

SOLENT OYSTER FISHERY

2015 Stock Report – Baird Dredge

9th-15th July 2015



Report compiled by Richard Gibbs

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INTRODUCTION

The 2015 stock assessment of the native oyster fishery in the Solent was undertaken for 5 days over the period of the 9th to 15th July 2015, using a chartered fishing vessel, 'Angelle Marie' (length 11m, engine 158 kW) locally based in Portsmouth Harbour. Southern IFCA officers undertook the survey with the assistance of researchers from the University of Southampton, Natural England, CEFAS, the Hampshire and Isle of Wright Trust and the Langstone Harbour Board. The Solent currently exists as a public fishery but has previously been managed through a regulating order until 2010. Due to a noticeable decline of the fishery in 2013-2014, Southern IFCA used its 'Temporary Closure of Shellfish Beds Byelaw' to close the fishery in the wider Solent and only allowed fishing to occur in Portsmouth and Langstone Harbours for 4 weeks. The 'Temporary Closure of Shellfish Beds Byelaw' was used again during the 2014/2015 season with a reduction of the fishery to 2 weeks again in the harbours. Due to the active management applied to the Solent oyster fishery by Southern IFCA, the authority decided that more recent data was required with regard to oyster levels in order to influence and inform the management of the fishery. This report details Southern IFCA's second year of an oyster stock assessment previously undertaken by CEFAS, which was discontinued in 2011. In addition to the CEFAS methodology, a number of stations were re-run using a Ladder dredge to work towards a comparison with the Baird dredge in order to consider the Baird dredges effectiveness.

METHODS

Samples were collected from each site using a Baird oyster dredge (figure 1) fitted with a 3ft blade and rigged with a 40mm square mesh chain-link bag. A diving plain was fitted to the dredge for all hauls. The length of the tow was approximately 100m at each station and was based on the vessel's Differential Global Positioning System (DGPS). All live oysters caught were measured using a calibrated Vernier Calliper. The maximum shell dimension was measured to the nearest millimetre, after which the oysters were returned to the seabed.



Figure 1 – The Baird Dredge being retrieved following a 100m tow.

Sampling was carried out using a standard fixed grid of stations, developed on previous surveys by CEFAS. As a result of budgetary and time constraints as well as the use of a second dredge (Ladder dredge) which slowed the process, the survey was reduced with fewer stations in some areas

(following reductions in 2014, and in 2011). Stations were chosen based on their location and advice on fishing practices given by the skipper of the vessel. Compared to previous surveys, in the Western Solent, only Sowley, Newtown and Lepe grounds were sampled. Similar to 2014, beds around Yarmouth and Lymington were not included; this was a result of the distance and steam time required to reach them, the low catches observed in 2010 and 2011, and the survey stations falling within closures due to seagrass (with no alternatives nearby). More grounds however were surveyed in the Eastern Solent compared to 2013 and in keeping with the methodology of the previous year; Chilling, North Channel and Thorn Knoll were included again. Tows were also undertaken at Spit Sands, and in Portsmouth and Langstone Harbours. The distribution of the stations across the Solent can be seen in figure 2.



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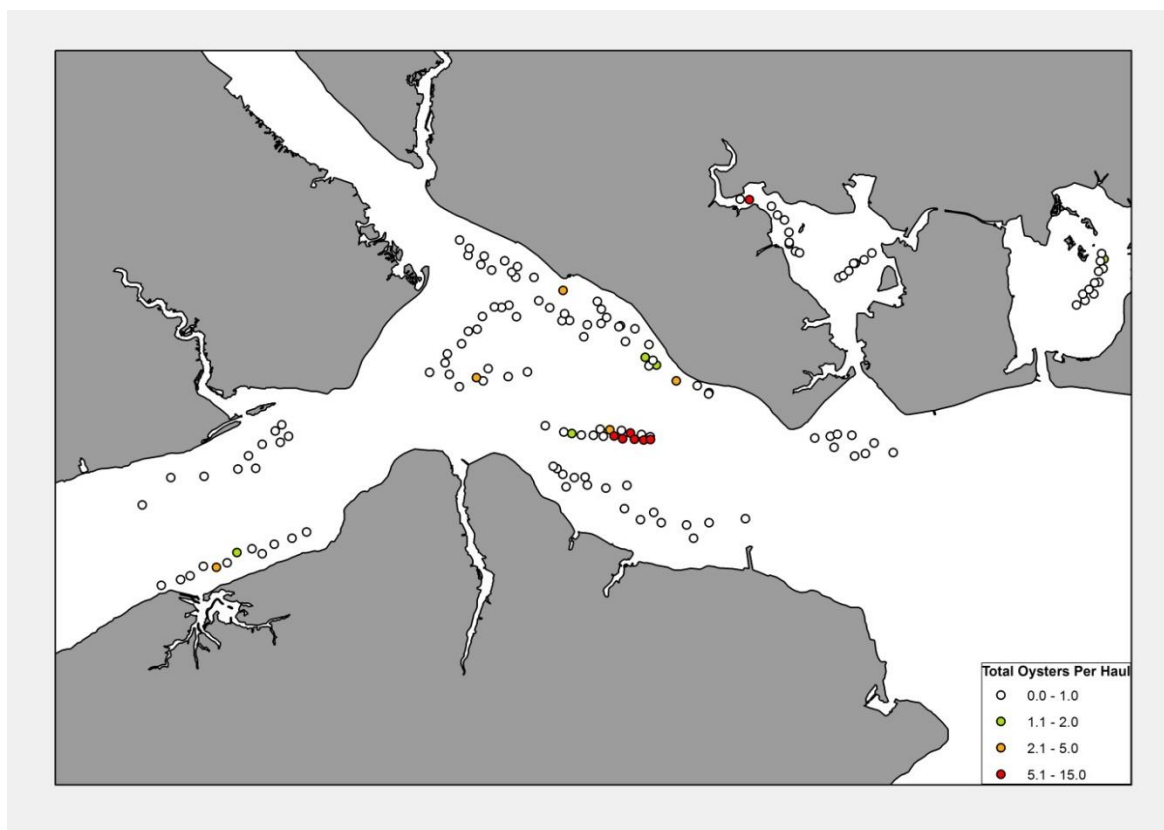
Figure 2 – Location of tows for the 2015 survey across the Solent.

Post survey, the catch of oysters at each station was divided into four size groups:

1. **65mm and over.** Oysters exceeding the pre-1992 minimum landing size (MLS) of 65mm. This size category has been retained to enable comparisons to be made with surveys carried out before the MLS was increased to 70mm in 1992.
2. **50-64mm.** Oysters that should grow sufficiently to enter the fishery in the next two seasons.
3. **35-49mm.** Oysters unlikely to attain fishable size (70mm) within the next two seasons.
4. **Less than 35mm.** Oysters spawned within the last 18 months.

RESULTS

A total of 148 tows were made with the Baird Oyster Dredge, 110 of these were undertaken in grounds traditionally surveyed in the previous CEFAS annual stock reports with an additional 17 in Portsmouth Harbour (10 in Fareham Creek and 7 in the Portchester channel), 12 in Langstone and 9 at Spit Sands. Figure 3 shows the survey stations and the total number of oysters caught per haul at each site across the Solent.



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Figure 3 – Total number of oysters caught per haul at each station location

In the data appendix tables 1-12 show the average catch rate of each size class for hauls that caught oysters in the Solent since 1990 to 2015 (with the exception of Spit Sands which started in 2001), table 13 showing the results for Portsmouth and Langstone Harbours. Figures 1-12 shows the average catch rates of oysters for all hauls for the time series (starting 1990 – 2015) categorized into large (>50mm) and small (<50mm) oysters. Figure 13 shows the oyster size frequency distribution across all sites in the Solent sampled in 2015 using the Baird Dredge.

To keep the methods consistent with previous reports, data in the tables is represented as average catches for positive hauls (hauls containing oysters) rather than the average catch for all hauls. Using averages which include all hauls does not reflect the true extent of the decline in abundance. This is because as the oyster population declines the area in which they populate is also reduced and so the proportion of hauls containing oysters has fallen.

Reports previously have divided the Solent into east and west with overall trends presented for each region. However, due to the reductions in sites in 2011, 2014 and 2015, results cannot be compared to previous years in this way. Although still considered separate, this report will focus on individual grounds.

