

# **Salcombe Estuary Scallop Fishery**

## **Stock Assessment**

**2012/13**



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## **1. Introduction**

### **1.1 Objective**

The objective of this project is to carry out a stock assessment on the scallop fishery in Salcombe Estuary, and to compare the stock between the 2011-12 fishery season and the 2012-13 season. It will also look at the stock before and after each fishery season. This will help inform the future management of the scallop fishery in Salcombe Estuary.

### **1.2 *Pecten maximus***

*Pecten maximus*, king scallop, is the larger and more valuable of the two scallop species which are fished in UK waters. The other species is *Aequipecten opercularis*, queen scallops. King scallops become sexually mature at approximately 2-3 years, with shell lengths of 80-90mm. But can live for over 20 years, reaching over 200mm in shell length (Beukers-Stewart & Beukers-Stewart). *P. maximus* spawns in spring/summer, with reproductive success being influenced by spawning stock biomass, environmental conditions and the availability of suitable settlement habitat. However, their long life span leads to generally stable population dynamics and productivity.

### **1.3 Site Description**

Salcombe Estuary is located on the South Devon coast, and falls within the South Devon Area of Outstanding Natural Beauty (AONB) (Fig. 1.1). The whole estuary is also designated a Site of Special Scientific Interest (SSSI) (Fig. 1.2), with a large portion of it also designated a Local Nature Reserve (LNR), due to its diverse range of marine habitats, flora and fauna, some of which are of international and national importance. For example, the *Zostera marina* eelgrass beds, which are recognised as some of the most extensive in the South West (South Devon AONB, 2005).



Fig. 1.1 The location of Salcombe Estuary within the South Devon AONB.

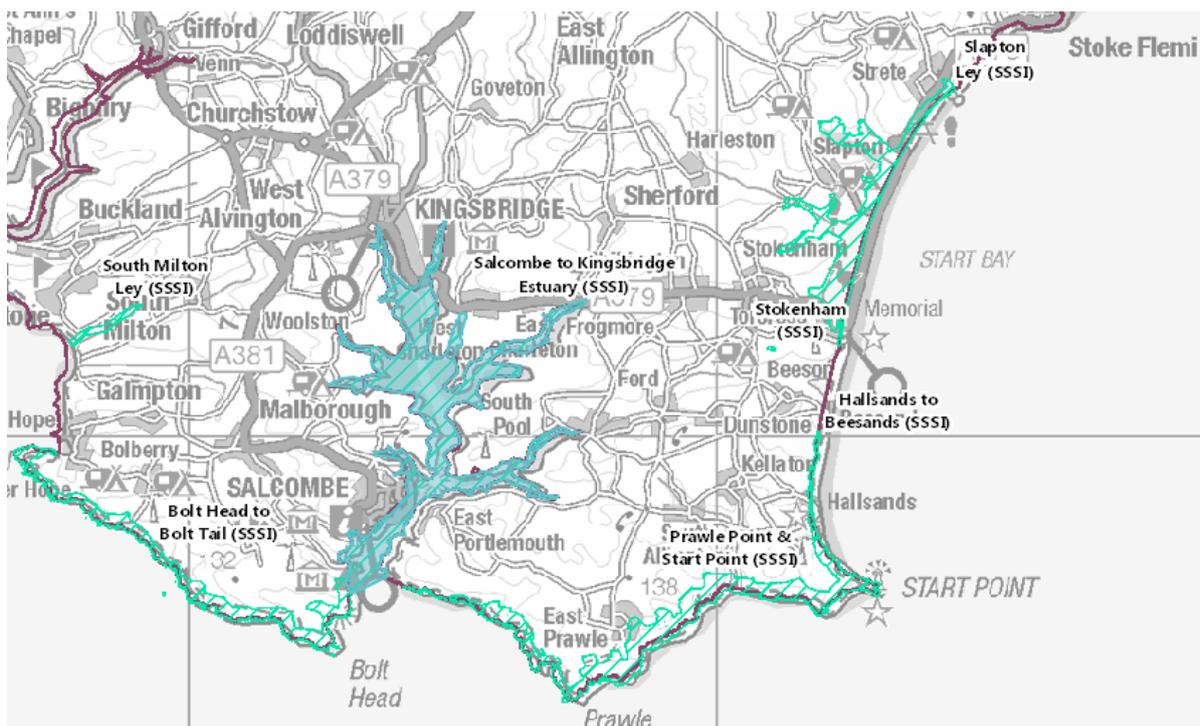


Fig. 1.2 Salcombe to Kingsbridge Estuary SSSI. (Natural England)

