

Marine Resources Annual Status Report 2012



PREFACE

This annual report sets out the current status of the marine environment and details the monitoring, research and management programmes that the Department is currently engaged in. It also fulfils reporting requirements under various international agreements and obligations and provides an annual update on the marine aspects of the “State of Jersey” report.

The format of the report has been widened to include a section relating to economic data relating to commercial fish and shellfish catches and the aquaculture industry. Whilst no attempt has been made to comment on the profitability of these industries, figures have also been included relating to the cost of marine diesel fuel. As these details were not included in the 2011 report, data has been included for both 2011 and 2012.

The report details progress being made in respect of implementing the Integrated Coastal Zone Management Strategy and it is pleasing to note that management plans have now been implemented for all of the Island’s Ramsar sites. Good progress has also been made in respect of data auditing and collection and the development of GIS mapping; important preliminary steps in the process of developing and delivering a marine spatial planning strategy.



Mike Smith
Assistant Director Marine Resources

CONTENTS

1. JERSEY'S TERRITORIAL WATERS	5
2. USE OF LIVING RESOURCES	7
3. OTHER HUMAN USES AND IMPACTS	17
4. HAZARDOUS SUBSTANCES	20
5. RADIOACTIVE SUBSTANCES	24
6. PROTECTION AND CONSERVATION OF BIODIVERSITY AND ECOSYSTEMS	25
7. MANAGEMENT	34
8. APPENDICES	35

Tables

- Table 1** Number and Vessel Capacity Units (VCUs) of licensed vessels.
- Table 2** Fate of fishing vessel licences
- Table 3** Quantity of shellfish landed by the Jersey fleet
- Table 4** Quantity of wetfish landed by the Jersey fleet
- Table 5** Landings per unit effort (LPUE) for selected shellfish species
- Table 6** Farmed shellfish production (area in hectares; production in kgs)
- Table 7** Catch Per Unit Effort (CPUE) of lobster.
- Table 8** Shellfish Production Classification Areas Grading
- Table 9** Non Indigenous Species
- Table 10** Algal biotoxin examination from shellfish and seawater samples
- Table 11** Reported marine mammal strandings
- Table 12** ASCOBANS report
- Table 13** Critical habitats and species monitoring status
- Table 14.** Estimated value of shellfish landed by the Jersey fleet in 2011
- Table 15.** Estimated value of wetfish landed by the Jersey fleet in 2011
- Table 16.** Estimated total value of the fishing and aquaculture industries at first sale
- Table 17.** Estimated value of shellfish landed by the Jersey fleet in 2012
- Table 18.** Estimated value of wetfish landed by the Jersey fleet in 2012
- Table 19.** Estimated total value of the fishing and aquaculture industries at first sale

Figures

- Figure 1** Normano-Breton Gulf (including fishing zones)
- Figure 2** Aquaculture concessions as of December 2012
- Figure 3** Average CPUE of Whelks (Total, large fraction, small fraction)
- Figure 4** Comparison of total catch for all surveys (1996-2012)
- Figure 5** Length frequency distribution of lobster
- Figure 6** Metal concentrations in Common Limpet, *Patella vulgata*.
- Figure 7** Metal concentrations in seaweed, *Fucus serratus*.
- Figure 8** Metal concentrations in Slipper limpet, *Crepidula fornicata*.
- Figure 9** Radioactivity in marine environment
- Figure 10** Location of acoustic receivers and fish capture sites in Portelet Bay
- Figure 11.** Les Écréhous reef habitat map
- Figure 12** Total dolphin sightings from Fisheries Protection Vessels.
- Figure 13.** Estimated total value 2002-2012
- Figure 14.** Price of Marine Diesel in Jersey, 2005-2012

1. JERSEY'S TERRITORIAL WATERS

Jersey's territorial waters stretch out to 12 nautical miles or to the median line between France and Guernsey and cover almost 2,000 square kilometres. This is a surface area of over seventeen times greater than its territorial land mass at high water of 117 square kilometres. Our coastal and marine areas are of outstanding scenic, historic and cultural value boosting Jersey's image both at home and abroad and feature regularly in tourism marketing material, and influence Island life in almost every way.

Jersey's coastline is 90km long at high water mark, not including the offshore reefs. The length of sea edge is an important influence on the Island's character and perceptions of character. On spring tides the difference between low and high tide can be as much as 12m. The south, south-east and west coast have a very shallow, gently sloping shore profile which means that a very large intertidal area is exposed at low tide and the Island almost doubles in size to about 200 square kilometres. By contrast the north and south west coasts are characterised by steep granite cliffs and coastal heath. Both the inland character of Jersey and its marine environment are very much influenced by the great variation in aspect and exposure of its coastal edges.

Jersey's coastal zone is an area of increasingly intense activity, where complex interactions take place between physical, biological, social, cultural and economic activities. Jersey's location at the confluence of the cold and warm temperature marine biogeographical region together with the warming influence of the Gulf Stream results in important groups of animal and plants associated with the warmer waters of southern Europe, as well as species associated with the cold, northern waters of the UK.

The overall extent and character of the rocky reefs and intertidal sediment flats on the south east coast is not found anywhere else in Europe. At low tide an extensive and biologically rich area of 3,210 hectares is exposed. The steep rocky coast, granite rocky platform and beach coast comprise the Jersey shoreline and are equally important, although better studied than the subtidal environment of predominantly tideswept sands and gravels. Large reef systems surround Les Écréhous and the Paternosters and extensive areas of shallow water with mixed sediment habitat stretch southeast from the Violet Bank. Of special interest is the submerged Plateau des Minquiers, an area of water shallower than 10m covering 100 square kilometres.

The international importance of Jersey's coastal waters is recognised by the fact that almost 190 square kilometres of inter-tidal habitat, spread across Jersey's south-east coast and offshore reefs, are designated as wetlands of international importance under the Ramsar Convention.

The seas around Jersey are very productive. This is reflected in the economic importance of fishing and aquaculture. The fishing industry plays a significant role in Island life and the maintenance of the marine habitat is vital in safeguarding nursery grounds and feeding areas for commercial species. Whilst on a different scale to the finance industry our marine and coastal areas support approximately 180 jobs directly related to fishing and aquaculture activities and more in associated industries.

Jersey is also rich in coastal and marine sites of cultural, archaeological and historical significance including one of the most important Palaeolithic sites in the British Isles at La Cotte de St Brelade; peat beds and remains of a Neolithic forest sealed beneath inter-tidal sands; and a rich density and diversity of coastal fortifications with excellent examples of Tudor, Napoleonic and Second World War structures.

2. USE OF LIVING RESOURCES

2.1. CAPTURE FISHING

2.1.1. Fishing Vessel Licensing

Any fishing vessel exploiting stock in local waters on a commercial basis requires a fishing licence. The Jersey fishing vessel licensing system is aligned directly with that of the UK and as such contributes to the stabilisation of fishing effort at a European wide level.

Table 1. Number and Vessel Capacity Units (VCUs) of licensed vessels.