Eastern Solent

At Lee-On-The-Solent the number of oyster caught has ranged significantly with peaks and troughs between 1990 to 2007 although mean catch rates per haul were generally below 4 for oysters sizes >50mm and <50mm. 2008 shows a significant decrease in the mean catch rate per haul to 2011 where there were only 2 successful hauls. This trend has continued to 2015 with only 1 oyster being caught which was >50mm (59mm). Similar to Lee-On-The-Solent, Browndown Bank has shown past trends of peaks and troughs although with generally high numbers of oyster catches especially in 1990. 2008 saw the decline of the oyster catch rate in the area and in 2015 there were only 3 positive hauls with no oysters below 50mm in size, compared to last year which had 3 oysters in the 49-35mm size class.

At North Channel, the catch rate has commonly been low for oyster sizes >50mm and <50mm with a significant decline in the average catch per haul from 2008 onwards. There has been little change since 2014, with low catch rates continuing in 2015. In 2014 North Channel was one of the few sites to catch oysters under 35mm with 2 oysters measuring at 32mm and 29mm. This was not the case in 2015 with no oysters below 50mm in size but with more oysters measuring greater than 64mm, 4 oysters with sizes between 80-90mm. Thorn Knoll has had past trends of high catch rates of oysters with a peak in 1995. Oyster catches however have been in decline since 2001 with only 1 oyster being caught in 2009 and 2010, and no oysters being caught in 2014. 2015 has shown no change and in a total of 7 hauls (a reduction on last year) no oysters were caught.

Osbourne Bay and Bramble Bank have had similar past trends in oyster catch rates with peaks in oyster numbers in 1999 and 2000 respectively, followed by a steep decline with a small peak in 2004 and 2005. In 2014, at both sites, only oysters >64mm were caught, 4 oysters being caught at Bramble Bank and 1 caught in Osbourne Bay over 22 tows. In 2015 there has been no change at Bramble Bank since the previous year and no oysters caught over 17 tows at Osbourne Bay.

At Chilling, the mean catch of oyster per haul declined from 2004 with only 1 oyster being caught in 2010 and 2014. In 2015, only 3 oysters were caught in 11 tows; however there was an oyster below 35mm (34mm).

Over the time series Ryde Middle has typically shown the highest catch rates of oysters but like the rest of the Solent this has been in decline following a peak in 2006. In 2015 61 oysters were caught over 17 tows, a decrease from the 98 oysters over 17 tows caught in 2014. There were also no oysters below the size of 35mm and only 1 oyster 49-35mm in size (44mm), showing there is little sign of settlement occurring and only the presence of older oysters.

Western Solent

In this years survey further reductions were made to the number of tows with again only Sowley, Lepe and Newtown being surveyed. At the Sowley ground, only 3 tows were made due to the time restrictions of travelling to the west, poor catch rates and advice from the skipper. These tows showed no oysters caught at both Sowley and Lepe indicating little recovery from the continued trend of poor catch rates.

Since the 1970s Newtown oyster catch rates have been in decline with only 1 large oyster being caught in 2014 at the most easterly station. Despite fewer tows, this year saw a rise in the number of oysters caught with 5 large oysters being caught (>64mm). Particularly interesting is the presence of an oyster in the size class 49-35mm possibly showing some indication of settling.

The Harbours and Spit Sands

Langstone and Portsmouth Harbours were the only areas in the wider Solent that remained open to oyster fishing and in keeping with 2014 were considered separately. In Portsmouth, Portchester and

Fareham were surveyed as they are regularly fished, with more sites added to Fareham in an area where the skipper had advised would have more oysters.

In Portchester one large oyster was found over 7 tows showing no change from the previous year. Fareham had more oysters, 10 in total with 2 oysters that were in the size class of 49-35mm (48mm, 47mm). Many of these were caught at the new sites, making comparison to the previous year difficult.

Langstone showed little change from 2014 with only 2 oysters caught.

Spit Sands was not in the original survey but was added in 2001. After a peak of oysters in 2007, the catch rate went into decline, although the number of oysters <50mm was already falling with no oysters in this size class by 2010. In 2014 only 1 oyster was caught and similarly no oysters were caught in 2015 at Spit Sands.

CONCLUSIONS

Western Solent:

The Western Solent has few signs of recovery with no oysters caught at Sowley or Lepe. Newtown caught 1 oyster below 50mm suggesting the presence of younger oysters although not enough to suggest the ground is improving.

Eastern Solent:

The Eastern Solent has greater catch rates than the Western Solent but little change or recovery compared to 2014 with poor catch rates at most stations. Only 2 oysters below 50mm were found, and only 1 which was less than 35mm found at Chilling. This is fewer than in 2014 and a lack of spat means that improvement of the fishery in the next 4 to 5 years is unlikely.

Harbours:

In Langstone and Portchester channel, catch rates were low showing there are few oysters on the ground. Fareham Creek had higher catch rates of oysters but significantly less than the previous year 2014, some of these were also at new sites making the comparison difficult.

General:

Across the Solent, oyster catches continue to be low with very few oysters below 50mm as can be seen in figure 13. The lack of spat means natural recovery is unlikely to occur in the next 4 to 5 years and suggests there are issues with breeding and spat settlement of the oyster.

DATA APPENDIX - Data includes a historical time series collected by CEFAS between 1990 and 2011 (See Palmer and Firmin, 2011, Vanstaen and Palmer, 2010)

| TABLE 1: LEE-ON-THE-SOLENT BAY | | | | | | |
|---------------------------------------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 9 | 1 | 0.0 | 1.0 | 0.0 | 0.0 |
| 2014 | 10 | 3 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 14 | 2 | 1.5 | 0.0 | 0.0 | 0.0 |
| 2010 | 14 | 4 | 1.0 | 0.5 | 0.0 | 0.3 |
| 2009 | 14 | 4 | 1.0 | 0.3 | 0.3 | 0.5 |
| 2008 | 14 | 6 | 1.2 | 0.2 | 0.5 | 0.5 |
| 2007 | NS | NS | NS | NS | NS | NS |
| 2006 | 14 | 11 | 2.1 | 1.3 | 0.5 | 1.4 |
| 2005 | 14 | 10 | 1.1 | 1.3 | 0.7 | 0.8 |
| 2004 | 14 | 13 | 2.4 | 1.6 | 0.8 | 2.9 |
| 2003 | 14 | 14 | 0.9 | 1.1 | 0.5 | 0.7 |
| 2002 | 14 | 11 | 2.1 | 1.3 | 0.4 | 0.2 |
| 2001 | 14 | 8 | 0.9 | 0.8 | 0.5 | 0.1 |
| 2000 | 14 | 10 | 2.5 | 0.4 | 0.2 | 0.6 |
| 1999 | 15 | 9 | 2.2 | 2.0 | 1.2 | 0.3 |
| 1998 | 13 | 7 | 1.9 | 0.9 | 0.6 | 0.1 |
| 1997 | 14 | 10 | 1.4 | 1.7 | 0.7 | 0.3 |
| 1996 | 14 | 7 | 1.7 | 1.9 | 0.0 | 0.0 |
| 1995 | 14 | 9 | 2.6 | 2.4 | 0.6 | 0.4 |
| 1994 | 14 | 9 | 2.4 | 2.4 | 1.9 | 0.2 |
| 1993 | 15 | 11 | 2.4 | 0.7 | 0.2 | 0.6 |
| 1992 | 16 | 8 | 1.5 | 0.3 | 0.3 | 0.6 |
| 1991 | 16 | 6 | 0.8 | 0.7 | 0.7 | 0.2 |
| 1990 | 16 | 10 | 1.6 | 0.9 | 0.5 | 0.3 |

