



Annual Research Report 2019-2020

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This document can also be viewed online at www.nifca.gov.uk

This report is intended to give an update on the outcomes and/or ongoing progress of Northumberland Inshore Fisheries and Conservation Authority's (IFCA) research plan. This report is intended to be an overview providing some detail and salient results, for more information on each of the projects signposting is provided where reports are available.

Northumberland IFCA's Annual Research Plan¹ outlines the work priorities and survey plans for gathering evidence and data over a 12-month period (May – April). In the 2019-2020 plan the following areas were identified as priorities:

- Assessment of brown crab stock status and sustainability of potting within the district
- Assessment of fishing activities within Marine Protected Areas (MPAs)
- Development and implementation of monitoring & control plans for fishing activities
- Continuation of annual survey work

The tables below provide a list of the surveys and research conducted by NIFCA, external researchers and students, as identified in the Annual Research Plan 2018-2019. Outcomes of NIFCA actioned surveys are summarised from May 2018 to April 2019 in table 1, and table 2 lists all student research projects conducted relevant to NIFCA and their project status as of April 2019. A glossary of terms can be found in Appendix A.

Northumberland IFCA Research 2019-20

Table 1 NIFCA survey work 2019-2020 including a summary of the work and any outcomes/results generated. Colours separate the work areas through Annual Research Plans and Reports: Red: Crustacea, Grey: Mollusca, Purple: Finfish, Yellow: General, Green: Habitat.

Work area	Survey type	Research/Survey	Summary	Outcomes/Results	Priority objective
Crustacea	Stock Assessment	Brown crab (<i>Cancer pagurus</i>) fishery ²	Data collection throughout the year: <ul style="list-style-type: none"> - Wholesaler surveys - Fleet and quayside sampling - Onboard observer surveys 	Data was collected through and fed into a FLAG funded project to assess the stock status of the Northumberland brown crab fishery. Result suggest the stock status for both male and female <i>C. pagurus</i> fell short of achieving the target of maximum sustainable yield. Assessments of future management implications for the stock status of the <i>C. pagurus</i> fishery of the NIFCA district highlighted the recommendation of an increase in the Minimum Conservation Reference Size to 140mm.	Develop 'Fisheries Liaison Group' to discuss management options. Continue sampling and analysis in 2021.
	Fisheries Management Plans	Lobster Fishery	Document to outline all aspects of species-specific fishery containing research plans, data deficiencies and monitoring & control plans etc.	Document in draft.	Complete document draft.

¹ Latest Annual Research Plan (2020-21) available on the NIFCA website: https://www.nifca.gov.uk/wp-content/uploads/2020/04/2020-21_Annual-Research-Plan.pdf

² Report in final stages of publication and will be available on the NIFCA website

		Brown Crab Fishery	Documents to outline all aspects of species-specific fishery containing research plans, data deficiencies and monitoring & control plans etc.	First draft of document complete and in review. Document outlines all relevant information pertaining to the brown crab fishery and sets out a monitoring plan.	Continue monitoring protocol as outlined in the plan.
		Velvet crab fishery	Documents to outline all aspects of species-specific fishery containing research plans, data deficiencies and monitoring & control plans etc.	Data analysis and drafting of document postponed due to staff time and resource constraints.	Review priorities for this document.
Mollusca	Mussel survey	Fenham Flats mussel survey ³	Part of NIFCA's annual monitoring programme. Mussel surveys at Fenham Flats have been carried out since 2006 to determine bed area, mussel number and density, length frequency and percentage cover.	2019 surveys showed an increase in mussel bed area however biomass has decreased (1271 tonnes in 2018 to 1151 tonnes in 2019). The mean shell length increased with very little spat or juvenile mussel recorded. Results are indicative of a declining stock and an aging population.	Liaise with Natural England and continue monitoring survey in 2020.
		Holy Island mussel survey ³	Part of NIFCA's annual monitoring programme. Mussel surveys at Holy Island have been carried out since 2018 to determine bed area, mussel number and density, length frequency and percentage cover. Following on from an initial survey the previous year, it was chosen to repeat the survey at Lindisfarne for a second year to monitor any changes in the bed.	The bed area increased from 31,100m ² in 2018 to 40,400m ² in 2019. Over this period, the mean shell length increased from 35.2mm to 48.1mm. only been surveyed since 2018, it is difficult to estimate the health of the mussel bed at this site at this time.	Continue monitoring survey in 2020.
		Blyth Estuary mussel survey ³	Part of NIFCA's annual monitoring programme. Mussel surveys at the Blyth Estuary have been carried out since 2015 to determine bed area, mussel number and density, length frequency and percentage cover.	The overall bed area increased in 2019 to 16,040 m ² , from 14,480 m ² in 2018. The mean shell length also increased from 32.9mm in 2018 to 35.5mm in 2019. the density of mussels within the Blyth Estuary has fallen since 2018 to 286 mussels/m ² . This coupled with the increasing shell size could indicate a decline in the overall bed health.	Continue monitoring survey in 2020.
Finfish	Small Fish Surveys	Aln Estuary Survey ³	Part of NIFCA's annual monitoring programme. Fish surveys have been carried out on the Aln Estuary since 2012 as part of monitoring for the Marine Conservation Zone (MCZ). NIFCA share results with the Environment Agency to input into their monitoring work to determine the WFD status of the estuary (Classified as Good by latest EA report in 2016).	During the 2019 surveys, 940 individuals of 13 species were caught and counted. Both species richness and individual abundance increase from 2017 and 2018. Lesser sandeel was by far the most abundant species recorded (58%), sprat made up 12% of the catch and goby species 15%. All three species have increased in abundance since 2017. Herring have declined in recorded number from 233 in 2017 to 18 in 2019. European eel increased in abundance from 1 in 2017 to 6 in 2019.	Continue monitoring survey in 2020 with particular focus on herring abundance.