### 1.4 Salcombe Scallop Fishery

The Salcombe Estuary scallop fishery is open from 15<sup>th</sup> December to 15<sup>th</sup> March. During this time dredging for scallops is authorised to permit holders, where permits are issued by Devon and Severn Inshore Fisheries and Conservation Authority (D&SIFCA). Dredging can only take place in an area between a line drawn across the estuary from Snapes Point to

Scoble Point and a line drawn across the estuary from Woodville Rocks to Ager Point (Fig. 1.3), avoiding areas of eelgrass bed (Fig. 1.4). Permit holders can use non-toothed dredges, no wider than one metre, and can use two dredges at any one time. Dredges must be hand hauled, and fishing can only take place between 0900hrs and 1600hrs on weekdays, but not during public holidays.

All scallops landed must be above the Minimum Landing Size of 100mm.

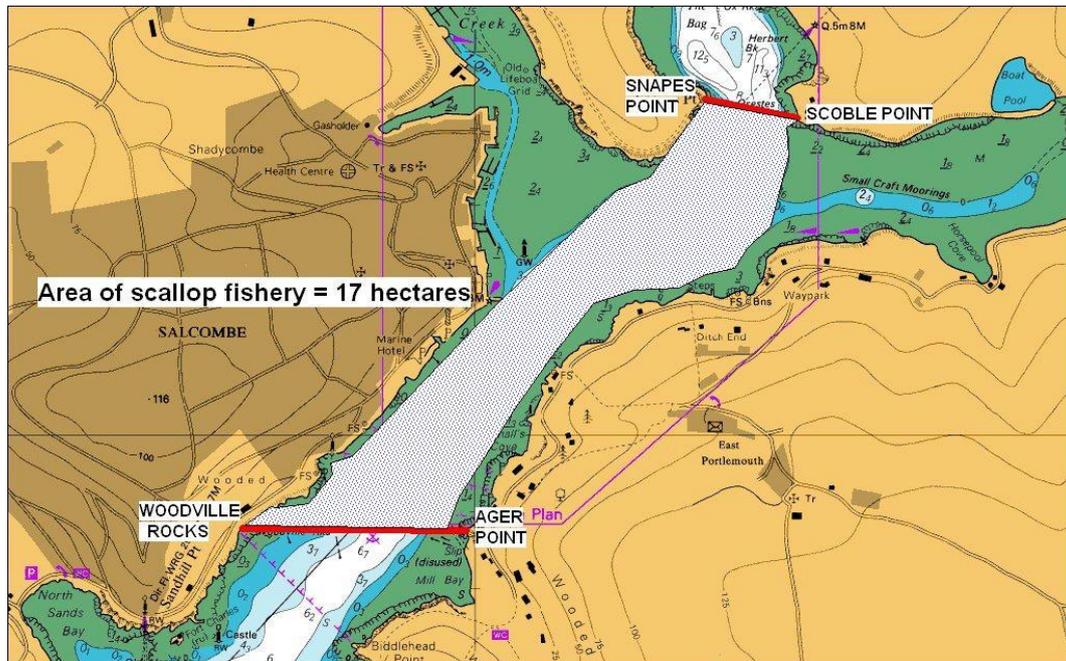
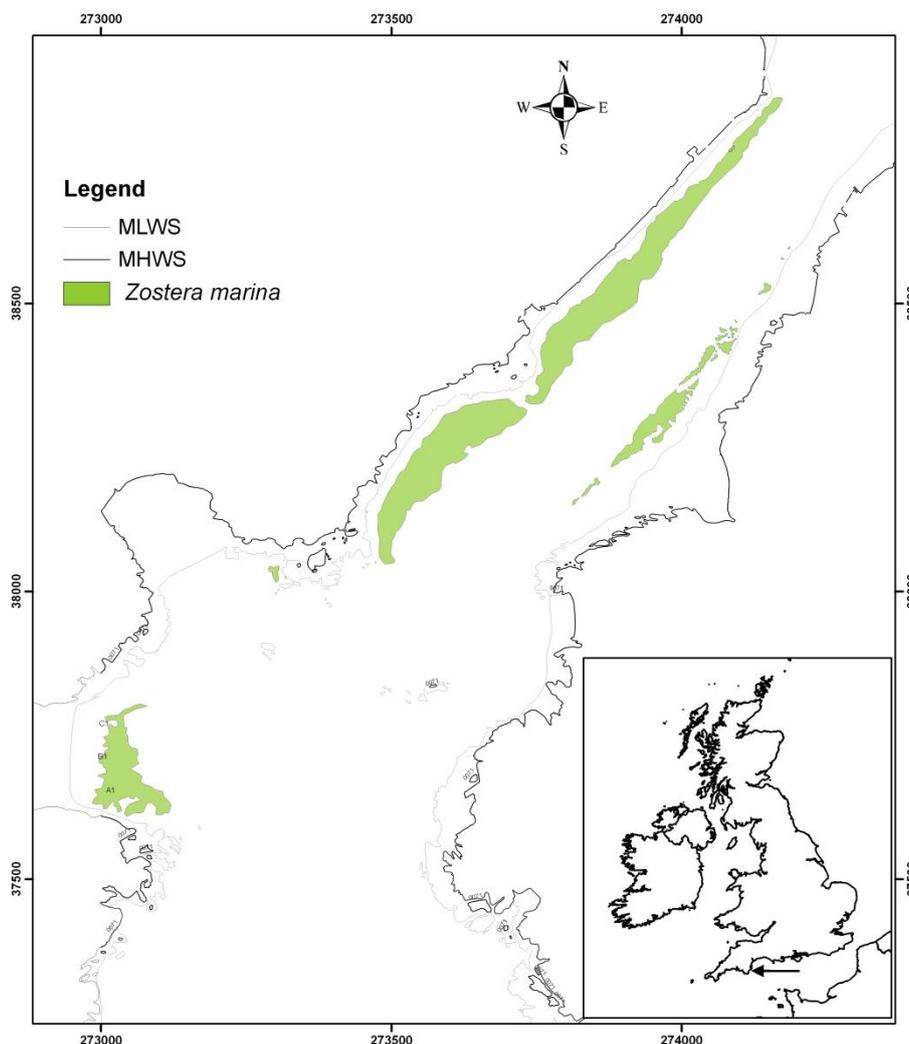