TABLE 2: BROWNDOWN BANK

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 8 | 3 | 1.7 | 0.7 | 0.0 | 0.0 |
| 2014 | 10 | 3 | 0.7 | 0.3 | 1.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 11 | 5 | 1.2 | 0.2 | 0.0 | 0.2 |
| 2010 | 11 | 7 | 2.7 | 0.0 | 0.0 | 0.0 |
| 2009 | 11 | 4 | 3.0 | 1.3 | 0.0 | 0.0 |
| 2008 | 11 | 9 | 3.3 | 3.3 | 0.7 | 0.1 |
| 2007 | 11 | 11 | 6.8 | 5.7 | 1.0 | 2.4 |
| 2006 | 11 | 10 | 5.2 | 7.2 | 2.1 | 0.8 |
| 2005 | 11 | 10 | 4.8 | 7.8 | 10.9 | 6.2 |
| 2004 | 11 | 10 | 6.5 | 11.3 | 6.7 | 15.6 |
| 2003 | 11 | 10 | 4.0 | 6.5 | 2.7 | 2.4 |
| 2002 | 11 | 8 | 9.9 | 19.6 | 5.8 | 1.4 |
| 2001 | 11 | 9 | 7.4 | 7.9 | 4.1 | 0.8 |
| 2000 | 11 | 11 | 11.1 | 14.7 | 3.9 | 0.6 |
| 1999 | 11 | 9 | 13.9 | 37.7 | 17.9 | 3.1 |
| 1998 | 12 | 10 | 8.0 | 15.5 | 7.2 | 0.6 |
| 1997 | 11 | 10 | 6.8 | 10.2 | 9.7 | 3.7 |
| 1996 | 11 | 10 | 7.7 | 16.2 | 9.0 | 0.7 |
| 1995 | 11 | 11 | 4.2 | 7.0 | 5.6 | 1.8 |
| 1994 | 11 | 8 | 5.6 | 13.8 | 12.0 | 3.0 |
| 1993 | 11 | 10 | 5.8 | 6.6 | 6.5 | 4.5 |
| 1992 | 11 | 11 | 3.9 | 2.8 | 1.8 | 1.8 |
| 1991 | 11 | 8 | 4.6 | 7.1 | 2.3 | 0.5 |
| 1990 | 9 | 9 | 8.1 | 8.7 | 6.7 | 2.8 |

TABLE 3: NORTH CHANNEL

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 11 | 1 | 4.0 | 1.0 | 0.0 | 0.0 |
| 2014 | 11 | 2 | 0.5 | 0.5 | 0.0 | 1.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | NS | NS | NS | NS | NS | NS |
| 2010 | 26 | 4 | 1.8 | 0.0 | 0.0 | 0.0 |
| 2009 | 26 | 10 | 2.2 | 1.4 | 0.4 | 0.1 |
| 2008 | 26 | 17 | 2.7 | 1.7 | 0.7 | 0.3 |
| 2007 | NS | NS | NS | NS | NS | NS |
| 2006 | 26 | 22 | 3.7 | 3.0 | 0.9 | 0.6 |
| 2005 | 26 | 23 | 2.0 | 2.7 | 3.3 | 1.0 |
| 2004 | 26 | 22 | 2.4 | 3.0 | 2.0 | 7.7 |
| 2003 | 26 | 22 | 1.8 | 2.3 | 1.0 | 0.1 |
| 2002 | 26 | 24 | 2.4 | 2.7 | 0.9 | 0.3 |
| 2001 | 26 | 22 | 1.8 | 2.2 | 2.3 | 0.6 |
| 2000 | 26 | 17 | 2.7 | 1.8 | 0.6 | 0.4 |
| 1999 | 26 | 19 | 2.8 | 2.4 | 1.4 | 0.2 |
| 1998 | 26 | 16 | 3.1 | 1.7 | 0.3 | 0.1 |
| 1997 | 26 | 15 | 2.1 | 1.3 | 0.6 | 0.1 |
| 1996 | 26 | 22 | 6.2 | 5.6 | 2.8 | 0.6 |
| 1995 | 26 | 24 | 2.2 | 2.5 | 1.9 | 0.5 |
| 1994 | 26 | 16 | 1.7 | 1.6 | 1.0 | 0.3 |
| 1993 | 26 | 21 | 2.1 | 1.6 | 1.0 | 1.0 |
| 1992 | 26 | 22 | 2.8 | 1.6 | 0.6 | 0.6 |
| 1991 | 25 | 20 | 1.5 | 2.5 | 2.7 | 0.4 |
| 1990 | 28 | 23 | 2.8 | 2.0 | 1.6 | 0.4 |

TABLE 4: THORN KNOLL

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 7 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2014 | 11 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | NS | NS | NS | NS | NS | NS |
| 2010 | 17 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 17 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2008 | 17 | 2 | 1.5 | 0.0 | 0.0 | 0.0 |
| 2007 | 17 | 6 | 2.2 | 0.0 | 0.0 | 0.0 |
| 2006 | 17 | 6 | 1.3 | 0.3 | 0.0 | 0.0 |
| 2005 | 17 | 10 | 2.2 | 0.8 | 0.1 | 0.0 |
| 2004 | 17 | 7 | 3.1 | 0.4 | 0.0 | 0.1 |
| 2003 | 17 | 10 | 3.6 | 0.1 | 0.0 | 0.0 |
| 2002 | 17 | 12 | 5.1 | 3.0 | 0.4 | 0.1 |
| 2001 | 17 | 16 | 12.7 | 10.1 | 1.6 | 0.5 |
| 2000 | 17 | 15 | 10.1 | 10.6 | 4.4 | 1.0 |
| 1999 | 17 | 15 | 13.6 | 14.1 | 7.0 | 2.4 |
| 1998 | 15 | 14 | 11.6 | 18.7 | 9.3 | 3.6 |
| 1997 | 16 | 13 | 11.4 | 9.9 | 11.0 | 10.0 |
| 1996 | 16 | 13 | 20.2 | 20.9 | 5.7 | 13.0 |
| 1995 | 16 | 14 | 12.5 | 29.8 | 20.3 | 4.6 |
| 1994 | 16 | 13 | 12.8 | 18.2 | 12.2 | 7.0 |
| 1993 | 17 | 17 | 9.8 | 10.7 | 3.2 | 1.5 |
| 1992 | 17 | 14 | 9.1 | 9.0 | 5.7 | 3.0 |
| 1991 | 17 | 16 | 3.4 | 5.0 | 5.1 | 1.6 |
| 1990 | 17 | 16 | 5.1 | 2.8 | 2.6 | 1.3 |

TABLE 5: RYDE MIDDLE BANK

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 17 | 10 | 5.3 | 0.7 | 0.1 | 0.0 |
| 2014 | 17 | 11 | 5.9 | 2.5 | 0.4 | 0.1 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 22 | 15 | 9.3 | 2.7 | 0.0 | 0.0 |
| 2010 | 22 | 16 | 14.4 | 11.9 | 0.7 | 0.1 |
| 2009 | 22 | 20 | 16.7 | 12.2 | 1.9 | 0.3 |
| 2008 | 22 | 20 | 30.8 | 37.8 | 7.2 | 6.9 |
| 2007 | 22 | 22 | 36.5 | 34.9 | 9.6 | 26.2 |
| 2006 | 22 | 20 | 30.6 | 85.7 | 38.3 | 32.7 |
| 2005 | 22 | 20 | 12.7 | 17.3 | 35.2 | 40.0 |
| 2004 | 22 | 22 | 12.3 | 12.9 | 7.9 | 24.0 |
| 2003 | 22 | 21 | 15.7 | 16.8 | 2.7 | 2.5 |
| 2002 | 22 | 21 | 21.1 | 32.2 | 11.8 | 3.0 |
| 2001 | 22 | 22 | 23.1 | 30.7 | 8.7 | 7.9 |
| 2000 | 22 | 21 | 29.6 | 34.3 | 11.2 | 2.7 |
| 1999 | 22 | 21 | 15.3 | 29.6 | 14.3 | 3.0 |
| 1998 | 22 | 21 | 10.9 | 16.5 | 6.9 | 1.0 |
| 1997 | 22 | 22 | 22.1 | 19.2 | 12.8 | 8.5 |
| 1996 | 22 | 21 | 18.1 | 26.7 | 5.7 | 1.4 |
| 1995 | 22 | 21 | 13.6 | 27.7 | 16.5 | 4.5 |
| 1994 | 22 | 22 | 14.5 | 12.4 | 10.5 | 5.9 |
| 1993 | 22 | 22 | 14.4 | 14.2 | 5.2 | 2.4 |
| 1992 | 22 | 22 | 14.7 | 15.5 | 5.8 | 2.8 |
| 1991 | 22 | 22 | 3.6 | 6.0 | 3.2 | 2.3 |
| 1990 | 22 | 22 | 16.3 | 9.6 | 6.4 | 3.9 |

