

# **Mussel Stocks on the Teign and Exe Estuaries**



## **Report for Members of the Byelaw and Permitting Sub-Committee**

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## 1. Aim of this Supplementary Report

This supplementary report has been prepared for members of the Devon and Severn Inshore Fisheries and Conservation Authority (D&S IFCA) Byelaw and Permitting Sub-Committee. The report is intended to assist with the decision making regarding the use of Byelaw 9 – Temporary Closure of Shellfish Beds, to aid the recovery of depleted mussel beds on the Teign and Exe Estuaries.

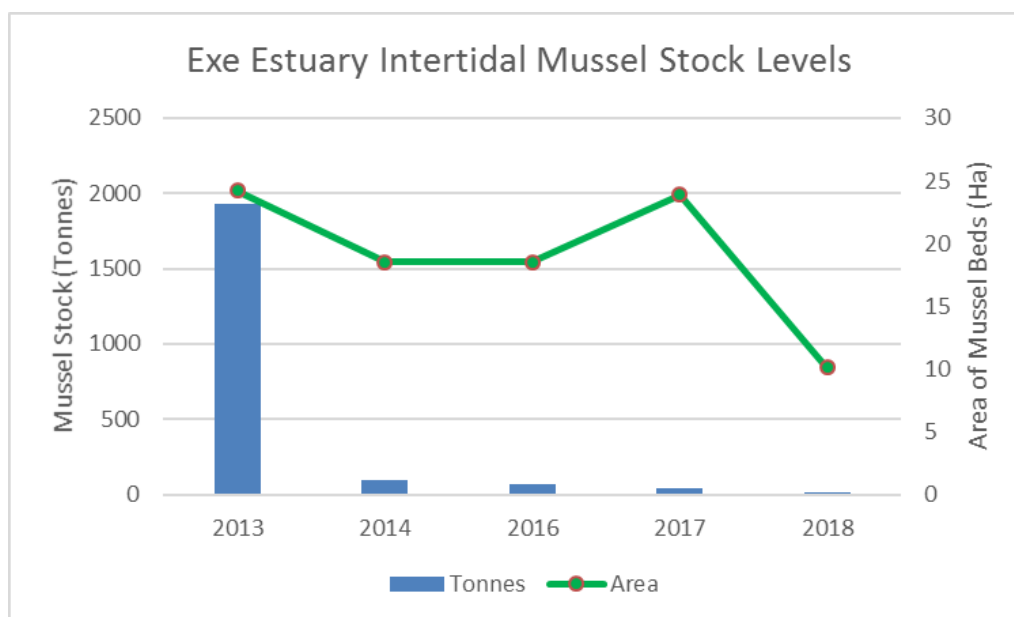
This supplementary report can be read in conjunction with mussel stock assessment reports for both the Teign and Exe Estuaries, available via the D&S IFCA website resource library ([Resource-library/H-Environment-and-Research/Mollusca/Mussels](#)) or on request (2018 stock assessment reports still pending).

## 2. Rationale for Mussel Stock Assessment Surveys

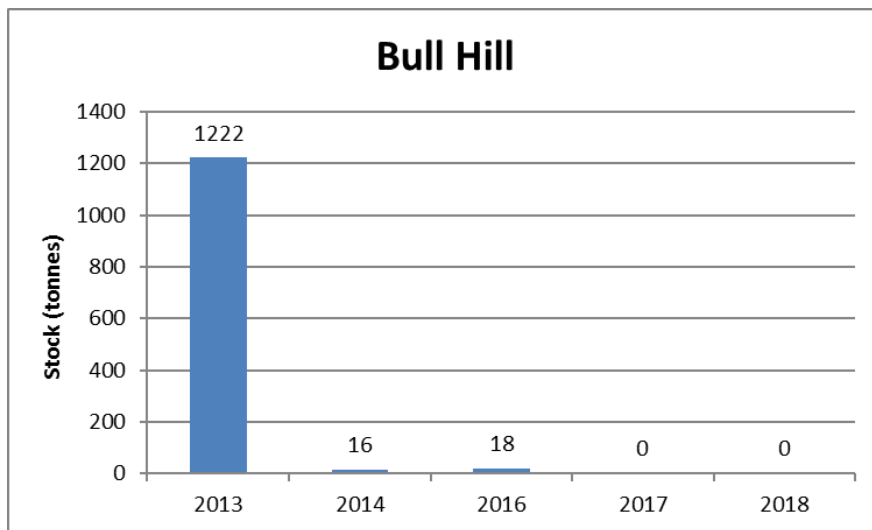
Devon and Severn IFCA has been carrying out regular stock assessments on the public mussel beds within its District for the past six years. The purpose of these surveys is to accurately map the extent of each bed and estimate the tonnage and size distribution of mussel across the beds. The data from these surveys will be used, in conjunction with other inter-tidal stock assessments and hand-gathering activity studies, to inform the IFCA's future management of identified hand working fishing methods. One option for management, but not the only option, may be the development of a "Hand Working Permit Byelaw". The data are also shared with Natural England, for use in food-availability modelling for bird populations.