	2000		2001		2002		2003	
Size	Nos.	VCU	Nos.	VCU	Nos.	VCU	Nos.	VCU
>10m	29	6,105	25	5,574	24	5,328	26	5,535
6-10m	66	4,453	68	4,608	65	4,371	65	4,472
<6m	128	2,874	120	2,809	123	2,826	119	2,747
Total	223	13,432	213	12,991	212	12,525	210	12,754

	2004		2005		2006		2007	
Size	Nos.	VCU	Nos.	Nos.	Nos.	VCU	Nos.	VCU
>10m	21	4,066	19	21	21	3,390	21	3,641
6-10m	65	4,251	60	61	61	3,958	61	4,176
<6m	112	2,579	105	89	89	2,335	89	2,037
Total	198	10,896	184	171	171	9,683	171	9,854

	2008		2009		2010		2011	
Size	Nos.	VCU	Nos.	VCU	Nos.	VCU	Nos.	VCU
>10m	17	3,069	17	2,984	17	2,974	16	2,858
6-10m	58	4,059	60	4,231	61	4,330	62	4,382
<6m	88	2,081	87	2,084	82	1,913	84	1,953
Total	163	9,209	164	9,299	160	9,217	162	9,193

	2012	
Size	Nos.	VCU
>10m	19	3224
6-10m	59	4215
<6m	81	1880
Total	159	9319

As of the 31st December 2011 the Jersey based fleet comprised of **159** (down 3) licensed fishing vessels, **89** (down 4) of which were shellfish qualified. This included **19** (up 3) Class A (over 10 metre) licences and **140** (down 6) Class B (10 metre and under) licences. These licences equate to a fleet size of **738** (up 21 tonnes) gross tonnes, **13217** (up 209 kw) kW and **9319** (up 126 vcus) Vessel Capacity Units (VCU's). *Although there has been a slight reduction in the overall number of Jersey*

licensed fishing vessels there has been an increase in the number of over 10m vessels which has resulted in a slight increase in the overall capacity of the fleet in terms of engine power and tonnage.

Licence Transactions

During the year **14** (down 1) Jersey Fishing Boat Licences including **9** (up 2) Additional (Piggy Back) Jersey Fishing Boat Licences were issued and 12 (down 1) licence entitlements were issued.

A total of **11** (down 1) licence entitlements were used, **5** (down 3) to licence vessels in Jersey while **4** (no change) transferred to the UK licensing system, 3 being used to licence Jersey vessels and one to licence a vessel based in the Isle of Man. One licence entitlement was used to licence a vessel in Guernsey. One entitlement expired.

No licence entitlements transferred from the UK to Jersey, Jersey fisherman preferring to take advantage of reciprocal licensing arrangements and keep their main licence on the UK licensing system while applying for a Jersey Additional (piggy back) Licence to fish in Jersey Waters.

As of the 31st December **2012** there were 25 valid Jersey licence entitlements (including **1** disaggregated entitlement) on the Jersey licensing system, 12 of which were shellfish qualified.

Table 2. Fate of fishing vessel licences

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Jersey Fishing Boat Licences Issued	20	17	17	13	21	15	9	8	5
Jersey Additional (Piggy Back) Licences Issued	1	2	7	4	0	4	7	7	9
Total Licences Issued	21	19	24	17	21	19	16	15	14
Entitlements Imported - Guernsey	1	1	1	0	0	0	1	2	0
Entitlements Imported - UK	3	1	1	0	0	1	1	0	0
Jersey Disaggregated Entitlements Issued	-	-	-	-	-	-	6	0	0
Jersey Licence Entitlements Issued	35	30	30	24	26	16	19	13	12
Entitlements Used - Jersey	22	15	20	16	22	14	10	8	5
Disaggregated Entitlements Used – Jersey	-	-	-	-	-	-	4	0	0
Entitlements Used - Guernsey	7	4	3	1	2	1	0	0	1
Entitlements Used - UK	8	2	6	7	8	9	5	4	4
Entitlements Lost	3	1	0	0	1	0	0	0	1
Entitlements Used – Total	38	22	29	24	33	24	19	12	11
Valid Jersey Entitlements 31 December	14	25	28	26	19	12	20	22	25

2.1.2. Landings

Whilst Brown Crab landings have again increased in 2012, there has been a slight reduction in Lobster landings. However this is only a slight decrease and 2012 is still the second highest year on record for total Lobster landings at just over 237 tonnes. As in 2011, there was again a decrease in Scallop, Spider Crab and Whelk landings compared to 2010 (Table 3).

Lobster landings per unit effort decreased by approximately 8% to average 12.98 kg per 100 pots over the year. (Table 5). Spider Crab Landings per unit effort have decreased by 25.69%. This decrease is most likely due to the continued reduction in netting and shift in metiers, rather than any change in stock numbers. Whelk landings have decreased upon 2011's figures, yet are still higher than 2009's landings and comparable to landings in 2008. Again this is possibly due to changes in metier and changes in whelk fishing effort, with the Department's independent whelk population research, still showing a concerning decline in stock numbers (Section 2.3.1).

Table 3. Quantity of shellfish landed by the Jersey fleet (kg)

Species	2006	2007	2008	2009	2010	2011	2012
Brown crab	348,990	412,239	480,844	360,872	408,873	433,845	474,268
Crawfish	500	170	142	138	0	5	47
Lobster	131,296	154,704	162,560	177,087	225,494	257,112	237,395
Scallop^{1, 2}	303,723	371,837	330,997	362,528	401,475	285,273	283,817
Spider crab	129,291	105,734	178,692	177,158	173,298	144,475	108,087
Whelk	621,011	545,395	297,742	104,995	497,410	244,480	217,520
Others^{3,4}	5,132	2,047	2,400	2,249	4,657	5,731	7,343
Total	1,502,528	1,592,126	1,453,377	1,180,976	1,711,207	1,370,921	1,328,477

Notes

1. 2007 onwards includes dredged and commercial dived.
2. 2010 contained 1,020 kg of Queen Scallops for the first time.
3. Others include prawn, velvet crab, cuttlefish, squid, praire, amande.
4. Others include ormers in 2012.

In the wetfish sector, Bream had the most significant change, with a significant increase upon 2011's figures, rising from 17.9 tonnes to 85.6 tonnes (Table). Bass landings have decreased to 10.6 tonnes, compared to 2011's 16.4 tonnes. Skate and Ray landings have remained relatively consistent at 34.5 tonnes, only 54 Kg less than 2011's landings.

Overall the wetfish sector landings have increased by around 57 tonnes from 2011's landings of 126.2 tonnes to 183.8 tonnes.

Table 4. Quantity of wetfish landed by the Jersey fleet (kg)

Species	2006	2007	2008	2009	2010	2011	2012
Angler	757	262	240	233	62	748	39
Brill	1,877	2,435	2,997	2,135	2,985	4,127	1,745
Bass	30,952	18,085	18,564	11,649	13,831	16,379	10,578
Cod	235	46	198	135	214	242	8
Conger	21,024	17,314	7,179	3,170	3,023	3,256	2,093
Dogfish	20,544	8,211	10,133	4,596	13,278	12,580	15,975
Gurnard/Latchet	1,911	1,570	2,085	104	413	85	907
Horse mackerel	1,100	63	3	226	3	0	185
John Dory	182	14	9	11	9	11	5
Ling	214	176	159	0	112	475	572
Mackerel	8,270	5,516	7,004	6,511	5,744	6,050	6,941
Mullet -grey	6,205	561	1,470	1,194	2,529	2,202	698
Mullet -red	1,268	900	372	248	195	430	1,526
Plaice	2,284	930	2,722	2,651	2,411	3,831	2,421
Pollack	6,374	2,690	7,334	7,915	6,657	16,553	8,849
Sea Bream ^{1,2}	7,378	3,066	4,215	3,158	10,428	17,904	85,654
Skate/Ray ³	59,643	49,801	79,961	22,699	37,390	34,611	34,557
Sole	3,814	1,807	2,194	1,344	1,463	1,630	1,234
Tope	2,295	1,593	747	187	30	270	550
Turbot	896	436	400	646	788	2,004	1,685
Other Species ⁴	1,865	2,124	2,586	3,352	5,096	2,813	7,631
Total	180,493	117,600	150,572	68,771	106,661	126,201	183,853

Notes

1. Figures for some years include catches from outside Jersey Waters

2. Gilt-head bream (300kg) included in 2012.

3. Blonde, small-eyed, and thornback only for 2012

4. Other species included flounder, herring, lemon sole, pouting, sandeel, sand sole, shark, smooth hound, snipe, trigger fish, whiting and wrasse.