Fig. 1.3 Salcombe Estuary scallop fishery area.



**Fig. 1.4** Areas of *Zostera marina* eelgrass beds.

## 2. Methodology

The survey is carried out from on board a chartered fishing vessel. A number of tows are undertaken throughout the permitted scallop fishery area of the estuary. Each tow uses two 1m wide, hand-hauled, non-toothed dredges. The start and end coordinates are recorded for each tow. All scallops that come up from each tow are counted and their sizes recorded<sup>1</sup>. This process is repeated for each tow until all areas of the estuary had been covered. The whole survey is replicated before and after the fishery season<sup>2</sup>. It is not possible to replicate the exact location of each tow between the two surveys, due to different tidal conditions and boats being present on different moorings etc., so the aim is to ensure there is the same level of coverage in equivalent areas. The tows for all surveys are mapped, using MapInfo GIS software (Figs. 2.1-2.3).

<sup>1</sup> As the survey takes place outside the permitted scallop dredging season, all scallops were returned to the estuary.

<sup>2</sup> Due to weather conditions and availability of the chartered vessel, no survey was conducted post-fishery for the 2011-12 season.

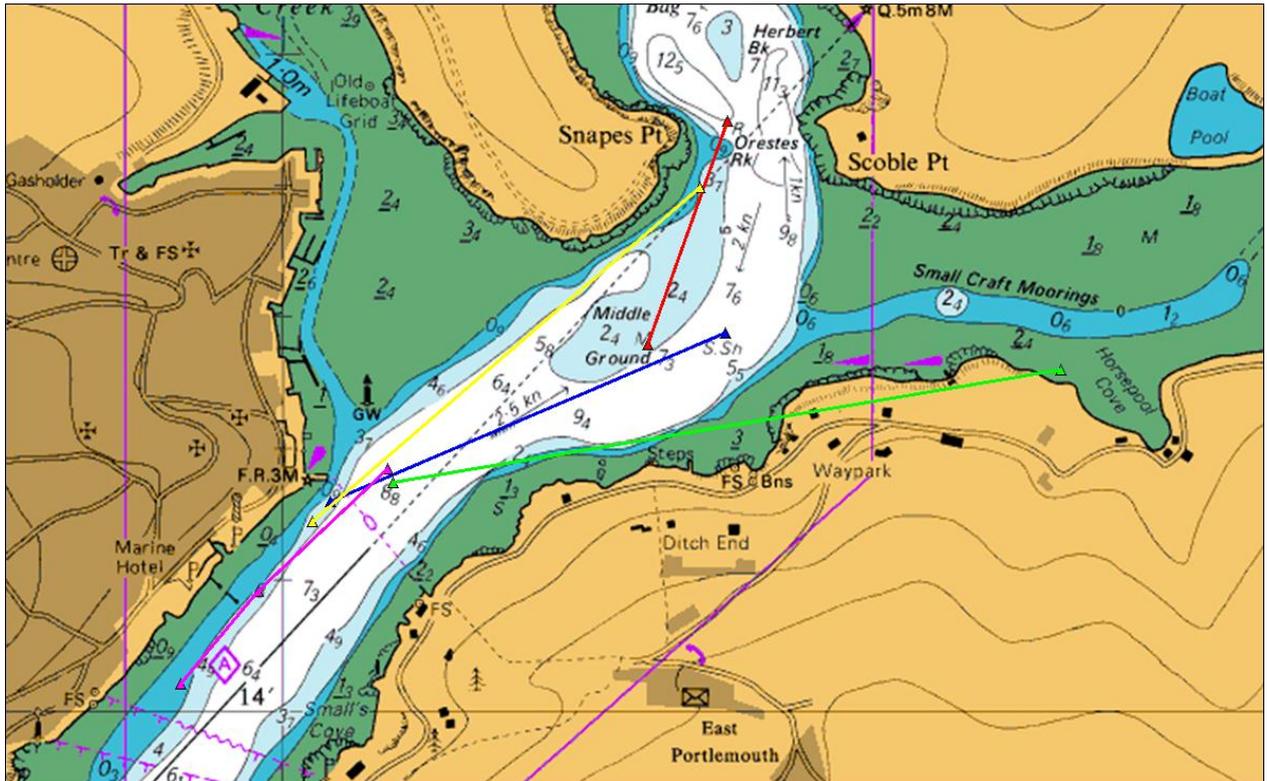


Fig. 2.1 Pre-fishery tows, December 2011.