## 3. Findings to Date

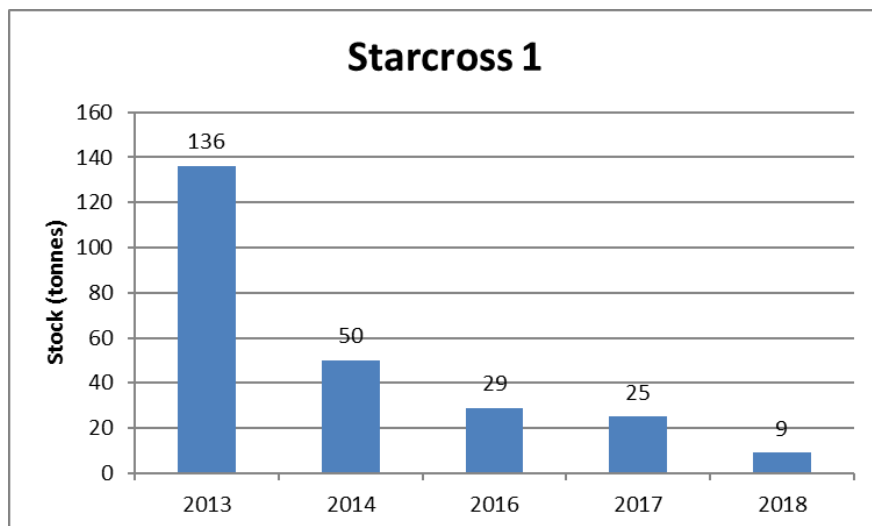
The Exe Estuary is a designated European Marine Site – a Special Protection Area (SPA) designated to protect populations of overwintering birds. Mussel surveys on the Exe Estuary have taken place on an annual basis since 2013. During this time the mussel stock on the estuary has shown a dramatic decline (a loss of 99.5% of the estuary's total stock). The initial loss of mussel from the estuary was caused by the storms of 2014, but the high energy environment makes it difficult for new mussel spat to settle and repopulate the beds, while older mussel continues to die off. Figure 1 shows the total mussel tonnage and area of mussel beds across the estuary since 2013, while Figures 2-4 show the breakdown of mussel stock on each of the three main beds (see Annex 1 for map of mussel beds). The extent of the mussel beds shown in the annex refers to the area where mussels were seen even if there was so few that a stock assessment was not possible or registered a zero tonnage.



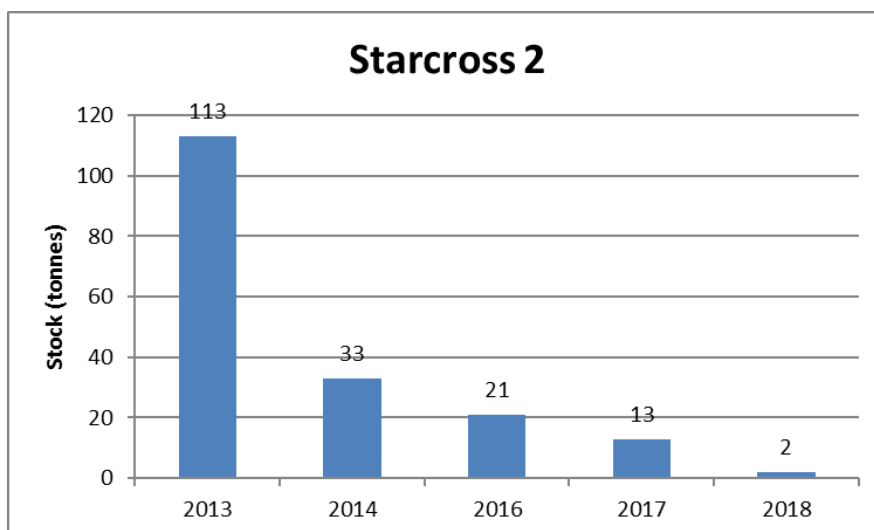
**Figure 1** Total mussel stock and area of beds 2013-2018