2.1.3. Landing Per Unit Effort

Table 5. Landings per unit effort (LPUE) for selected shellfish species

Species	Quantity landed (kg)	Nos. of pot lifts ¹	LPUE (kg per 100 pots)	% change from 2011
Brown crab	474,268	1,828,059	25.94	6.18
Lobster	237,395	1,828,059	12.98	-8.07
Spider crab	108,087	1,828,059	5.9	-25.69

Notes

1. Pot lifts include parlour pots, inkwell, creels, D pots

2.2. MARICULTURE

Production of Pacific Oyster in 2012 decreased slightly on 2011's record 972 tonnes to approximately 761 tonnes (Table 6). Mussel production increased slightly to 102 tonnes. There was no significant change in King Scallop production, by aquaculture, increased significantly upon the previous three years, increasing to around 4.5 tonnes.

There were no new Aquaculture concessions awarded in 2012.

Table 6. Farmed shellfish production (area in hectares; production in kg)

	2005	2006	2007	2008	2009	2010	2011	2012
Intertidal area¹	62.65	62.88	62.88	68	68.76	68.76	68.76	68.76
Subtidal area	166	166	166	166	166	166	166	166
Pacific Oyster	579,915	651,148	737,395	829,952	903,000	628,760	972,000	760,865
King Scallop	8,484	2,540	4,100	8,841	2,571	2,462	2,493	4,516
Ormers	-	-	-	-	-	-	-	43
Mussels	50,000	117,500	50,000	117,000	101,000	201,278	89,205	102,664
Total	638,399	771,188	791,495	955,793	1,006,571	832,500	1,063,698	868,046

Note

1. Area pre 2004 relates to actual area farmed. 2005 onwards relates to total concession area granted.

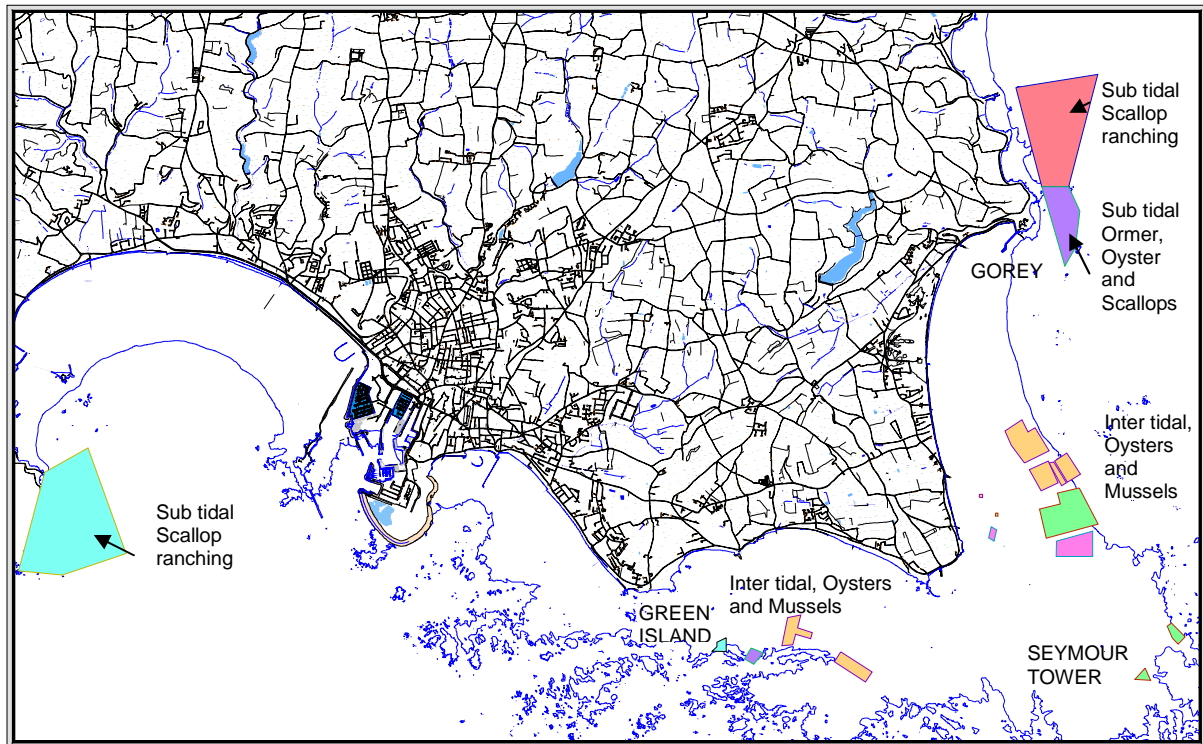


Figure 2. Aquaculture concessions as of December 2012

2.3. RESEARCH AND DEVELOPMENT PROGRAMME

2.3.1. Whelk

The annual study of whelk (*Buccinum undatum*) catch per unit effort (CPUE) was conducted in February 2012. The same study sites and methodology were used as in preceding years.

Overall, the CPUE in 2012 was 1.71 kg per pot (Fig. 3). This was a slight increase on the CPUE recorded in 2011 (1.46 kg), but still one of the lowest total CPUE on record since 1996. The large fraction (above minimum landing size) of 2012's catch was slightly higher than 2011, with a CPUE of 1.42 kg, compared to 1.20 kg in 2011. However the small fraction (below minimum landing size) remains low at 0.28 kg per pot.

Overall there is still a trend of decline in the stock, particularly so in the large fraction ($R^2=0.71$), with no significant improvement on catches from the last fourteen years (Fig. 4).