³ Report available on the NIFCA website: <https://www.nifca.gov.uk/downloads/>

General	North East Beached Bird Survey	Druridge Bay	Part of NIFCA's annual monitoring programme. Surveys feed into multiagency project to determine the number of beached birds along the North East coast.	Data collected by NIFCA feeds into regional monitoring. There is no requirement for NIFCA to produce reports on findings for the short stretches surveyed.	NIFCA have reviewed survey priorities and due to resource constraints have postponed involvement in this project.
		Beadnell	Part of NIFCA's annual monitoring programme. Surveys feed into multiagency project to determine the number of beached birds along the North East coast.	Data collected by NIFCA feeds into regional monitoring. There is no requirement for NIFCA to produce reports on findings for the short stretches surveyed.	NIFCA have reviewed survey priorities and due to resource constraints have postponed involvement in this project.
Habitat	Broadscale habitat mapping	Collect high resolution seabed habitat maps within NIFCA district.	Operating WASSP multibeam sonar during routine patrols as well as targeting data collection in the northern part of the district.	During routine at sea patrols with St Aidan, areas with less detailed information on seabed habitat spatial extent was targeted. Seabed hardness information was generated from which, habitat type can be inferred. OLEX data must be ground-truthed to fully determine habitat type.	Develop this objective in 2020 to target specific areas and plan ground truthing surveys.
	MSFD Project	Develop and test indicators for seabed habitat health for mud and reef features. Site selected so results can be compared along a fishing pressure gradient.	Partnership project between Newcastle University, Natural England and NIFCA. Rock and mud habitats were sampled in 2018 and 2019 and indicators (such as species diversity) will be analysed. Sample sites were selected based on fishing pressure gradients therefore results can be used to determine impact of trawling and potting pressure. Sample sites were also added to include dredged areas (cobble/gravel habitat).	Results area currently being analysed and written up into a report by a research associate at Newcastle University. This will be available on the NIFCA website when published.	May provide information that can be used in MPA assessments and monitoring.

Marine Protected Areas

Northumberland IFCA assessment of fishing activities in MPAs is ongoing with progress made on assessments throughout the year. Assessment work will continue through 2020 with thanks to Natural England for their helpful guidance and input. For a detailed breakdown of the progress made with assessments, outcomes of assessments, and a list of assessments to be completed, please contact the Environmental Team.

External Projects

External projects carried out by partner organisations or academia but relevant to NIFCA aims and priorities are detailed below. NIFCA may have input into projects by providing data, staff time or resources. For further information on the projects listed please contact the Environmental Team.

Table 2 Research projects carried out by external researchers.

Project title	Institute / Project type / Student	Status
Comparison of trawl data and fishery food webs between present and 100 years ago in Northumberland.	Newcastle University / PhD / Georgina Hunt	Due: 2020
Potential drivers of temperate reef fish assemblage structure.	Newcastle University / MPhil / Matt Jankowski	Completed September 2019
Fenham Flats Mussel Surveys (2005-2019)	Newcastle University / BSc / Imogen Dent	Completed August 2019
Comparison of historic and current pot catch data.	Newcastle University / BSc / Molly Stockill	Completed August 2019
Impacts of the restrictions on the North Sea salmon and sea trout fishery on the Northumberland pot fishery.	Newcastle University / BSc / Sophia Yakoob	Due August/September 2020
Impacts of Sea Surface Temperature (SST) on changes in lobster population and catch size.	Durham University / BSc / Jessica Swinbank	Due August 2020

Appendix A – Glossary of Terms

FLAG – Fisheries Local Action Group. Provides grants for commercial fishermen, the fishing industry including aquaculture.

Ground-truth - The collection of ground-truth data enables the accuracy of remote- sensing data (such as underwater video footage) to be determined, aiding the interpretation and analysis of the remotely-sensed data.

Marine Conservation Zone (MCZ) - Marine areas in English waters designated under the Marine and Coastal Access Act 2009 to protect marine habitats and species typical of UK waters.

Marine Protected Areas (MPAs) - A marine area that is protected by statutory or voluntary measures to control human activity. The term is also used to describe Scotland's national network of marine nature conservation sites.

Minimum Conservation Reference Size (MCRS) - The size for a given species below which the sale of catches shall be restricted to reduction to fish-meal, pet food or other non-human consumption products only.

Monitoring & Control Plans – outline the methods of monitoring fisheries to detect their impacts over time.

OLEX - a complete system for seabed mapping, plotting and navigation.

WASSP multibeam sonar - A multibeam echosounder is a type of sonar that is used to map the seabed.