**Figure 2** Mussel stock (tonnes) on Bull Hill, 2013-2018

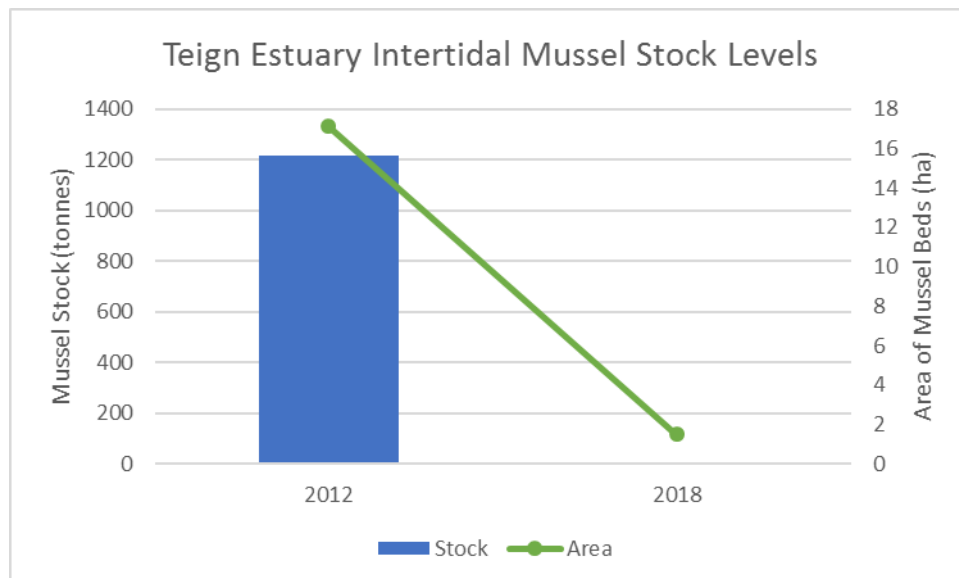


**Figure 3** Mussel stock (tonnes) on Starcross 1, 2013-2018

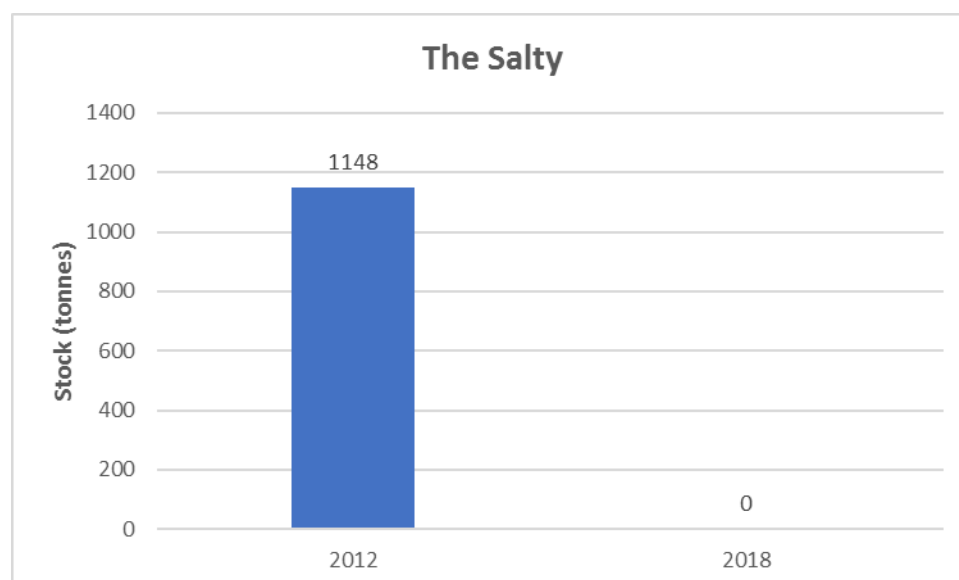


**Figure 4** Mussel stock (tonnes) on Starcross 2, 2013-2018

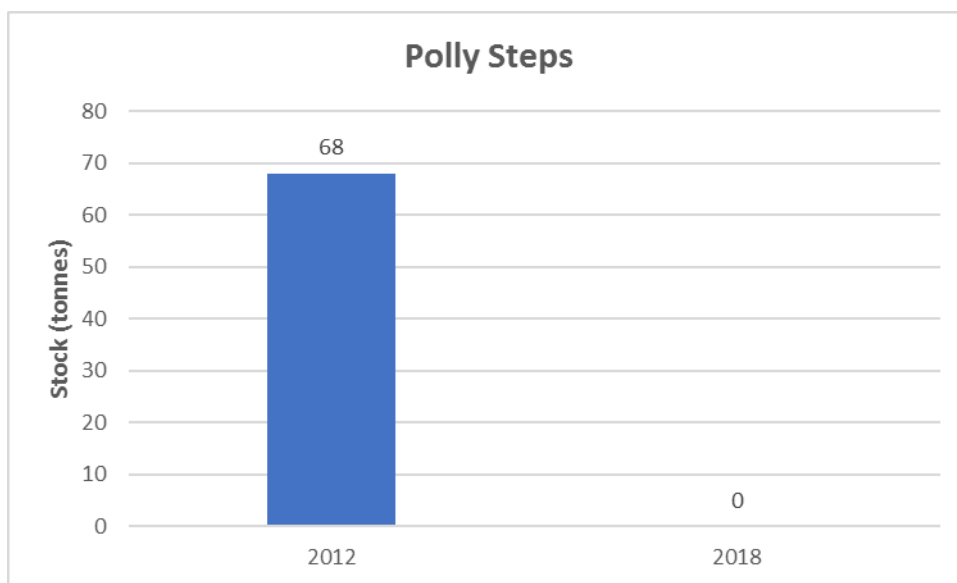
The Teign Estuary is not covered by any statutory designations, and therefore has not been surveyed as frequently as the Exe Estuary. A baseline mussel stock assessment was carried out in 2012, with the survey repeated in 2018. During this time the estuary has lost almost all its mussel stock. Similar to the Exe, the initial loss is thought to have been triggered by the storms in 2014 and the natural die-off of mussel. Although, some mussel was found in the 2018 survey, it was so sparse that it did not register in the stock estimations. Figure 5 shows the total mussel tonnage and area of mussel beds across the Teign Estuary in 2012 compared to 2018, while Figures 6 and 7 show the breakdown of mussel stock on each of the two beds (see Annex 1 for map of mussel beds).



