

1 SAMPLING AREAS

1.1 Introduction

The following is an appendix to the Food Standards Agency (FSA) Research Project S14017: Pilot study on the incidence of algal toxins (ASP, DSP and PSP) in Scottish Brown Crab (*Cancer pagurus*), hereafter referred to as the main report or by the abbreviation MR. Section 4.2.4 (MR) describes in detail the sampling strategies used to detect algal toxins in wild Brown crab. Figure 1 is a copy of Figure 12 from the main report showing all the geographical areas sampled for wild Brown crabs during this study. For each sampling strategy described in section 4.2.4 (MR): this appendix has included a brief description and a detailed map to illustrate the locations that Brown crab batches were obtained.

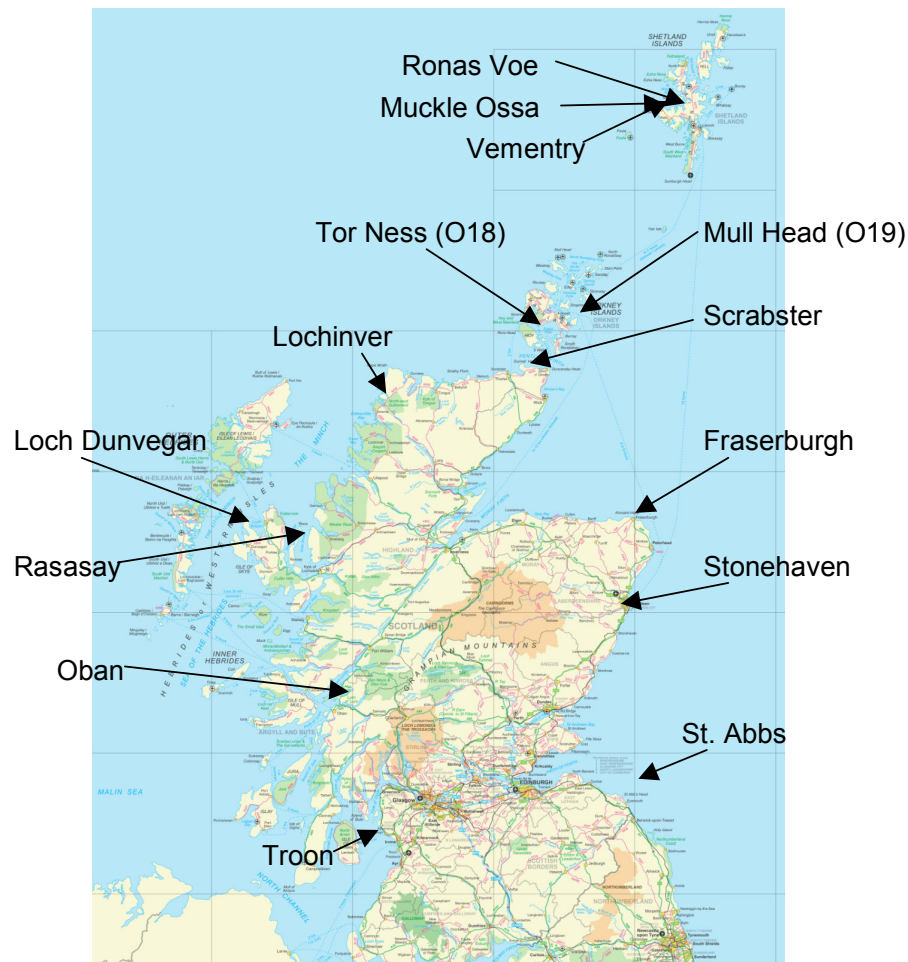


Figure 1: Map indicating the geographical locations from which Brown crabs were sampled for this project

1.2 Targeted sampling in 2005

The 2005 targeted sampling strategy (section 4.2.4.1 MR) used historical data to select areas with a history of high toxin levels. Table 5 (MR) lists the potential areas and the reasons behind the final selection. The selected areas comprised Loch Dunvegan and Stonehaven for PSP toxins, around Skye for ASP toxins, Loch Dunvegan and St Abbs for DSP toxins. Figure 2 shows the locations selected and the toxins expected for the targeted sampling in 2005. Batches of Brown crab were obtained from these areas over the toxin season (June to October). Table 6 (MR) summarises the number of crabs tested from each selected area for each toxin and Table 14 and Table 17 (MR) summarise the detected toxin results for ASP and PSP respectively.