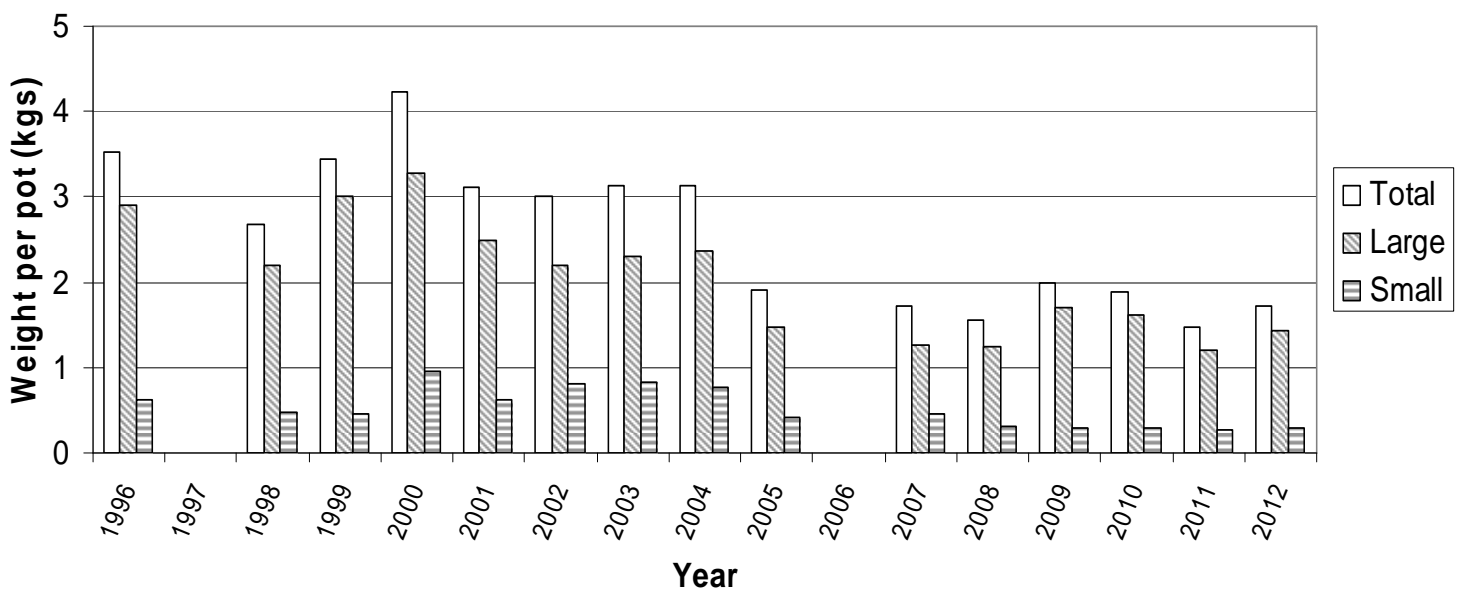


Figure 3. Average CPUE of Whelks (Total, large fraction, small fraction)

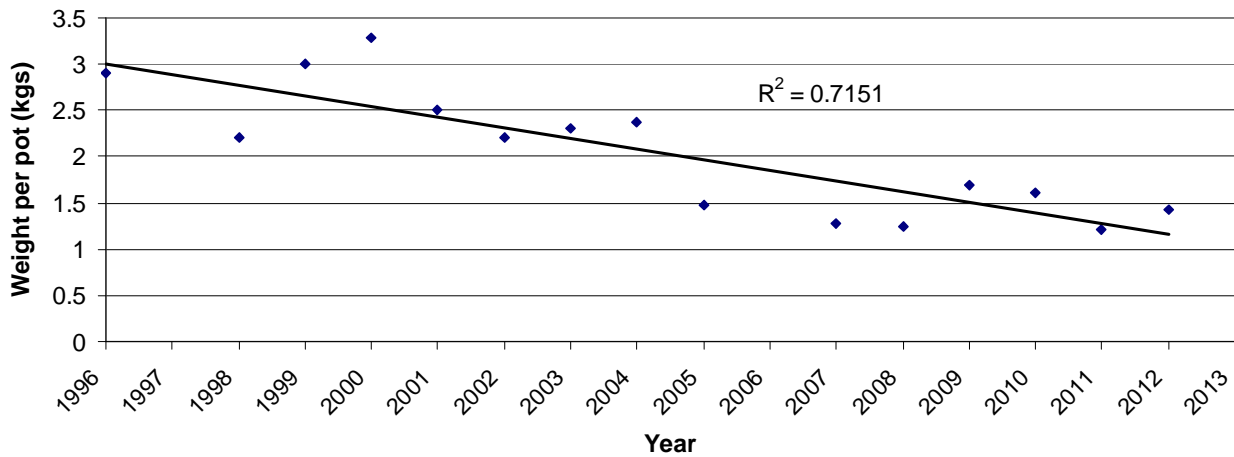


Figure 4. Comparison of catches for sized whelks (>45 mm Minimum Landing Size) for all surveys (1996-2012) with linear trend line fitted.

2.3.2. Lobster

Since 2004, an annual study has been conducted by the Department to monitor changes in the number and structure of the Lobster population in Jersey waters. Each year the same equipment and sites are used, to allow comparison over time. The lobster pots used differ from commercial pots, to allow the capture and assessment of juvenile lobsters.

In 2012, there was a total of 287 lobsters caught for 180 pots hauled, compared to 335 caught in 2011 and 192 caught in 2010 for the same amount of pot lifts. Although this is a slight decrease in total lobster caught, 2012 was still one of the best catches on record since the study began in 2004. This increase is reflected in Table 7, which depicts the Catch per Unit Effort (CPUE) figures for sized and undersized lobsters over the last nine years of research.

Of the 287 lobsters caught in 2012, 64 lobsters (22.3%) were sized above the minimum landing size of 87mm length carapace. This is a slight decrease on 2011 and 2010, where, respectively, 29.6% and 28.1% of the catch were sized.

Table 7. Catch Per Unit Effort (CPUE) of lobster (kg per 100 pots).

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Average CPUE Sized (kg/100 Pots)	7.3	8.6	6.3	12.3	10	31	18.2	27.5	21.8
Average CPUE Under-sized (kg/100 Pots)	26.7	32.6	32.3	31.6	27.4	89.8	28.2	49.1	42.8

The frequency distributions of lobster carapace lengths are also assessed and monitored to help analyse the structure of the lobster population. The frequency distribution has changed compared to 2011 and 2010. There where a smaller proportion of lobsters found over the 87mm minimum landing size (MLS) (Figure 5). This suggests that the fishery is still fully exploited and relies heavily on recruiting lobsters close to the minimum size.