**Figure 5** Total mussel stock and area of beds 2012-2018



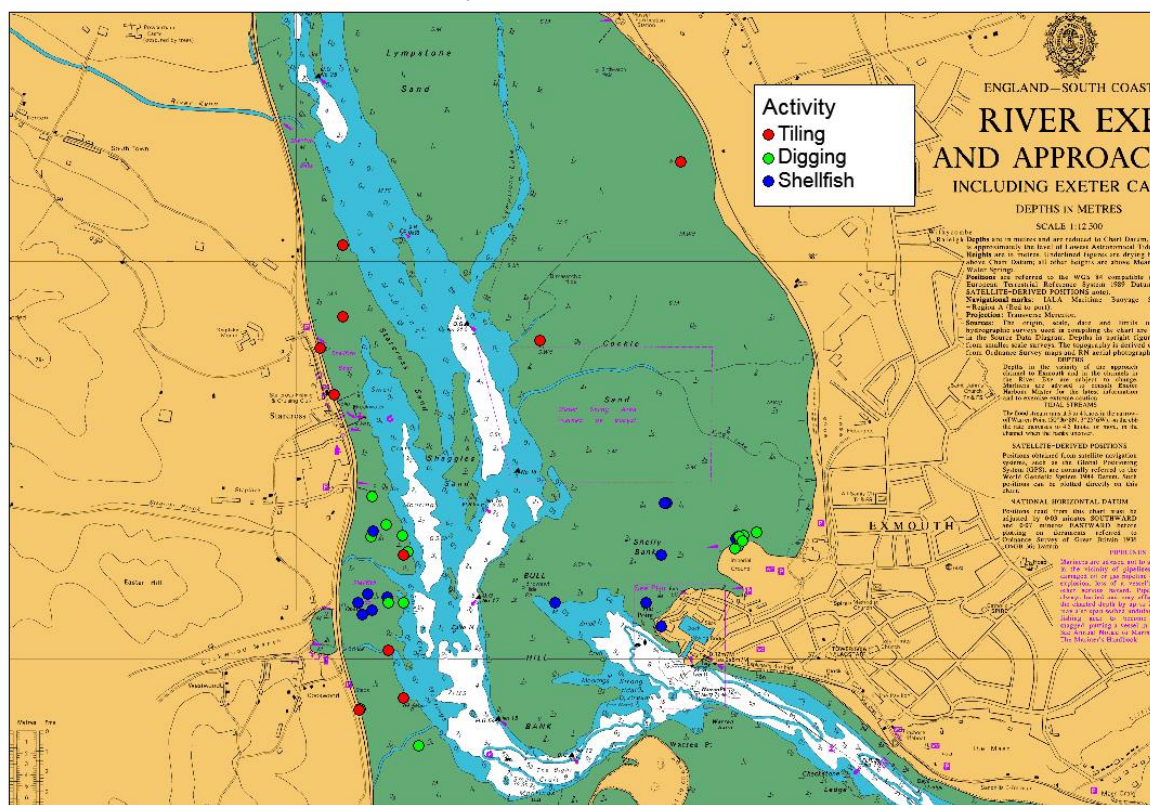
**Figure 6** Mussel stock (tonnes) on The Salty, 2012-2018



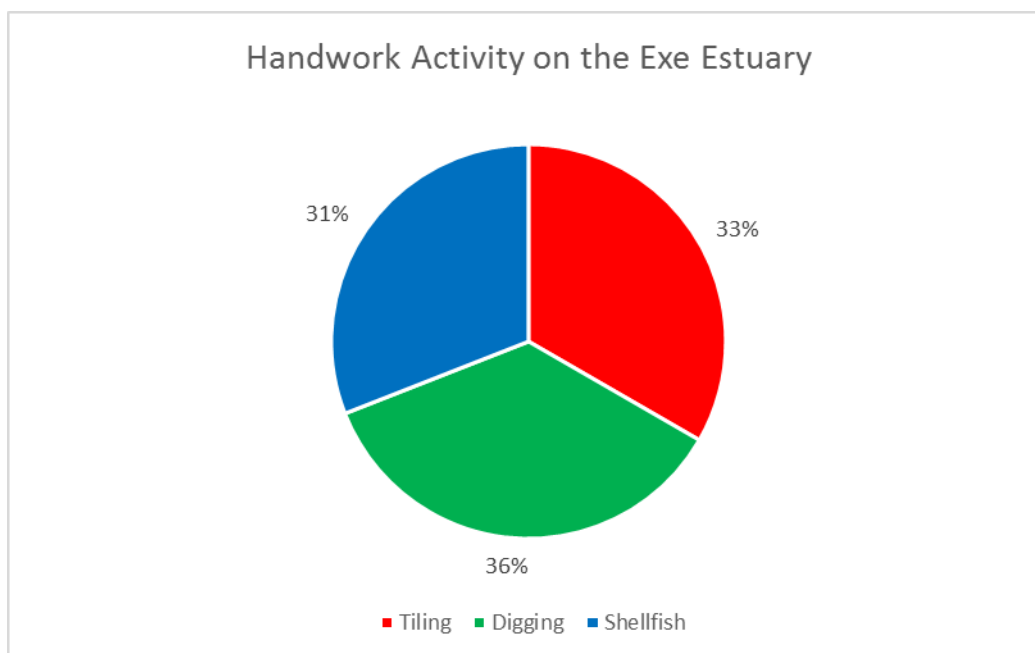
**Figure 7** Mussel stock (tonnes) on Polly Steps, 2012-2018

#### 4. Hand-gathering Activity

Despite the decline in stock, shellfish collection has continued to take place on both estuaries. In 2016, to inform HRA assessments of intertidal handwork, D&S IFCA carried out a survey in the Exe Estuary SPA to assess the level and distribution of handwork activity across the estuary (this covered bait digging and crab tiling, as well as shellfish collection). Shellfish collection was found to account for 31% of the handwork activity on the Exe, with mussel largely being collected on the western shore from the Starcross beds (the shellfish collection on the eastern shore was predominantly cockle). Figures 8 and 9 show the split of intertidal handwork activities across the estuary.



