

Orkney Sustainable Fisheries

Orkney Shellfish Research Project

Logbook Report 2013

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Introduction

Fishermen participation in the Orkney Fishery Research Project is a key aspect of understanding the fishing activity in Orkney's waters, one of the ways in which the fishermen can provide quantitative information about their fishing activities is to fill in a logbook.

In Scotland the only fishing vessels that are required by law to fill in logbooks are vessels over 12m in length. They are required to fill in an e-log which provides the government with details of their fishing activity, as the majority of the vessels that fish around Orkney are under 12m they are not required by law to fill in an e-log, however there may be changes within the law that make it mandatory for the under 12's to fill in an e-log daily. Marine Scotland do collect information on the landings of each fisherman but all they provide is a total weight landed for each of their target species.

The initial objective was to have six fishermen (Index Fleet) filling in logbooks, however it was made clear to all fishermen if they wanted to fill in a logbook they would be able to do so. There are currently eight fishermen filling in logbooks, the aim is to increase this number during 2014. The logbooks are designed to compliment the data collected by the VMS and the biological sampling giving a more detailed picture of the fishing activity around Orkney.

It should be noted that the data in this report is not representative of the Orkney Shellfish Fishing Fleet as a whole and the data should be viewed as a sample of the fishing effort in Orkney waters.

The Shellfish Fishery in Orkney

The inshore fishery in Orkney is what is known as a mixed species fishery, which simply means that the fishermen don't target one species they set¹ their pots and will land the shellfish over the Minimum Landing Size and will discard or throw back undersized shellfish. The main target species fished in Orkney are:

- Brown Crab (*Cancer pagurus*)
- European Lobster (*Hommarus Gammarus*)
- Velvet Crab (*Necora puber*)

Even though Orkney is a mixed target fishery, there are still seasonal changes in the target species caught. This is both market driven and weather driven, during the winter months there will be more landings of Velvet Crab compared to Brown Crab as the Velvet Crab can be found in more inshore sheltered waters and Brown Crab are mainly found in deeper water. And during the summer there are more landings

¹ Setting pots means adding bait usually fish to the pots and putting them into the water for a few days

on Brown Crab as the weather is better and allows the fishermen to access the fishing grounds more offshore.

Fishing Effort

One of the main pieces of information that the logbooks provide is a fishery statistic known as Fishing Effort, For example fishing effort is the amount of effort a fishermen has to put in to catch XKg of crab. In this case fishing effort is the amount of creels or crab pots hauled (lifted out of the water) to catch XKg of their target species. Fishing effort is an important statistic because if the fishermen are putting in lots of effort (lift lot of pots) and they are not getting large amounts of their target species in return it could be a sign of a depletion in the fish stock, this would have to be backed up with information from stock assessment.

If fishermen are not getting good return from the pots they are lifting, they may target a different species or move their gear into a different area. Fishing effort could also include factors like the amount of fuel used to catch XKg of target species or money spend on bait for the pots. Fishing effort in this report does not include fuel or finances, this could be something included in the project if the fishermen were willing to provide information on bait usage for example and if it was thought to add more clarity to the overall picture.

Example of a logbook sheet

The design of the logbook took a few attempts with at sea trials by fishermen to make sure that it was easy and not too time consuming for the fishermen to fill in but at the same time giving good quality quantitative information which could be used to calculate fishing effort. The logbook provides daily information on:

- Weight landed of each of the main target species (Brown Crab, European Lobster and Velvet Crab)
- The number of undersized per pot of the three main target species
- The total number of pots hauled (lifted)
- The soak time (the number of days the baited pots have been in the water for)
- By-catch found in the pots

Date	Total Pots Lifted/Snak Time	Species	Wt landed (kg)	number of undersized per creel	By-Catch	Other Comments
One row for one day	The amount of time the pots have been in the sea	What species they have caught, Commercial species only Brown Crab Velvet Crab and European Lobster	Weight landed of each Commercial species	Estimate of the numbers of undersized caught per day at sea	The species of by catch that have come up in the pots	Any other comments eg. weather, tide and swell conditions