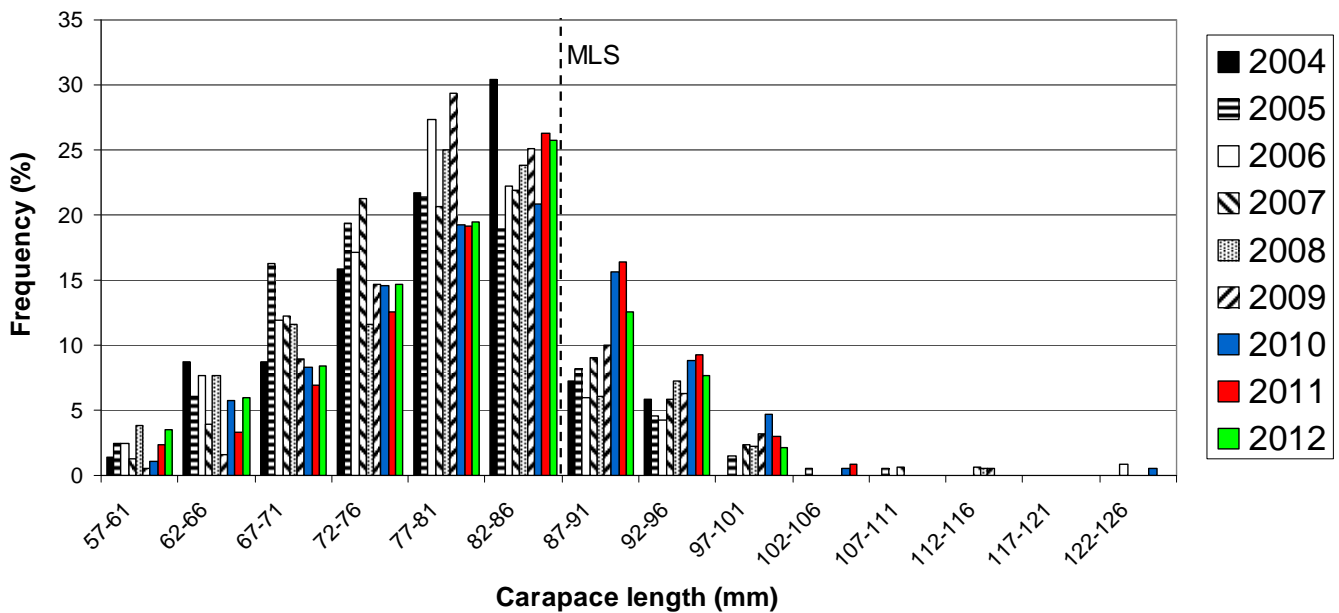


Figure 5. Length frequency distribution of lobster

2.3.3. Ray

The tagging of rays continued throughout 2012 by project partners and the Department. By the end of 2012 1325 rays had been tagged (268 blonde, 913 small-eyed, 130 undulates and 13 thornbacks).

Seven tagged fish were recaptured in 2012. In total 200 recaptures have reported since 2006, giving a tag:recapture rate of 15%. One undulate ray recaptured in 2012 was tagged in 2006 with the fish remaining at large for over 5 years. The fish was recaptured close to the original tagging location.

Information from these recaptures add to our understanding of ray species biology and habitat use, which in turn contributes to the management of these stocks.

A small sample of nine small-eyed and one undulate were also internally tagged as part of other study using acoustic transmitters which will provide additional detailed information on the long term movement of these species (see chapter 6 for further details).



Tagged Undulate Ray (Photo MR)

3. OTHER USES AND IMPACTS

3.1. MICROBIAL CONTAMINATION

3.1.1. Bathing Water

Monitoring of bathing water quality started in 1992, with 16 of the most popular beaches monitored weekly between May and September. In 2012 all bathing waters passed the imperative standard and 75% passed the stringent Guideline standard¹.

3.1.2. Mariculture

Table 8. Shellfish Production Classification Areas Grading (as of December 2012)

* Provisional grading

Production Area	Species	Grade
Green Island	<i>C. gigas</i>	B
	<i>O. edulis</i>	B*
Le Hocq	<i>C. gigas</i>	B
	<i>M. edulis</i>	B
La Hurel holding bed	<i>C. gigas</i>	B
	<i>M. edulis</i>	B
La Hurel main bed north	<i>C. gigas</i>	B
	<i>M. edulis</i>	B
La Hurel main bed south	<i>C. gigas</i>	B

¹ For further information please see www.gov.ie

3.2. DEPOSITS IN THE SEA

Deposits in the sea are controlled under the Food and Environment Protection Act 1985 (Jersey) Order 1987. The following licences were issued during 2012.

Deposit of material

Licence Number	2012/01
Date Issued	February 2012
Project Title	St Aubin's Harbour Approach
Project Description	Removal and deposit of material at harbour entrance

A licence for the deposit of green seaweed was issued but for various operational reasons was not used.

Burial at sea

No burial at sea licences were issued during 2012.

Construction

No construction licences were issued during 2012.

3.3. NON INDIGENOUS SPECIES

Non indigenous species can have a significant impact on a number of aspects of marine ecosystems including competition and biodiversity loss. The main routes for unintended importations include ballast waters, fouling on ships hulls and aquaculture. Some non-indigenous species have also been imported intentionally for aquaculture production, such as *Crassostrea gigas*.

Eradication of non indigenous species in the marine environment once established is considered virtually impossible due to logistic and resource issues.

No new non indigenous species were recorded in 2012 although some previously recorded species, namely *Hemigrapsus*, *Undaria*, *Watersipora*, have been reported in new location, indicating possible spread.

Table 9. Non Indigenous Species

Species Name	First record	Vector	Probable Impact
<i>Janua brasiliensis</i>	1987	●	
<i>Elminius modestus</i>	1983	●	● ●
<i>Urocryptella diogeni</i>	1952		
<i>Hemigrapsus sanguineus</i>	2009	● ●	● ●
<i>Crepidula fornicata</i>	1974	●	● ●
<i>Urosalpinx cinerea</i>	1983		
<i>Crassostrea gigas</i>	1982	●	● ● ●
<i>Tapes philippinarum</i>	2009	●	●
<i>Bugula stolonifera</i>	2009	●	● ●
<i>Watersipora subtorquata</i>	2009		
<i>Styela clava</i>	2009	●	● ●
<i>Undaria pinnatifida</i>	2009		● ●
<i>Sargassum muticum</i>	1980	● ●	● ● ●
<i>Asparagopsis armata</i>	2005	●	
<i>Grateloupia filicina</i>	1865		
<i>Grateloupia subpectinata</i>	2011	●	
<i>Polyopes lancifolius</i>	2011	●	
<i>Antithamnionella ternifolia</i>	2011		
<i>Polysiphonia harveyi</i>	1994		
<i>Codium fragile fragile</i>	1983	● ●	● ● ●
<i>Codium fragile atlanticum</i>	2011		

Data supplied by Dr P Chambers

KEY

Vector	
●	Fouling
●	Ballast Water
●	Secondary Spread
●	Importation for aquaculture
●	Aquaculture

Probable Impact	
●	Competition
●	Habitat modification
●	Biodiversity loss

4. HAZARDOUS SUBSTANCES

4.1. HEAVY METALS

The monitoring programme commenced in July 1993 to assess whether any contamination of the marine biota was occurring from the Waterfront reclamation site. Two benthic mollusc species; the common limpet (*Patella vulgata*), an algal browser; the slipper limpet (*Crepidula fornicata*), a filter feeder and a serrated seaweed (*Fucus serratus*) were used as bio-monitors. All three species were present in large numbers around Jersey's coast. Common limpet and seaweed samples are taken from five locations around the coast and slipper limpet samples from four location and Les Ecrehous reef. The programme has now been extended to include a full suite of samples from all the offshore reefs.