**Figure 8** Intertidal handwork sightings from the D&S IFCA survey, 2016



**Figure 9** Proportions of activities sighted on D&S IFCA Intertidal Handwork Survey, 2016

Over the course of 2017 and 2018 D&S IFCA's Enforcement Team received a total of 13 reports relating to the hand collection of shellfish on the Exe and Teign (five reports for the Exe, eight for the Teign). Many of the reports described "gangs" of people collecting large quantities of shellfish. This activity is not currently covered by a D&S IFCA byelaw, so the D&S IFCA's Enforcement Team have been working with the MMO and the Local Authorities' Environmental Health Officers in an advisory capacity.

## 5. Current Shellfish Harvesting

Both the Teign Estuary and Exe Estuary contain classified shellfish harvesting areas, where commercial harvesting of shellfish takes place and is regulated to ensure Shellfish Hygiene Standards are met. The Teign Estuary's harvesting areas are located above Shaldon Bridge within the Teign Regulating Order area. They are worked by commercial fishermen who are part of the Teign Musselmen's Association, which holds the Regulating Order. The beds surveyed by D&S IFCA Officers are public beds and lie outside of this Regulating Order and are not classified. In the past commercial fishermen have taken some seed mussels (immature mussels) from the public beds below the Bridge to restock their shellfish areas, encouraged by the Teign Harbour Master to prevent build-up of mounds of mussels on the Salty where recreational boats are moored. However, the commercial fishermen usually buy in huge quantities of seed mussel to replenish their harvesting areas. River Teign Shellfish Ltd is the main commercial operator on the Teign and D&S IFCA officers have discussed the potential to put a temporary closure on the Salty and Polly Steps beds. This operator is fully supportive of such a measure. The operator was also concerned that the Harbour Authority's levelling work on the Salty and the dredging of the river channel may have added to the demise of the public beds.

The Exe Estuary has a commercial operator, Exmouth Mussel Ltd, who harvests mussels from the private fishery part of the Exe Estuary, which he leases from the Earl of Devon. Exmouth Mussels Ltd brings in seed mussels from outside of the estuary to replenish the commercial beds. The operator relays the mussels both intertidally at Starcross and subtidally within the private fishery boundary. The Starcross beds lie within the private fishery and make up an

important part of the commercial shellfish business. The shellfisherman adds and removes mussel from this bed periodically, and usually leaves mussel intertidally for food for the birds, for which the Estuary is designated.

## **6. Re-stocking of Shellfish Beds**

In 2015 Exmouth Mussels Ltd., with consent and support from Natural England and D&S IFCA, trialled an experimental method to encourage spat to re-settle on Bull Hill on the Exe Estuary. Approximately 1,000 square metres of “hairy rope” was installed, lying horizontally across the bed, to try to capture the larval mussels as they floated by. Unfortunately, due to the strong tidal conditions this experiment was not successful.

Exmouth Mussels Ltd. has commenced another trial on Bull Hill, again with permission from Natural England. This trial involves the relaying of seed mussels as well as more mature older mussels onto the northern part of the bed to see if the mussels become established. Further mussels will then be added to try to replenish and re-establish the Bull Hill mussel bed. Exmouth Mussels Ltd is very keen to re-establish this bed, not only for the birds using the estuary, but also to stabilise this bed as it is becoming denuded and there is evidence of loss of sediment and structure, because there are no longer mussels present to contain the sediment. The Bull Hill mussel bed was a well-studied and significant bed and helped maintain the path of the river and the hydrography of the estuary. With the trial in restocking currently taking place it is important that the mussels from this bed are not harvested. Exmouth Mussel are supportive of a temporary closure to Bull Hill Bank.