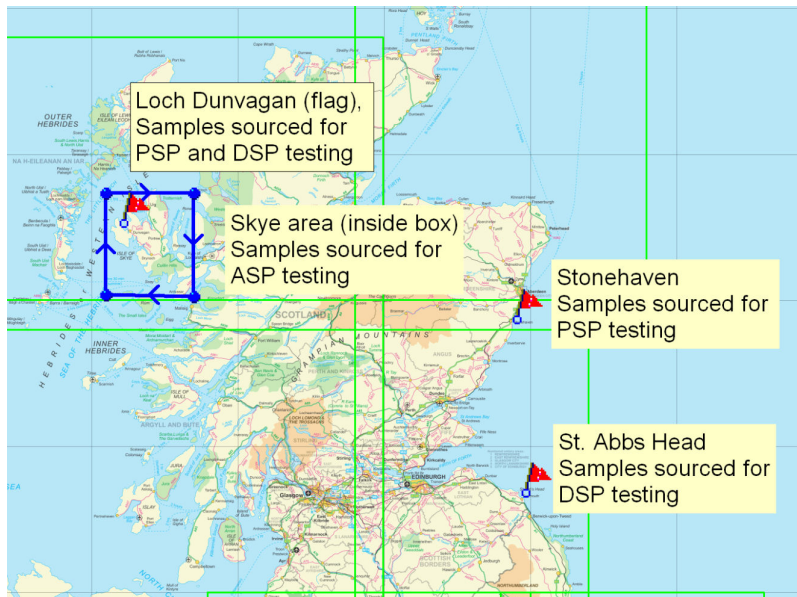


Figure 2: Targeted sampling locations for 2005.

1.3 Reactive sampling in 2005

The 2005 reactive sampling strategy (section 4.2.4.2 MR) used the FSA Scotland's current statutory biotoxin monitoring programme to highlight areas where ASP or PSP toxin concentrations in shellfish approached or were above the regulatory limits. Batches of Brown crab were obtained weekly from these areas for a total of three weeks and tested for the appropriate toxin or toxins. Figure 3 shows the two reactive sites Tor Ness (O18) and Mull Head (O19) located in Orkney. Figure 4 shows the area around Oban, box SM16 where only one batch of crabs was received (due to bad weather and engine failure). Table 7 (MR) summarises the number of crabs tested from each area for each toxin and Table 14 and Table 17 (MR) summarise the results for ASP and PSP concentrations respectively.