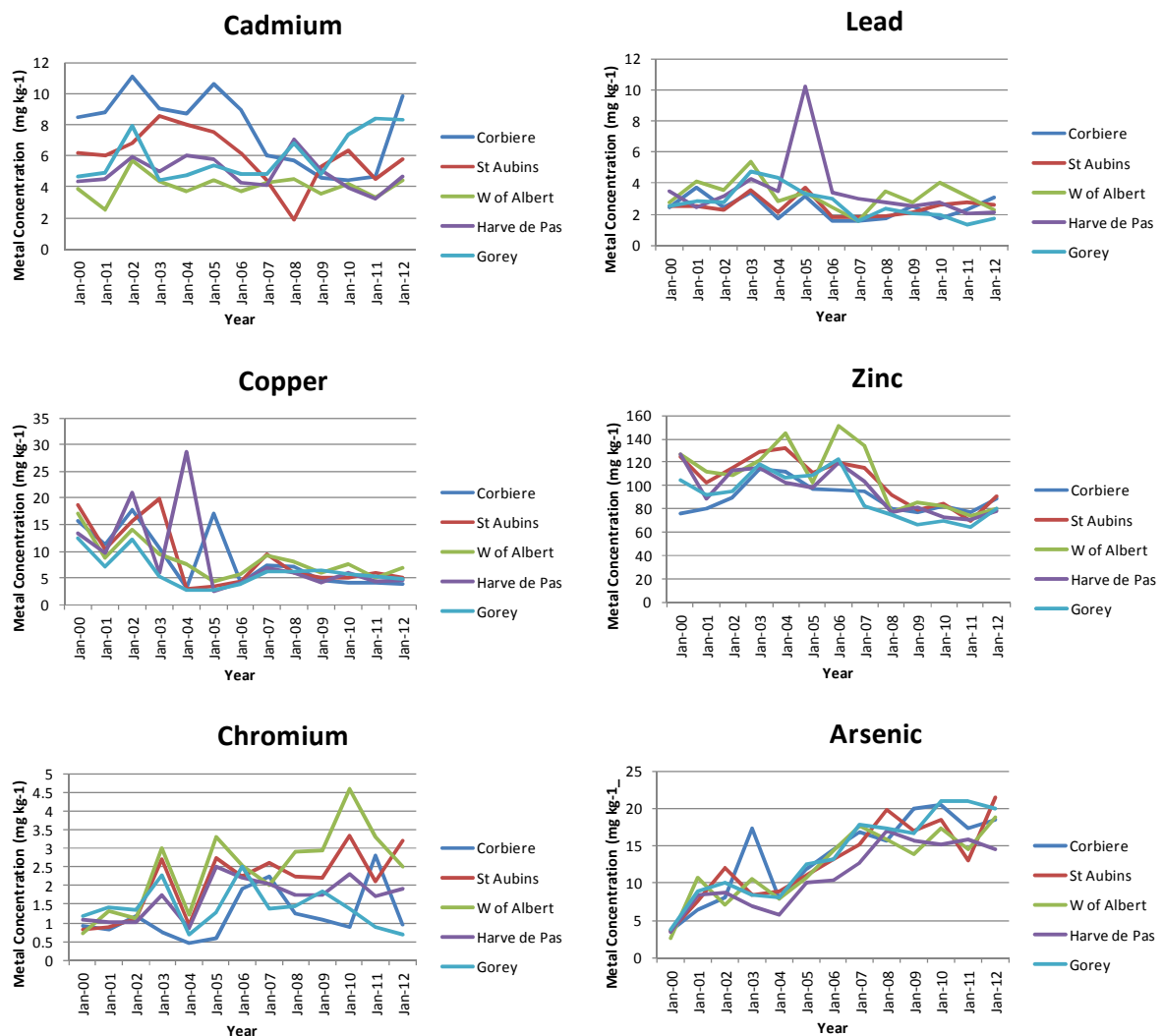


Figure 6. Metal concentrations in Common Limpet, *Patella vulgata*.

Whilst there is variation between metals, analysis shows that there is general correlation between sites indicating that trends are consistent around the locations sampled and therefore not indicative of a point source of these metals. However further analysis and study is required to assess some trends in the data. For example, the levels of arsenic have increased steadily over the years at all locations in both common limpet and seaweed and in recent years in slipper limpet. It is hoped the inclusion of remote offshore sites at the reefs will assist in this work.

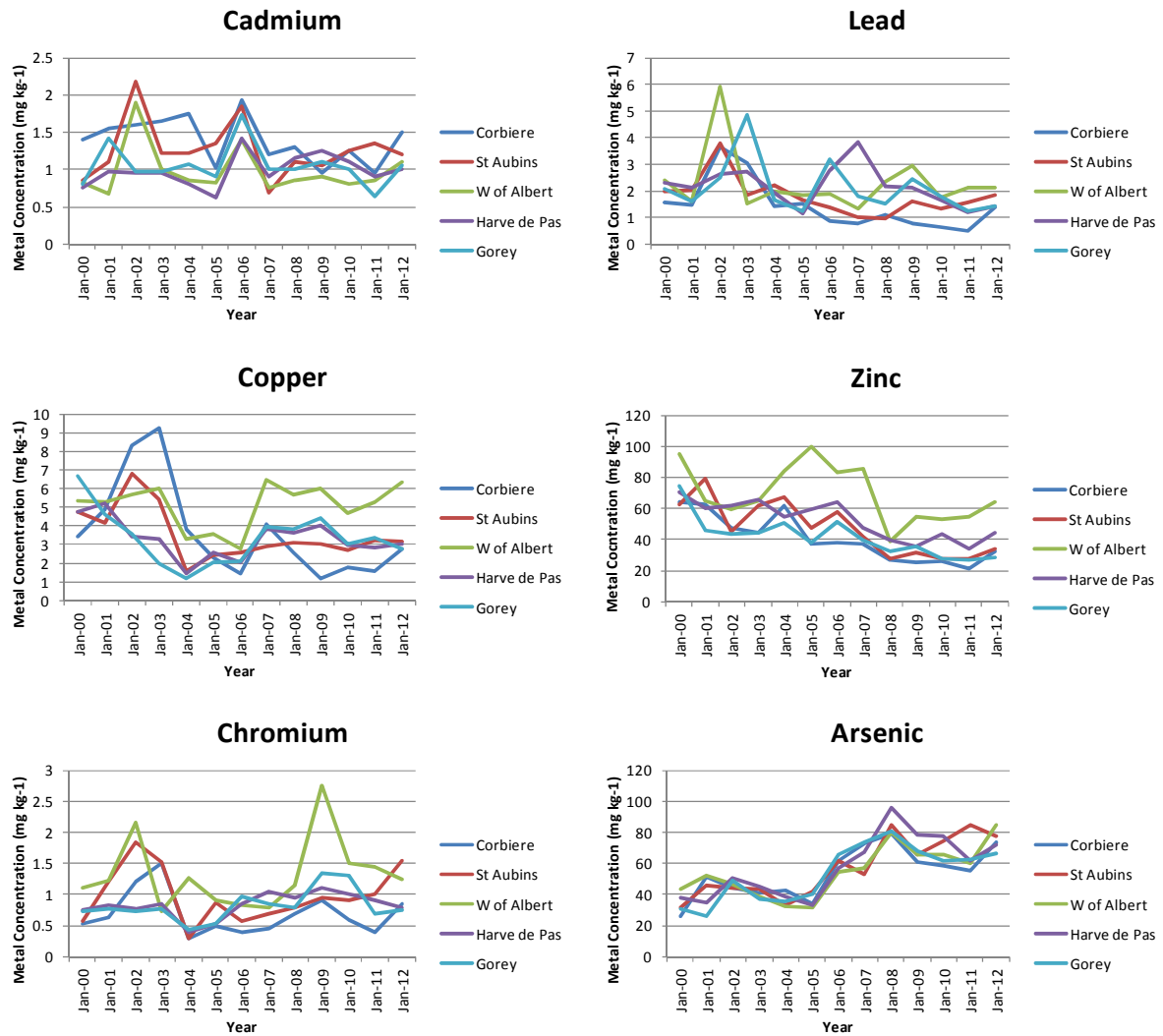


Figure 7. Metal concentrations in seaweed, *Fucus serratus*.