## **7. Officer Comments**

Due to the decline in the mussel beds and the lack of seed settling in the areas the Authority are able introduce a temporary closure of beds under D&S IFCA's Byelaw 9 - Temporary Closure of Shellfish Beds, is as follows:

*Where in the opinion of the Committee, in any fishery, any bed or part of a bed of shellfish is so severely depleted as to require temporary closure in order to ensure recovery, or any bed or part of a bed contains mainly immature or undersized shellfish which in the interests of the protection and development of the fishery ought not to be fished for the time being or any bed of transplanted shellfish ought not to be fished until it has become established, and where the bed or part thereof has been clearly defined in notices displayed in the vicinity prohibiting the removal of the shellfish, or where the display of notices is not practicable a notice in a weekly newspaper circulating in the district in which the shellfish bed or part of the bed is situated, no person shall, while the bed or part thereof so defined, take away any shellfish without the consent of the Committee. For the purpose of this Byelaw the term “shellfish” means mussels, oysters, clams and periwinkles.*

The evidence detailed in this report shows that the public mussel beds in the Teign and Exe Estuaries are severely depleted, and a temporary closure would provide the opportunity for recovery of the beds through this extra protection. The beds that would benefit from a temporary closure are the Eastern Banks of the Exe Estuary, which include Bull Hill Bank, and the beds downstream of the Shaldon Bridge – those being Polly Steps and The Salty - on the Teign Estuary.

Also, the trial to relay mussel seed on Bull Hill will meet the criteria of “*any bed or part of a bed contains mainly immature or undersized shellfish which in the interests of the protection and development of the fishery ought not to be fished for the time being or any bed of transplanted shellfish ought not to be fished until it has become established*”.

If a temporary closure was put in place D&S IFCA would continue to undertake annual stock assessments on the beds, to monitor the health of the beds and detect any signs of recovery. Mussels take approximately 18-24 months to grow to marketable size (55-60mm), and a two-year closure might provide the best opportunity for any new mussel that settles on the beds (or is laid there, in the case of Bull Hill) the chance to mature. During this time should the IFCA decide to introduce a Hand Working Byelaw there may then be a management mechanism to restrict hand gathering of shellfish without the temporary closure remaining in place.