TABLE 6: BRAMBLE BANK

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 7 | 2 | 2.0 | 0.0 | 0.0 | 0.0 |
| 2014 | 15 | 4 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 26 | 9 | 1.8 | 0.6 | 0.0 | 0.0 |
| 2010 | 26 | 12 | 3.4 | 0.0 | 0.0 | 0.1 |
| 2009 | 26 | 14 | 2.3 | 0.4 | 0.0 | 0.0 |
| 2008 | 26 | 17 | 4.5 | 0.9 | 0.4 | 0.1 |
| 2007 | 26 | 20 | 4.1 | 1.5 | 0.4 | 1.4 |
| 2006 | 26 | 19 | 4.9 | 4.6 | 3.3 | 2.5 |
| 2005 | 26 | 22 | 8.7 | 5.0 | 5.4 | 8.2 |
| 2004 | 26 | 22 | 8.7 | 3.6 | 1.2 | 8.9 |
| 2003 | 26 | 22 | 9.2 | 8.0 | 0.8 | 0.1 |
| 2002 | 26 | 24 | 12.5 | 28.7 | 8.0 | 1.0 |
| 2001 | 26 | 21 | 22.7 | 33.7 | 7.5 | 3.7 |
| 2000 | 26 | 23 | 27.9 | 31.1 | 10.9 | 3.5 |
| 1999 | 26 | 24 | 12.0 | 29.0 | 14.6 | 6.5 |
| 1998 | 28 | 27 | 11.3 | 29.9 | 19.3 | 5.1 |
| 1997 | 27 | 26 | 15.2 | 18.8 | 17.1 | 24.4 |
| 1996 | 27 | 25 | 15.9 | 20.3 | 6.6 | 9.5 |
| 1995 | 27 | 26 | 8.6 | 19.1 | 15.1 | 5.9 |
| 1994 | 27 | 26 | 15.2 | 18.1 | 16.2 | 6.8 |
| 1993 | 26 | 26 | 10.7 | 13.0 | 5.8 | 1.9 |
| 1992 | 26 | 23 | 19.0 | 22.0 | 8.7 | 4.1 |
| 1991 | 26 | 26 | 9.1 | 13.0 | 8.8 | 5.5 |
| 1990 | 25 | 25 | 13.4 | 8.3 | 6.4 | 4.5 |

TABLE 7: OSBOURNE BAY

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 17 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2014 | 22 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 49 | 2 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2010 | 49 | 17 | 1.2 | 0.3 | 0.2 | 0.1 |
| 2009 | 49 | 12 | 1.8 | 0.3 | 0.0 | 0.1 |
| 2008 | 49 | 16 | 2.1 | 0.8 | 0.1 | 0.0 |
| 2007 | 49 | 16 | 1.4 | 0.1 | 0.1 | 0.1 |
| 2006 | 49 | 20 | 2.5 | 0.9 | 0.2 | 0.0 |
| 2005 | 49 | 34 | 1.3 | 1.9 | 1.6 | 0.4 |
| 2004 | 49 | 40 | 3.5 | 2.3 | 1.0 | 3.7 |
| 2003 | 49 | 33 | 1.5 | 2.3 | 0.9 | 0.1 |
| 2002 | 49 | 38 | 3.2 | 3.0 | 1.2 | 0.2 |
| 2001 | 49 | 42 | 3.2 | 3.4 | 1.7 | 0.1 |
| 2000 | 49 | 39 | 4.8 | 3.4 | 0.3 | 0.1 |
| 1999 | 49 | 49 | 6.1 | 5.9 | 1.5 | 0.1 |
| 1998 | 45 | 33 | 3.7 | 2.8 | 0.6 | 0.2 |
| 1997 | 45 | 35 | 2.6 | 3.2 | 2.1 | 0.3 |
| 1996 | 46 | 33 | 2.7 | 1.9 | 0.5 | 0.1 |
| 1995 | 47 | 35 | 2.5 | 2.4 | 0.4 | 0.1 |
| 1994 | 49 | 44 | 2.7 | 3.5 | 1.8 | 0.1 |
| 1993 | 51 | 40 | 2.0 | 1.2 | 0.7 | 0.1 |
| 1992 | 51 | 42 | 2.2 | 1.0 | 0.4 | 0.2 |
| 1991 | 43 | 39 | 1.9 | 2.6 | 1.7 | 0.2 |
| 1990 | 43 | 39 | 3.5 | 4.8 | 1.0 | 0.1 |

TABLE 8: CHILLING

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 11 | 3 | 0.7 | 0.0 | 0.0 | 0.3 |
| 2014 | 11 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | NS | NS | NS | NS | NS | NS |
| 2010 | 19 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 19 | 4 | 1.3 | 0.0 | 0.0 | 0.0 |
| 2008 | 19 | 4 | 1.3 | 0.8 | 0.0 | 0.0 |
| 2007 | 19 | 14 | 1.9 | 0.3 | 0.1 | 0.1 |
| 2006 | 19 | 11 | 1.6 | 0.5 | 0.3 | 0.1 |
| 2005 | 19 | 16 | 0.8 | 0.7 | 0.2 | 0.1 |
| 2004 | 19 | 18 | 3.2 | 3.6 | 1.4 | 3.3 |
| 2003 | 19 | 13 | 2.4 | 4.8 | 3.5 | 0.8 |
| 2002 | 19 | 16 | 3.9 | 4.2 | 1.4 | 0.3 |
| 2001 | 19 | 13 | 1.5 | 3.3 | 2.1 | 0.2 |
| 2000 | 19 | 12 | 4.3 | 3.1 | 1.2 | 0.7 |
| 1999 | 19 | 19 | 1.8 | 5.8 | 3.9 | 0.4 |
| 1998 | 19 | 18 | 3.8 | 4.1 | 1.5 | 0.3 |
| 1997 | 19 | 18 | 3.1 | 4.1 | 3.5 | 0.4 |
| 1996 | 19 | 17 | 3.5 | 5.2 | 2.5 | 0.7 |
| 1995 | 19 | 16 | 1.5 | 5.2 | 1.8 | 0.3 |
| 1994 | 19 | 14 | 4.4 | 9.9 | 7.6 | 0.6 |
| 1993 | 19 | 15 | 2.3 | 2.9 | 1.4 | 0.2 |
| 1992 | 20 | 18 | 5.0 | 3.0 | 1.4 | 1.5 |
| 1991 | 20 | 16 | 1.2 | 4.0 | 2.9 | 0.3 |
| 1990 | 20 | 16 | 5.0 | 5.1 | 2.0 | 1.1 |

TABLE 9: LEPE

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 8 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2014 | 9 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | NS | NS | NS | NS | NS | NS |
| 2010 | 13 | 2 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 13 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2008 | 13 | 2 | 0.5 | 0.5 | 0.0 | 0.0 |
| 2007 | 13 | 2 | 0.5 | 0.5 | 0.0 | 0.0 |
| 2006 | 13 | 6 | 2.2 | 0.7 | 0.7 | 0.0 |
| 2005 | 13 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2004 | 13 | 4 | 1.3 | 0.0 | 0.3 | 0.3 |
| 2003 | 13 | 2 | 1.0 | 0.0 | 0.0 | 0.5 |
| 2002 | 13 | 5 | 3.0 | 0.4 | 0.0 | 0.0 |
| 2001 | 13 | 3 | 1.3 | 0.3 | 0.0 | 0.0 |
| 2000 | 25 | 6 | 3.3 | 2.0 | 0.3 | 0.0 |
| 1999 | 24 | 9 | 4.1 | 1.7 | 1.0 | 0.1 |
| 1998 | 21 | 7 | 2.6 | 2.1 | 0.0 | 0.1 |
| 1997 | 25 | 3 | 3.0 | 2.3 | 1.3 | 0.0 |
| 1996 | 40 | 18 | 3.0 | 2.4 | 0.2 | 0.1 |
| 1995 | 39 | 19 | 1.7 | 2.6 | 1.4 | 0.1 |
| 1994 | 42 | 20 | 2.1 | 2.0 | 0.3 | 0.3 |
| 1993 | 42 | 24 | 3.0 | 2.6 | 1.0 | 0.3 |
| 1992 | 49 | 22 | 2.6 | 1.0 | 0.3 | 0.4 |
| 1991 | 26 | 12 | 1.5 | 0.0 | 0.0 | 0.1 |
| 1990 | 48 | 33 | 2.6 | 2.2 | 0.9 | 0.3 |