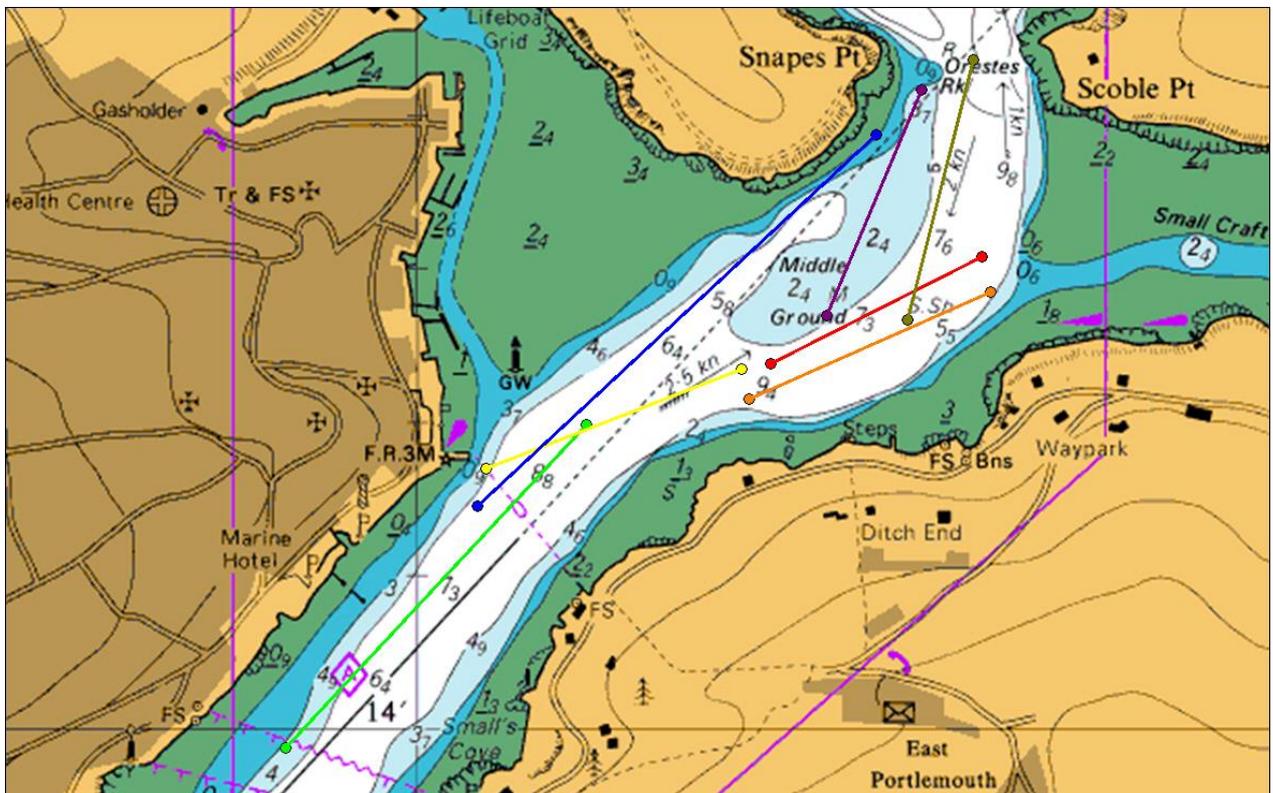


Fig. 2.2 Pre-fishery tows, December 2012.