## 8. Annex 1 – Maps of mussel beds

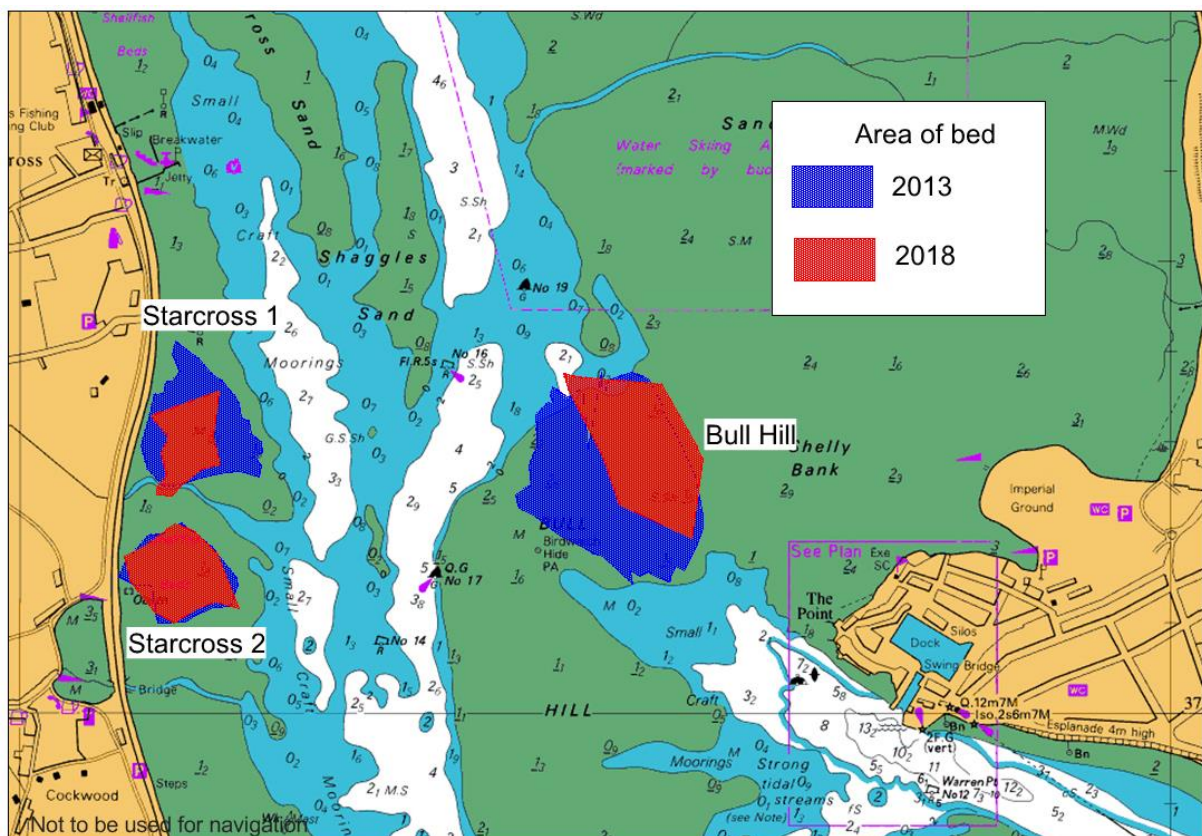


Figure 10 Location of mussel beds