TABLE 10: SOWLEY

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 3 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2014 | 3 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 16 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2010 | 22 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 22 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2008 | 22 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2007 | 22 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2006 | 22 | 2 | 0.5 | 0.5 | 0.0 | 0.0 |
| 2005 | 22 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2004 | 22 | 4 | 0.8 | 0.0 | 0.3 | 0.0 |
| 2003 | 22 | 2 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2002 | 22 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2001 | 22 | 2 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2000 | 38 | 2 | 1.0 | 0.0 | 0.0 | 0.0 |
| 1999 | 39 | 5 | 1.4 | 0.0 | 0.0 | 0.0 |
| 1998 | 40 | 3 | 1.0 | 0.3 | 0.0 | 0.0 |
| 1997 | 37 | 9 | 0.9 | 0.3 | 0.2 | 0.0 |
| 1996 | 54 | 13 | 1.6 | 0.6 | 0.0 | 0.0 |
| 1995 | 54 | 22 | 2.5 | 1.7 | 0.2 | 0.0 |
| 1994 | 54 | 24 | 2.4 | 1.4 | 0.3 | 0.0 |
| 1993 | 55 | 38 | 4.7 | 4.1 | 0.7 | 0.2 |
| 1992 | 84 | 48 | 3.6 | 3.0 | 0.7 | 0.3 |
| 1991 | 89 | 64 | 2.4 | 3.8 | 2.1 | 0.3 |
| 1990 | 87 | 69 | 3.5 | 5.3 | 1.1 | 0.6 |

TABLE 11: NEWTOWN

| Year | Number of Hauls | No. Of Hauls with Oysters | Average Catch from Hauls with Oysters | | | |
|------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 12 | 3 | 1.7 | 0.0 | 0.3 | 0.0 |
| 2014 | 17 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 29 | 1 | 2.0 | 1.0 | 0.0 | 0.0 |
| 2010 | 29 | 4 | 1.3 | 0.0 | 0.0 | 0.0 |
| 2009 | 29 | 10 | 2.4 | 0.3 | 0.0 | 0.1 |
| 2008 | 29 | 9 | 2.0 | 0.7 | 0.1 | 0.0 |
| 2007 | 29 | 12 | 2.6 | 1.3 | 0.8 | 0.2 |
| 2006 | 29 | 10 | 1.8 | 0.3 | 0.4 | 0.2 |
| 2005 | 29 | 8 | 2.0 | 0.4 | 0.4 | 0.0 |
| 2004 | 29 | 12 | 1.2 | 0.2 | 0.2 | 0.1 |
| 2003 | 29 | 8 | 1.9 | 0.4 | 0.1 | 0.0 |
| 2002 | 29 | 18 | 4.1 | 1.1 | 0.2 | 0.0 |
| 2001 | 29 | 14 | 4.4 | 1.9 | 0.7 | 0.1 |
| 2000 | 29 | 13 | 3.4 | 1.6 | 0.4 | 0.0 |
| 1999 | 29 | 20 | 6.1 | 2.3 | 0.3 | 0.1 |
| 1998 | 29 | 16 | 4.9 | 3.4 | 0.7 | 0.3 |
| 1997 | 28 | 17 | 2.6 | 1.5 | 0.4 | 0.2 |
| 1996 | 28 | 20 | 3.1 | 2.5 | 0.9 | 0.3 |
| 1995 | 29 | 26 | 4.2 | 3.6 | 1.8 | 0.8 |
| 1994 | 29 | 24 | 4.3 | 4.0 | 3.0 | 2.0 |
| 1993 | 29 | 19 | 3.7 | 2.5 | 0.7 | 0.3 |
| 1992 | 26 | 16 | 3.6 | 1.6 | 0.9 | 0.5 |
| 1991 | 26 | 20 | 1.9 | 2.0 | 0.7 | 0.3 |
| 1990 | 28 | 19 | 4.9 | 2.3 | 0.8 | 0.4 |

| TABLE 12: SPIT SAND | | | | | | |
|----------------------------|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | Average Catch from Hauls with Oysters | | | |
| Year | Number of Hauls | No. Of Hauls with Oysters | >64mm | 64-50mm | 49-35mm | <35mm |
| 2015 | 9 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2014 | 11 | 2 | 1.0 | 0.0 | 0.0 | 0.0 |
| 2013 | NS | NS | NS | NS | NS | NS |
| 2012 | NS | NS | NS | NS | NS | NS |
| 2011 | 28 | 10 | 1.4 | 0.0 | 0.0 | 0.0 |
| 2010 | 28 | 16 | 2.1 | 0.8 | 0.0 | 0.0 |
| 2009 | 28 | 25 | 3.7 | 1.7 | 0.2 | 0.0 |
| 2008 | 28 | 24 | 7.1 | 9.4 | 1.5 | 0.2 |
| 2007 | 28 | 28 | 14.6 | 18.4 | 5.1 | 0.9 |
| 2006 | 28 | 26 | 9.3 | 12.8 | 5.0 | 1.4 |
| 2005 | 28 | 26 | 5.4 | 13.4 | 12.8 | 3.1 |
| 2004 | 28 | 26 | 6.9 | 11.2 | 4.6 | 9.6 |
| 2003 | 28 | 26 | 2.7 | 5.7 | 1.8 | 0.2 |
| 2002 | 28 | 26 | 4.9 | 7.2 | 2.6 | 0.2 |
| 2001 | 28 | 23 | 4.3 | 6.6 | 4.3 | 0.8 |

| TABLE 13 - LANGSTONE AND PORTSMOUTH HARBOURS - 2015 | | | | | | |
|--|-----------------|---------------------------|---------------------------------------|---------|---------|-------|
| | | | Average Catch from Hauls with Oysters | | | |
| Harbour | Number of Hauls | No. Of Hauls with Oysters | >64mm | 64-50mm | 49-35mm | <35mm |
| Langstone | 12 | 1 | 1.0 | 0.0 | 1.0 | 0.0 |
| Portchester | 7 | 1 | 1.0 | 0.0 | 0.0 | 0.0 |
| Fareham | 10 | 3 | 0.3 | 2.3 | 0.7 | 0.0 |

Solent Oyster Stock Assessment
 Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Lee-On-The-Solent.

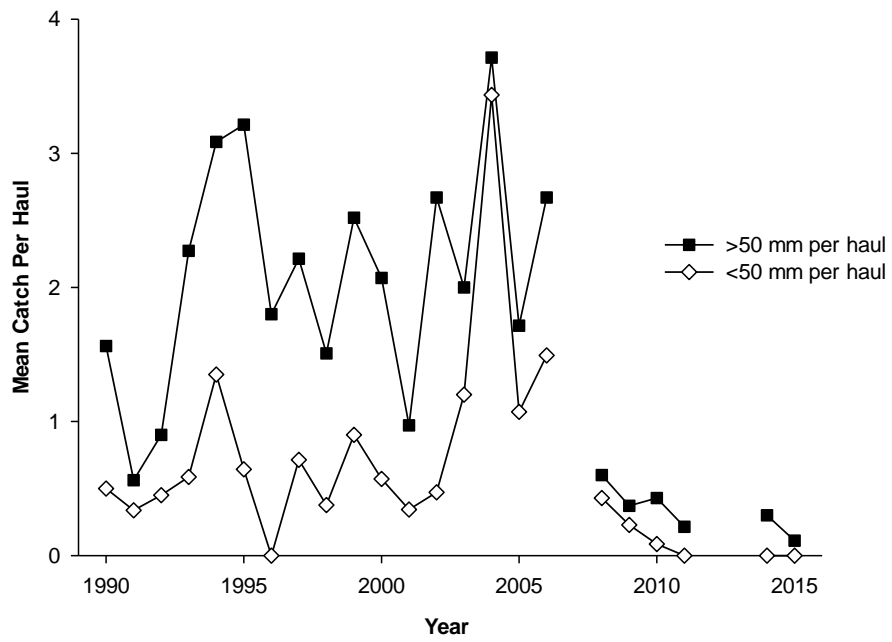


FIGURE 1 – LEE-ON-THE-SOLENT

Solent Oyster Stock Assessment
 Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Browdown Bank.