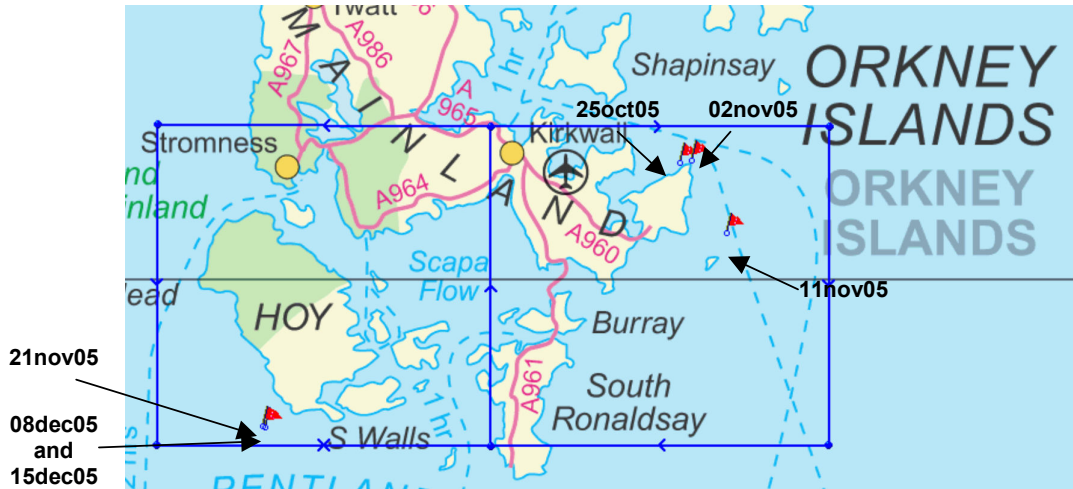


Figure 3: 2005 Reactive sampling locations around Orkney. The left hand box represents the O18 sampling area and the right hand box represents the O19 sampling area.

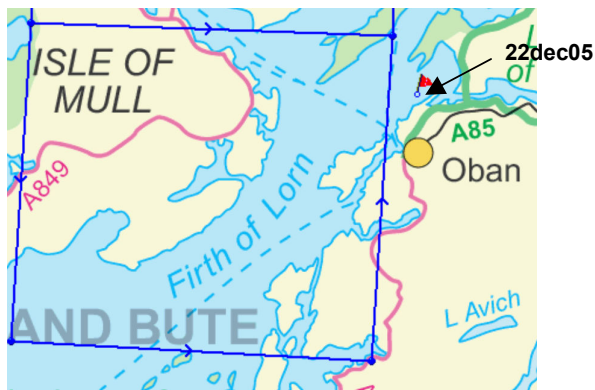


Figure 4: 2005 Reactive sampling location around Oban. The box represents the SM16 sampling area.

Figure 4 also shows the area where the first ASP positive samples, described in section 4.3.2.1 of the main report were obtained and externally verified using LC-MS/MS by Michael Quilliam’s group (Appendix 04). The 20 pooled crabs (FSA04-011105-Pool) had an ASP level of 25.3 mg/kg, over the regulatory limit of 20 mg/kg for ASP.

1.4 Random Sampling in 2006

The random sampling strategy in 2006 (section 4.2.4.3 of the main report) used the survey analysis of the report (see section 3 MR) to obtain a list of the twelve ports (Table 4 MR) that have the highest annual crab landings in Scotland. From this list; three ports Oban, Scrabster and Lochinver (Figure 5) were selected as they represented important geographical crab fishing areas around Scotland (see section 3.2.1 MR) and batches of Brown crab could be reliably obtained. Table 8 (MR) shows

the number of tests conducted for each toxin, the results of which can be seen in Table 16 and Table 19 of the main report.

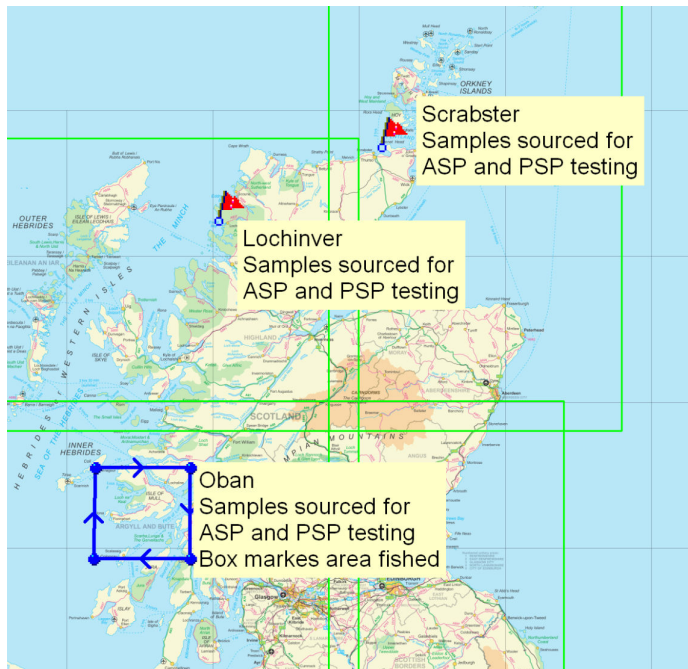


Figure 5: 2006 random sampling areas. Crabs sampled from Scrabster and Lochinver were fished from the same areas marked by the flags. The crabs obtained from Oban were fished from within the box as the fishmonger was supplied by a variety of small vessels.