on the Exe Estuary

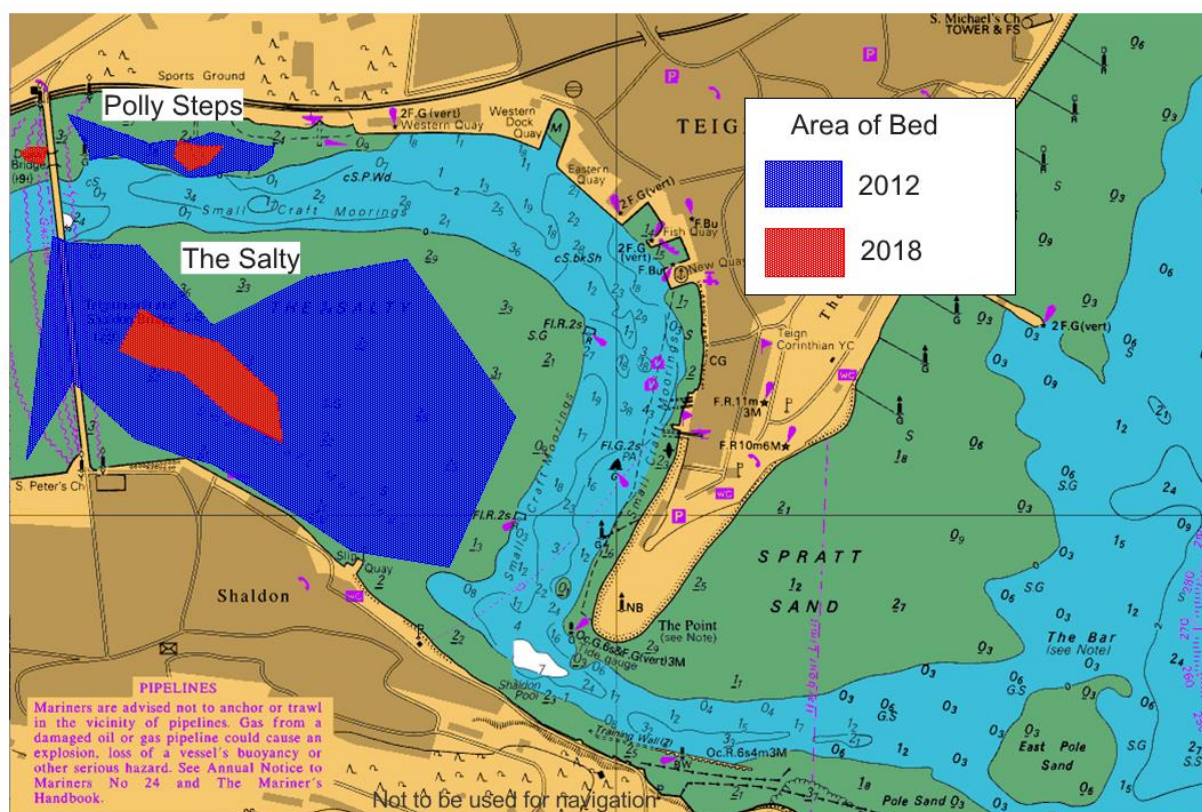


Figure 11 Location of mussel beds on the Teign Estuary