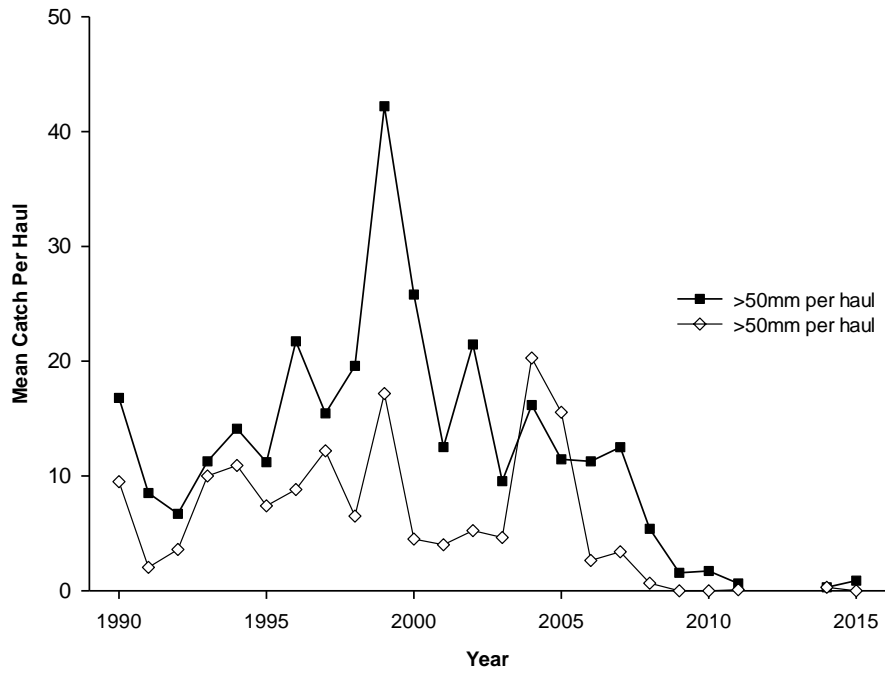


FIGURE 2 – BROWNDOWN BANK

Solent Oyster Stock Assessment

Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at North Channel.

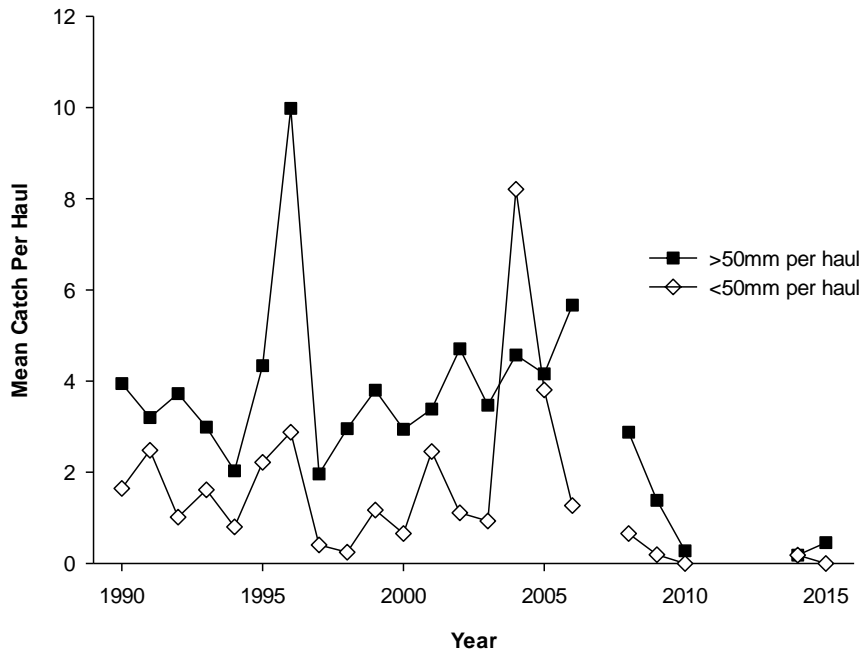


FIGURE 3 – NORTH CHANNEL

Solent Oyster Stock Assessment

Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Thorn Knoll.

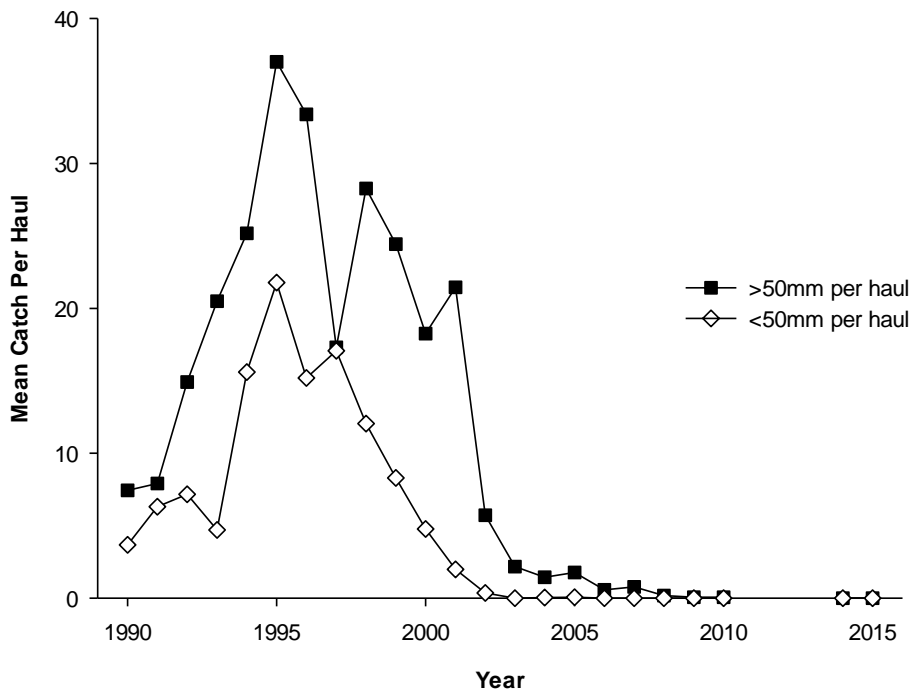


FIGURE 4 – THORN KNOLL

Solent Oyster Stock Assessment

Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Ryde Middle.

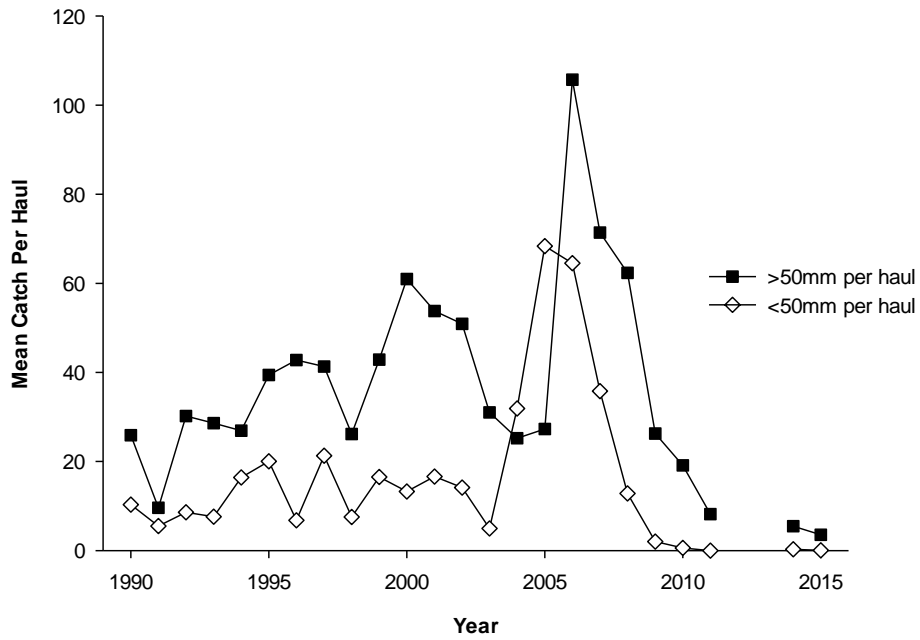


FIGURE 5 – RYDE MIDDLE

Solent Oyster Stock Assessment

Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Bramble Bank.