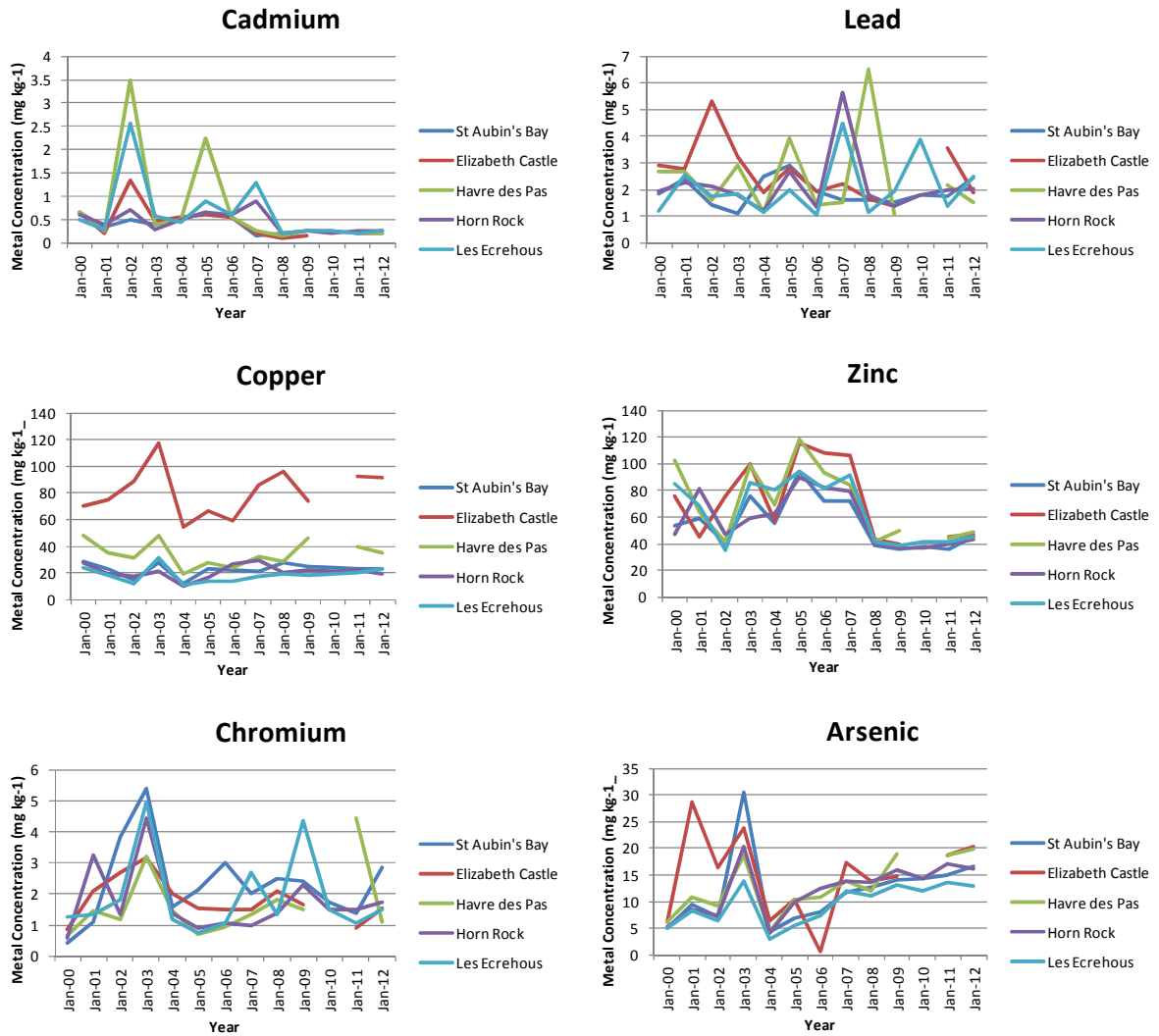


Figure 8. Metal concentrations in Slipper limpet, *Crepidula fornicata*.

4.3. HARMFUL ALGAL BLOOMS

Shellfish and seawater samples are collected and analysed monthly from November to April and bimonthly from May to October. Samples are analysed for three algal biotoxins. In 2012, biotoxins were either not detected or below level that required action or additional samples.

Table 10. Algal biotoxin examination from shellfish and seawater samples

	PSP		DSP		ASP	
	Shellfish	Seawater	Shellfish	Seawater	Shellfish	Seawater
2004	ND	<TP	Negative	<TP	ND	<TP
2005	ND	<TP	Negative	<TP	< RL	<TP
2006	ND	<TP	Negative	<TP	< RL	<TP
2007	ND	<TP	Negative	<TP	< RL	<TP
2008	ND	<TP	Negative	<TP	< RL	<TP
2009	ND	<TP	Negative	<TP	<LOQ	<TP
2010	ND	<TP	Negative	<TP	<LOQ	<TP
2011	ND	<TP	< RL	<TP	<LOQ	<TP
2012	ND	<TP	<RL	<TP	<LOQ	<TP

Key

ND Not Detected
 <TP Below Trigger Point for additional sampling
 < RL Below Reporting Limit
 <LOQ Below Limit of Quantitation

5. RADIOACTIVE SUBSTANCES

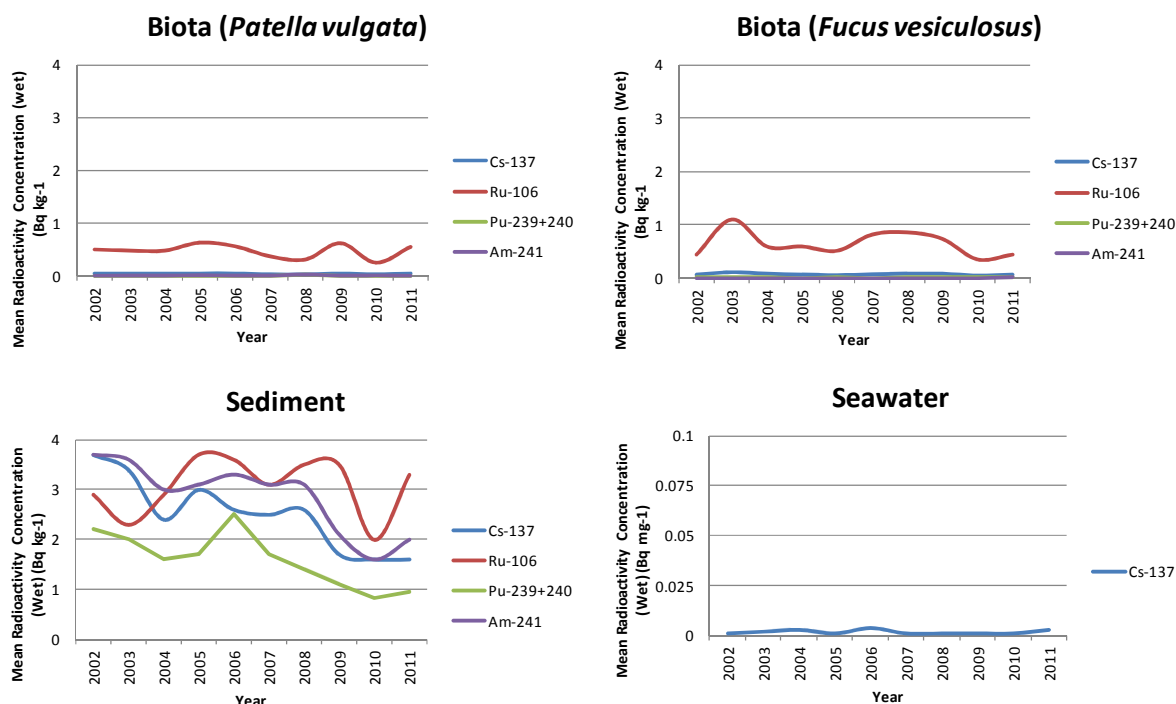


Figure 9. Radioactivity in marine environment

Radioactivity in the marine environment is monitored by an annual sampling programme and analysis as part of a UK wide programme. The programme monitors the effects of radioactive discharges from the French reprocessing plant at Cap de la Hague and the power station at Flamanville. It also serves to monitor any effects of the historical disposals of radioactive waste in Hurd Deep. Analysis show that the concentration of artificial radionuclides in the marine environment and the effects of discharges from local sources continue to be of negligible radiological significance. No evidence for significant releases of activity from Hurd Deep was found².