1.5 Reactive sampling in 2006

The reactive sampling strategy in 2006 (section 4.2.4.4 MR) was primarily to target areas that had high levels of DSP toxins in shellfish, *i.e.* where a Temporary Closure Notice had been issued. Ronas Voe was the area selected and sampled from (Figure 6). However as high PSP levels were detected in Shetland during the sampling period these crabs were also tested for PSP toxins. The high PSP levels in Shetland also warranted sampling on the west coast of Shetland so one batch of brown crabs was obtained from Vementry and Muccl Ossa (Figure 6). Two early samples sent to Integrin as “Oban random samples” had actually come from Fraserburgh and Troon (Figure 7). These samples have been treated as 2006 reactive samples. Table 9 (MR) shows the number of tests conducted for all 2006 reactive samples, the results of which can be seen in for each toxin in Table 19 and Table 21 of the main report.

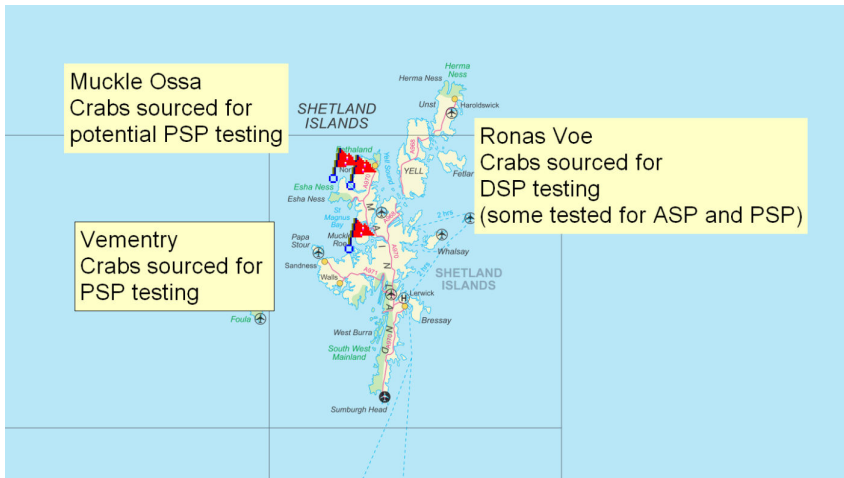


Figure 6: 2006 reactive samples obtained from Shetland. Ronas Voe was targeted for potential DSP positive crabs but was also tested for PSP toxins. Crabs from Muckle Ossa and Vementry were tested for PSP toxins.

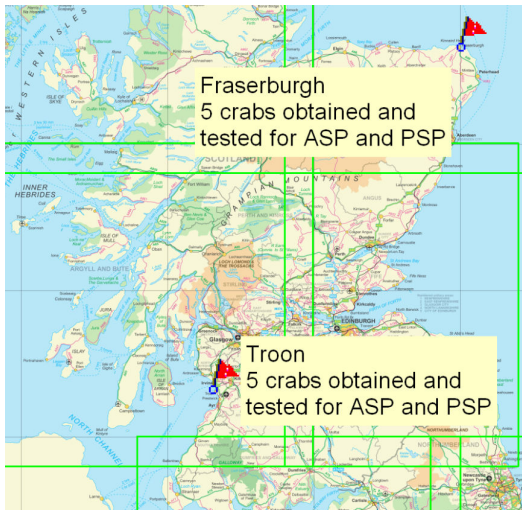


Figure 7: 2006 reactive samples from Fraserburgh and Tron.