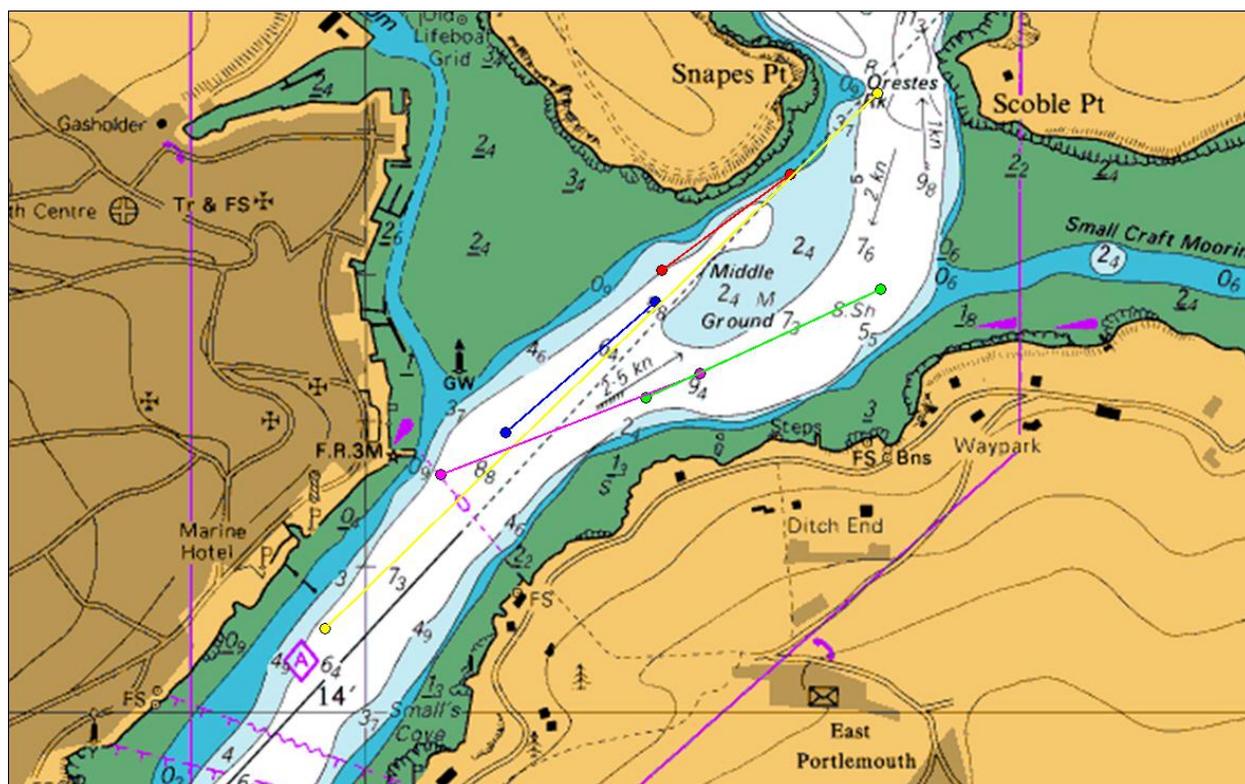


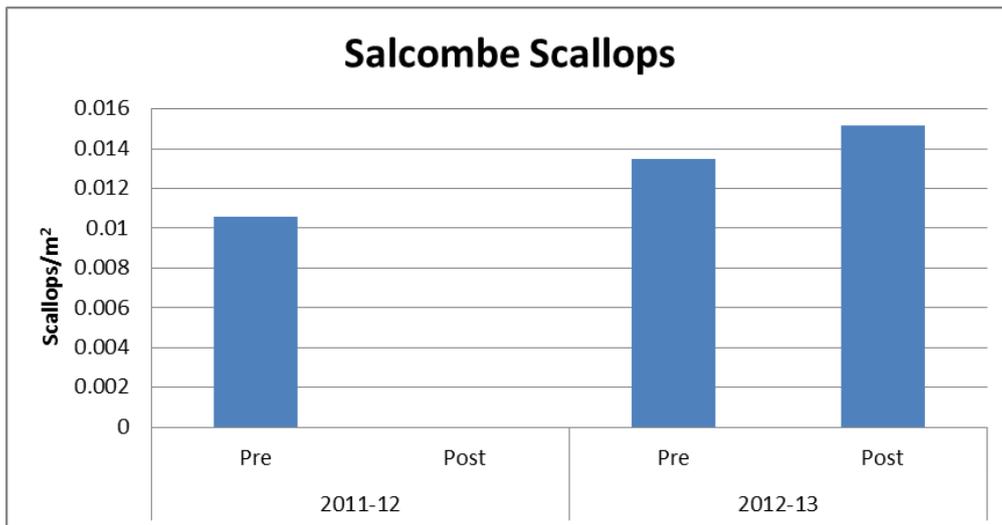
Fig. 2.3 Post-fishery tows, April 2013

### 3. Results

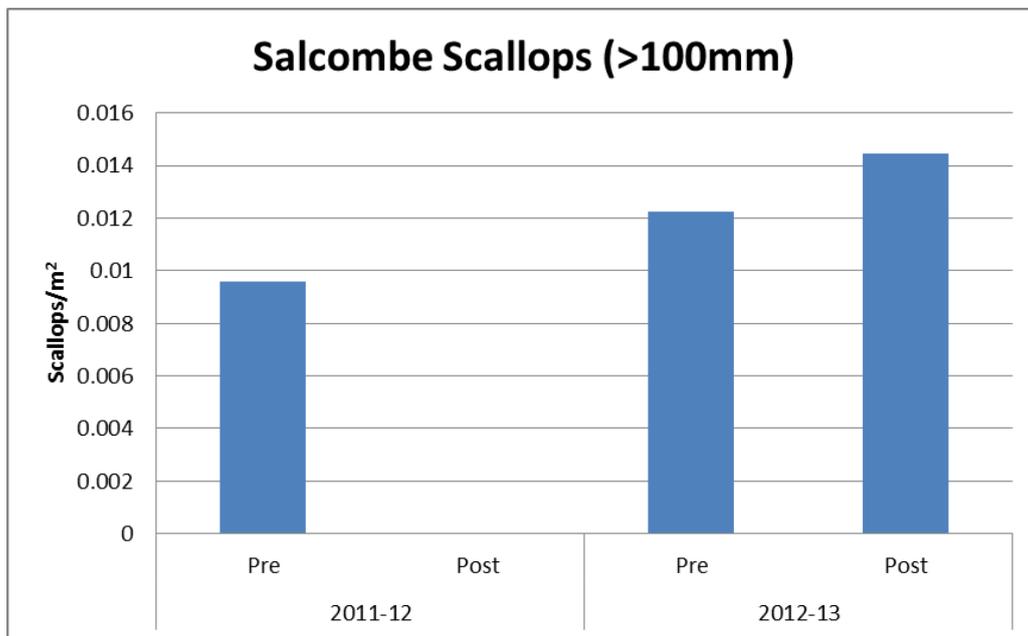
Table 3.1 summarises the results of the pre- and post-fishery surveys for both the 2011-12 and 2012-13 seasons. There is little difference between the numbers of scallops caught across each survey.