Figure 1 An Example of a fishermen's logbook

Logbook Data

The areas that are covered by the logbooks are:

- Kirkwall
- Stromness
- Tingwall
- Hoy (Longhope)

- Burray
- Around the Northern Isles

To keep the data aggregated and anonymous all the data from the fishermen was added together. After that the data was separated into two areas (see figure 2) East and West coast fishing grounds. The total weight landed for each species was calculated and confirmed by looking at processor records for each of the fishing areas. The total number of pots hauled for each of the fishing areas was calculated and the amount of Kg of each species caught per pot hauled.

Out of the eight fishermen that are completing the logbooks 5 of them are fishing on the West Coast and 3 are fishing on the East Coast. When looking for new fishermen to complete the logbook, fishermen who fish on the East Coast will be approached first to increase the data from the fishing grounds on the East of Orkney.

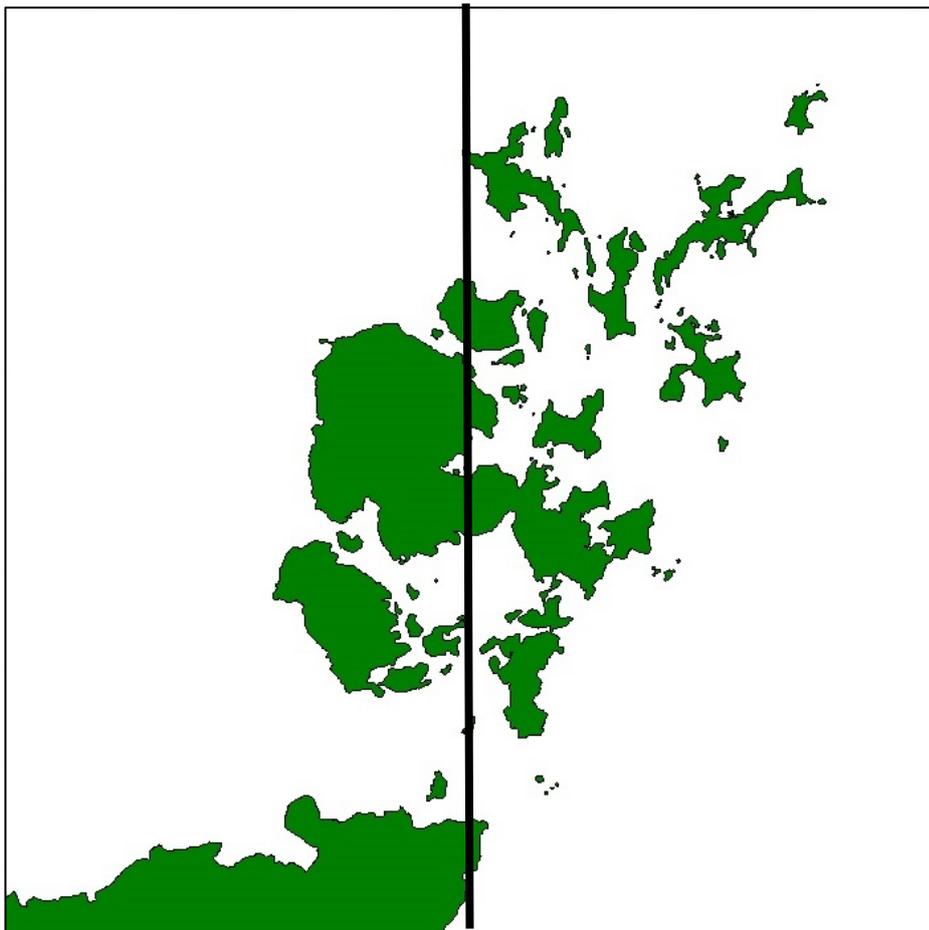


Figure 2 Map showing the 2 fishing areas East and West Coast

	Pots Hauled per Year	Pots hauled per Week	Weight Landed Brown Crab Kg	Weight Landed European Lobster Kg	Weight Landed at Velvet Crab Kg
West Coast	265,680	5,535	196,270	7,080.8	16,600
East Coast	231,600	4,825	846,306	2,836	11,225