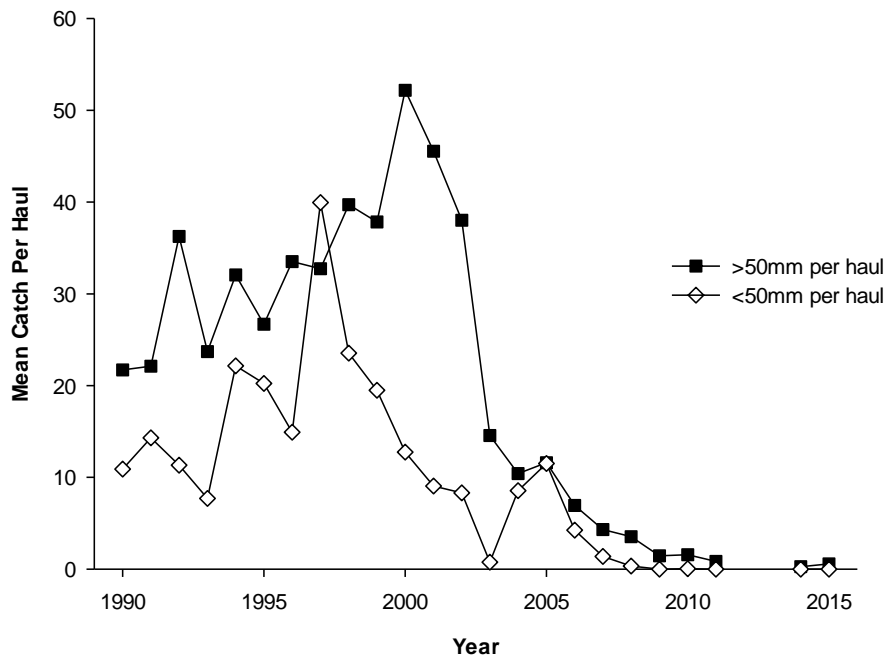


FIGURE 6 – BRAMBLE BANK

Solent Oyster Stock Assessment

Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Osbourne Bay.

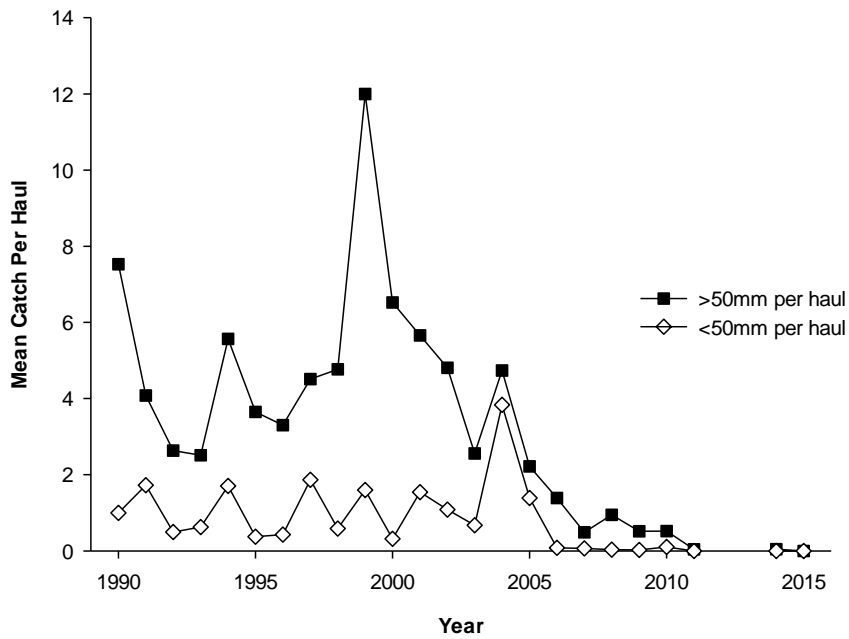


FIGURE 7 – OSBOURNE BAY

Solent Oyster Stock Assessment

Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Chilling.

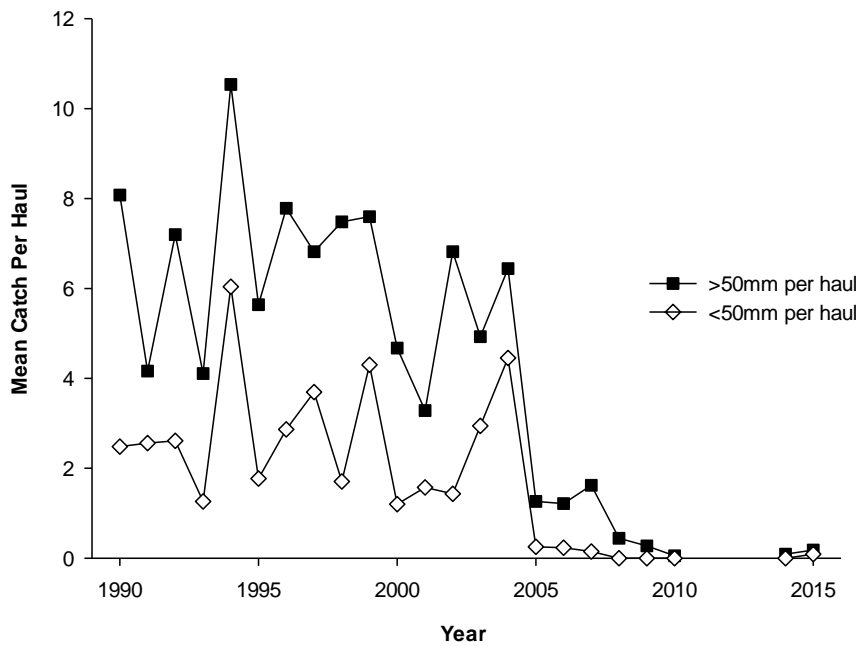


FIGURE 8 – CHILLING

Solent Oyster Stock Assessment
 Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Lepe.

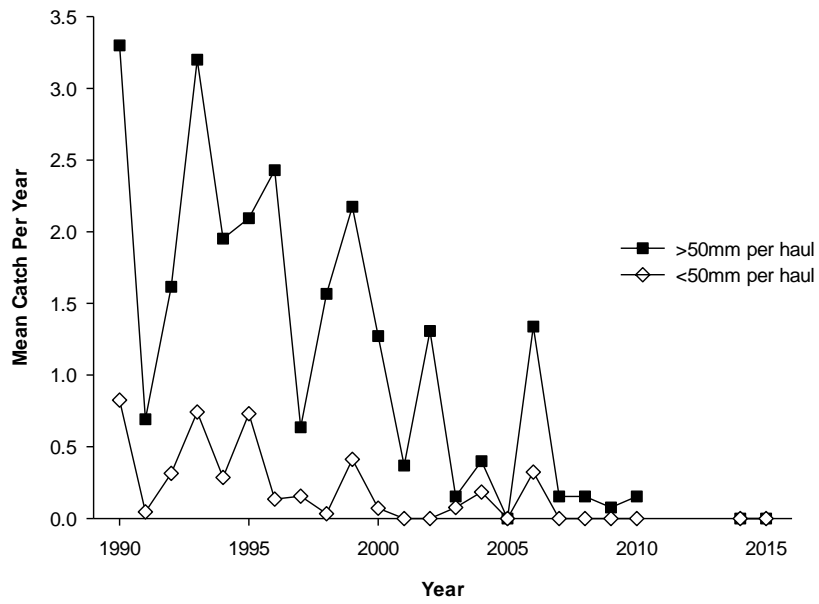


FIGURE 9 – LEPE

Solent Oyster Stock Assessment
 Long-term trends in catch rates of large (=50mm) and small (<50mm) oysters at Sowley.