	2011-12		2012-13	
	Pre	Post	Pre	Post
Total length of tows (m)	3030	-	2740	2110
Area surveyed (m <sup>2</sup> )	6060	-	5480	4220
Total no. scallops	64	-	74	64
Scallops >100mm	58	-	67	61
Scallops/m <sup>2</sup>	0.010561	-	0.013504	0.015166
Scallops >100mm/m <sup>2</sup>	0.009571	-	0.012226	0.014455

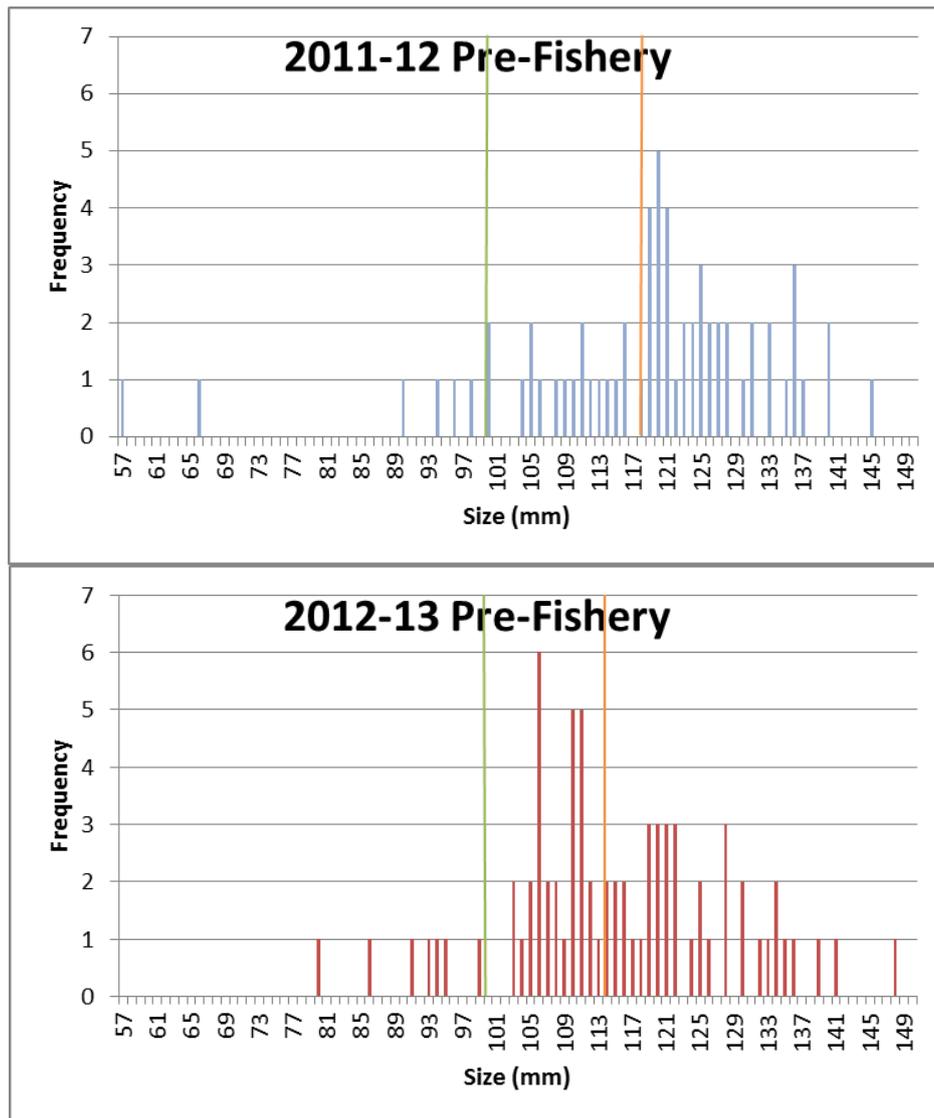
Table 3.1 Comparison between 2011-12 and 2012-13