Table 1 Pots hauled and the weight landed of each target species for the East and West Coast fishing areas

The figures shown in table 1 show that there are more pots hauled in the West Coast per week and per year, but there is a much higher weight of brown crab caught on the East Coast. One of the boats that is working in the West coast has a viver boat and is able to fish for longer at a time work further offshore which enables a higher level of catch compared to the majority of fishing vessels in Orkney.

There is a much higher catch of European Lobsters caught off the West coast than the East coast, The fishing areas on the East and West coast of Orkney have very different substrate, on the East it is made up of a more sandy substrate and on the West it is predominantly a rocky substrate which is a much more suitable habitat for Lobsters.

The weight of velvet crab that is caught on the West Coast compared to the East Coast, even though the fishing ground on the West Coast is more suited to velvet crab fishing. This is due to the number of fishermen filling in logbooks on the West is higher than the number on the East.

Species	Total Weight Landed Kg
Brown Crab	1,042,576
European Lobster	9,916
Velvet Crab	27,825

Table 2 the total weights of the 3 main target species

The total weight of the three main target species are shown in table 2, Brown Crab is the most fished species out of the eight fishermen with velvet crab being the next most fished species and lobsters being the least fished species. The market value of European Lobster is higher than that of Brown Crab and Velvet Crab.

	Total Pot Hauls
Per Week	10,375
Per Year	497,280

Table 3 The total Pot Hauls for all the fishermen combined

The total pots hauled by the eight fishermen are shown in table 3. The total pots hauled and the total weight of each of the target species were used to calculate the

total kg of each species caught per pot hauled (fishing effort) shown in table 4. The averages in table 4 are for both West and East Coast data. The total kg per pot hauled of Brown Crab is high at 11.42kg/PH compared to European Lobster and Velvet Crab, however the fishermen are still getting a return on the effort they are putting into fishing. The fact that the numbers are positive highlights that Orkney has an abundant shellfish fishery.

Species	Average kg per Pot Haul
Brown Crab	11.42
European Lobster	0.14
Velvet Crab	0.42

Table 4 The total kg per pot hauled

Fishermen leave their baited pots in the water for a certain amount of time before hauling them this is known as the soak time. The average soak time of the pots varies greatly depending on what species the fishermen are targeting (table 5). The soak time relates to the freshness of the bait in the pots. Velvet crab are more attracted to fresh bait which is why the soak time is only about one day, whereas European Lobsters are more attracted to older bait which is why the soak time is so much longer. The bait that the fishermen uses in the pots changes depending on what species they are targeting.

Species	Average Soak Time (days)
Brown Crab	5
European Lobster	8
Velvet Crab	1.5

Table 5 Average Soak time of the pots

The other non-target species (by-catch) which are found in the pots are shown in table 6. Its essential to know what other species of fish are being brought up in the pots to know if the fishing is having a detrimental effect on other fish or shellfish populations. Pot fishing is known as a passive fishing method which means very little of the habitat and other species are affected unlike trawling. However there are still non-target species caught in the pots, this is most likely down to the fact that the pots are baited and it attracts all sorts of fish and shellfish. There are non-target species that are not only attracted to the bait but also that target species, Octopus will consume everything in a pot if it has the opportunity. The amount of by-catch coming up in the pots is not excessive or high enough to cause concern but this is still valuable information, all by-catch are reused as bait.

Species	Average Numbers per week East Coast	Average Numbers per week West Coast
Lesser spotted dogfish	5	3
Cod	6	3
Ling	2	5
Rockling	5	1
Dab	7	3
Hermit crab	10	18
Conger Eels	4	3
Octopus	0.5	1
Whelks	60	110