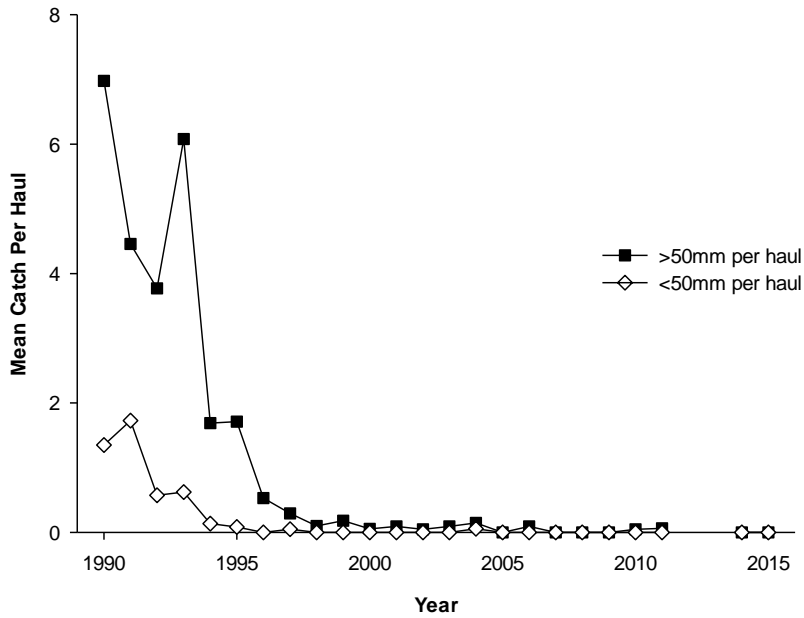


FIGURE 10 – SOWLEY

Solent Oyster Stock Assessment
 Long-term trends in catch rates of large ($\geq 50\text{mm}$) and small ($< 50\text{mm}$) oysters at Newtown.

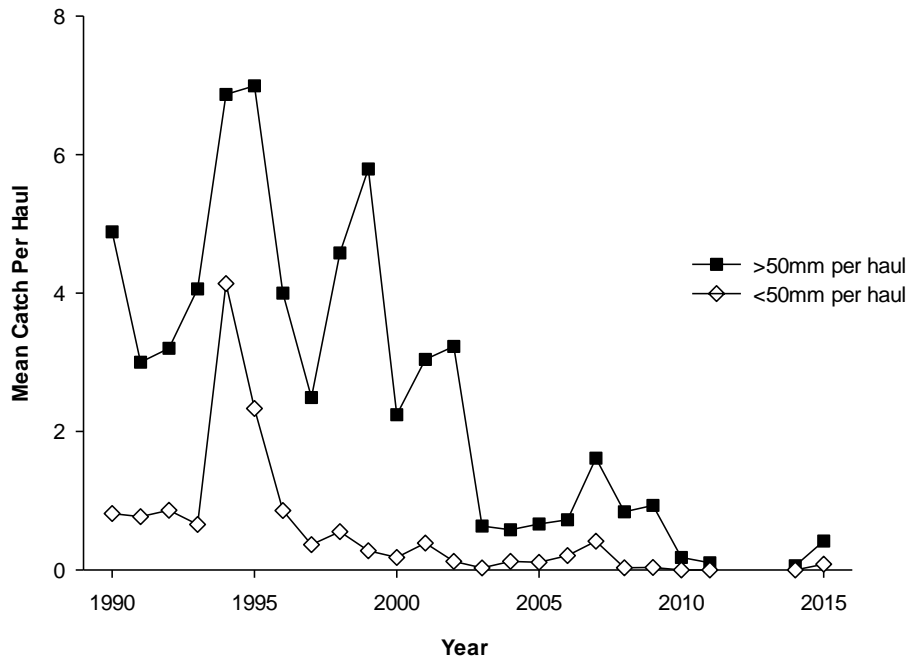


FIGURE 11 – NEWTOWN

Solent Oyster Stock Assessment
 Long-term trends in catch rates of large ($\geq 50\text{mm}$) and small ($< 50\text{mm}$) oysters at Spit Sands.

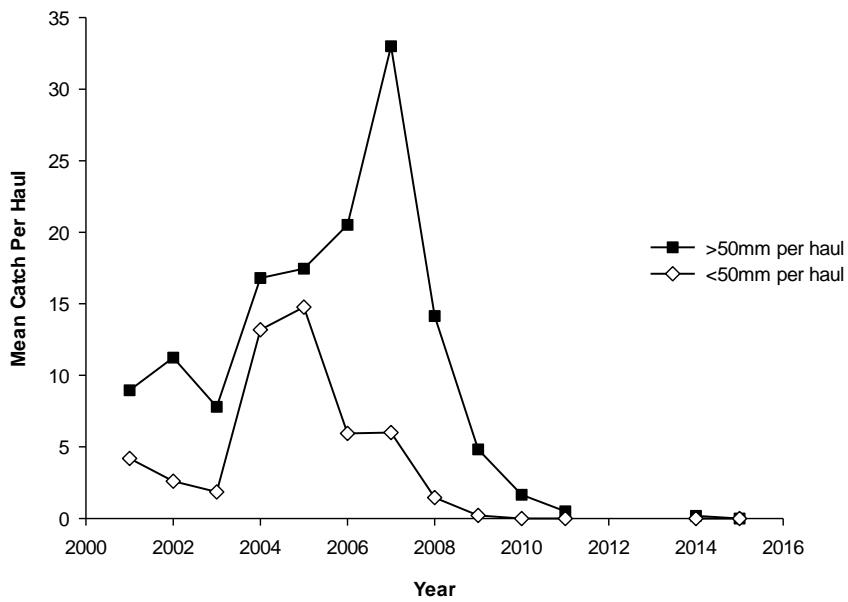


FIGURE 12 – SPIT SANDS

2015 Survey Baird Oyster Dredge - Oyster Size distribution

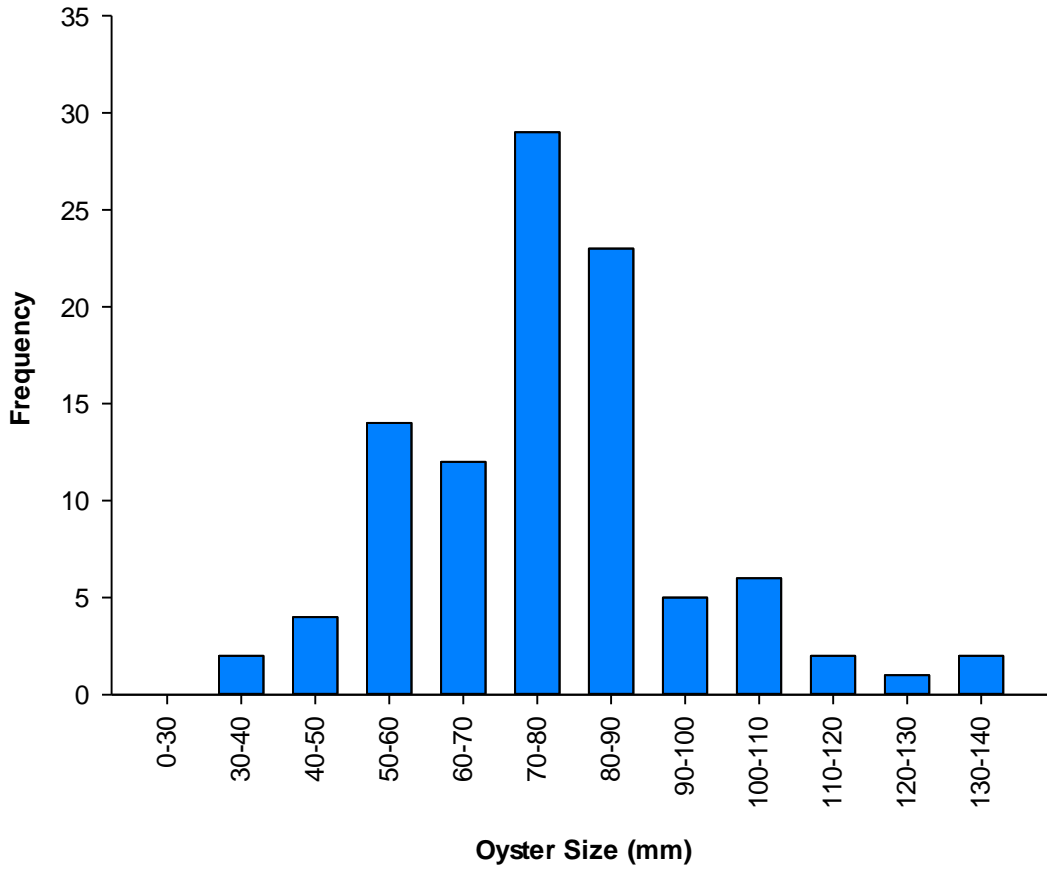


FIGURE13 – Distribution of size of oysters caught with the baird dredge on the 2015 survey.