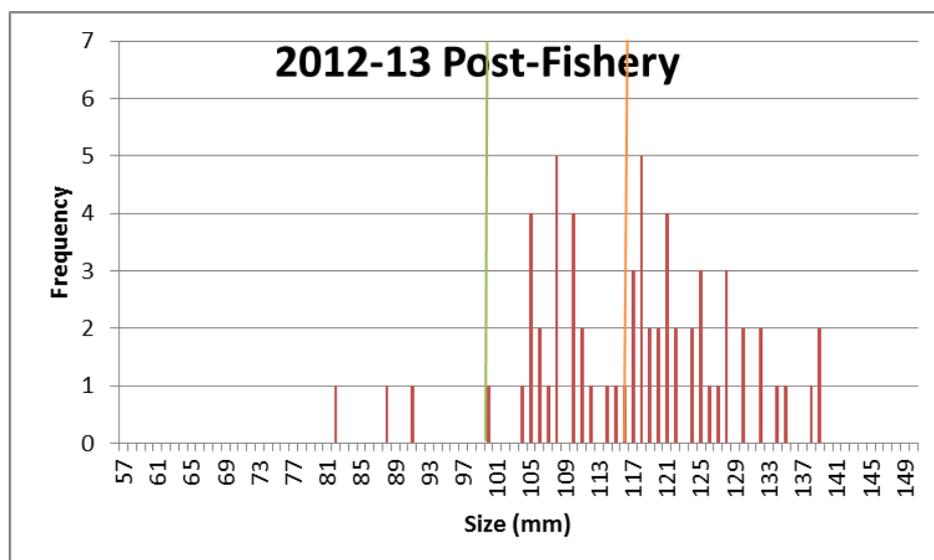
**Fig. 3.1** Average number of scallops caught per m<sup>2</sup>.



**Fig. 3.2** Average number of scallops >100mm caught per m<sup>2</sup>.



**Fig. 3.3** Size frequencies of scallops caught in the pre-fishery surveys of 2011-12 (top) and 2012-13 (bottom), with MLS shown by green line and average size caught shown by orange line.



**Fig. 3.4** Size frequencies of scallops caught in the post-fishery survey of 2012-13, with MLS shown by green line and average size caught shown by orange line.

#### 4. Discussion

There is little variation between stock levels and size distribution of scallops across the surveys. This would seem indicate that the fishery, at its current level, is not having an impact on the scallop stock in Salcombe Estuary. However, with only two year's data, this report should be treated as a baseline and it is recommended that the surveys are continued, both pre- and post-fishery, every year to be able to see any long-term patterns.

The camera-mounted pyramid frame technique could also be trialled in this area as a methodology for scallop stock assessment. This is a method adapted from that used by Stokesbury et al. (2004) in the off-shore northeast waters of the US. This method has recently been trialled in other areas of the Devon & Severn IFCA District, with the results still being analysed.

#### 5. References

Beukers-Stewart, B. D., & Beukers-Stewart, J. S. Principles for the Management of Inshore Scallop Fisheries around the United Kingdom. Environment Department, University of York.

South Devon AONB (2005) Salcombe – Kingsbridge Estuary Environmental Management Plan. Background Information 2005-2010 First 5 Year Review.

Stokesbury, K. D. E., Harris, B. P., Marino II, M. C., and Nogueira, J. I. (2004) Estimation of sea scallop abundance using a video survey in off-shore US waters. *Journal of Shellfish Research*, 23(1):33-40

<http://magic.defra.gov.uk/MagicMap.aspx?startTopic=Designations&activelayer=sssiIndex&query=HYPERLINK%3D%271002041%27>