² For further details see CEFAS website (RIFE 2011 report)

6. PROTECTION AND CONSERVATION OF BIODIVERSITY AND ECOSYSTEMS

6.1. MARINE PROTECTED AREAS

Jersey's current Marine Protected Areas (MPAs) network consists of sites designated under the Ramsar Convention (see section 6.2.) and sites protected under the Fisheries Law, the most important of those covered by restrictions on certain types of fishing activity. They are the no mobile gear zones to the south and east and the no dredging zones to the south, east and north³.

Work on MPAs during the year has continued as part of wider marine spatial planning. Given the increasing pressure on the marine environment from various activities, together with the developing maritime or "blue" economy good marine spatial planning is an important part of overall management of the marine environment. It is likely this aspect will form part of the Marine Resources Strategy, which will be launched for consultation in 2013.

Focus in 2012 has been on three areas:-

1. Data audit. Spatial data was held in diverse locations and formats. It was necessary to audit all the available data.
2. GIS mapping. All available data was inputted into the Cadcorp GIS mapping package, using a thematic system designed by officers following discussions with colleagues at the MMO in the UK and the Agence des Aires Marines Protégées in France.
3. Data acquisition. Following the audit a gap analysis was done and a programme established to fill these gaps to ensure compliance with international obligations and delivery of Department and States business and strategic plans. This phase of the project will be ongoing in 2013.



Low tide, St Ouen's Bay

³ See Fisheries and Marine Resources Annual Report 2010

6.1.1. Acoustic tagging Project

No fieldwork occurred during the year in this project as the receiver array was established and no new fish were tagged. The receivers will be recovered during 2013 to download the data from the previous two years. The first paper from this project was published in a scientific peer reviewed journal⁴. Results indicate relatively small MPAs (<0.5 km²) that with suitable habitat could provide effective, long-term protection for ballan wrasse, but would likely be of little conservation benefit for rays. Our findings emphasize the importance of quantifying fish movements when planning MPAs which intend to protect multi-species assemblages of coastal fishes.

In 2013 it is planned to increase the geographical coverage of the array and include bass in the tagging programme. This project would not be possible without the continued support of colleagues based at the University of Hawaii.

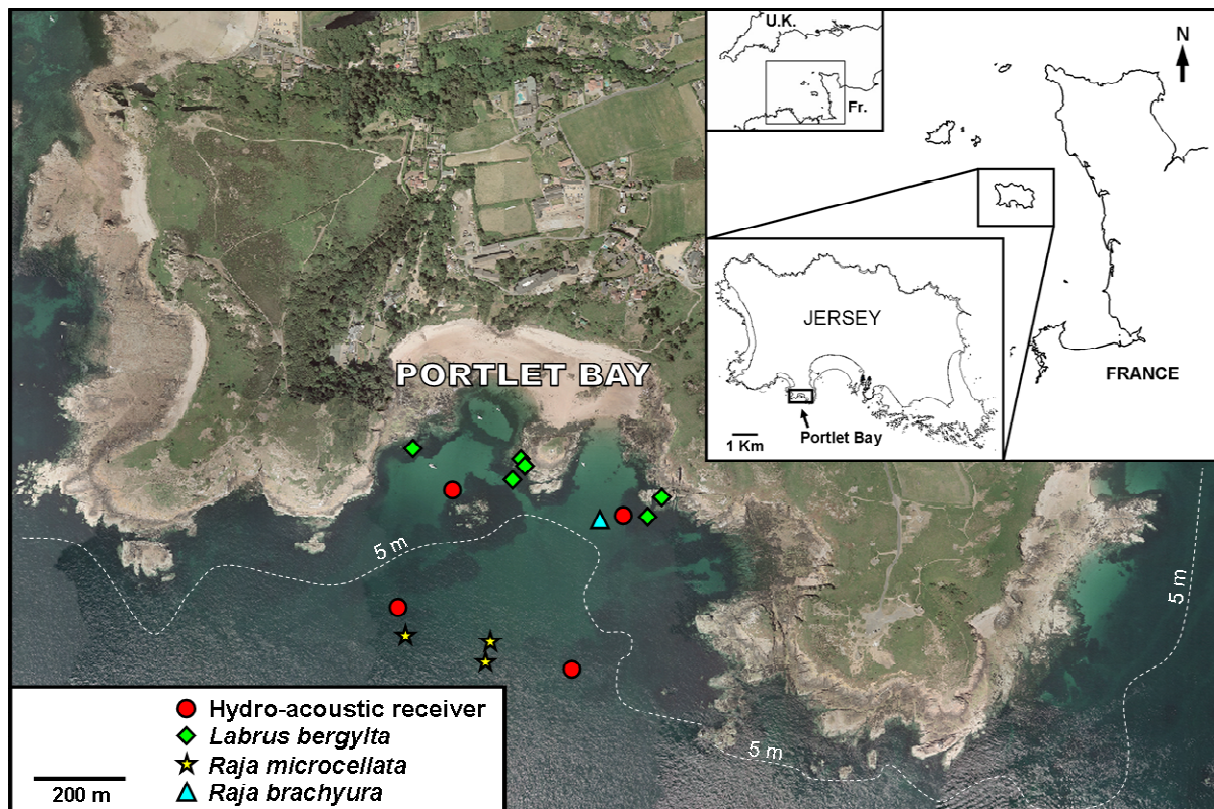


Fig 10. Location of acoustic receivers and fish capture sites in Portelet Bay.

⁴ G.M. Morel, J. Shrivess, S.F. Bossy and C.G. Meyer. 2012. Residency and behavioural rhythmicity of ballan wrasse (*Labrus bergylta*) and rays (*Raja* spp.) captured in Portelet Bay, Jersey: implications for Marine Protected Area design. *Journal of the Marine Biological Association of the United Kingdom*, available on CJO2012. doi:10.1017/S0025315412001725.

6.2. RAMSAR

Significant progress was made in the management of Jersey's four Ramsar sites in 2012. The three remaining management plans, for the offshore reefs of Les Écréhous and Les Dirouilles, Les Minquiers and the Paternosters, were published this year following the hard work of the Ramsar Management Authority. The Authority was created in 2010 and has worked to fulfil Jersey's obligation under the Convention on Wetlands of International Importance, commonly known as the Ramsar Convention.

Biota samples were collected and analysed for heavy metals and a habitat map was completed for Les Ecrehous reef. The habitat survey was undertaken by Dr Paul Chambers and Nick Jouault, supported by Marine Resources staff.

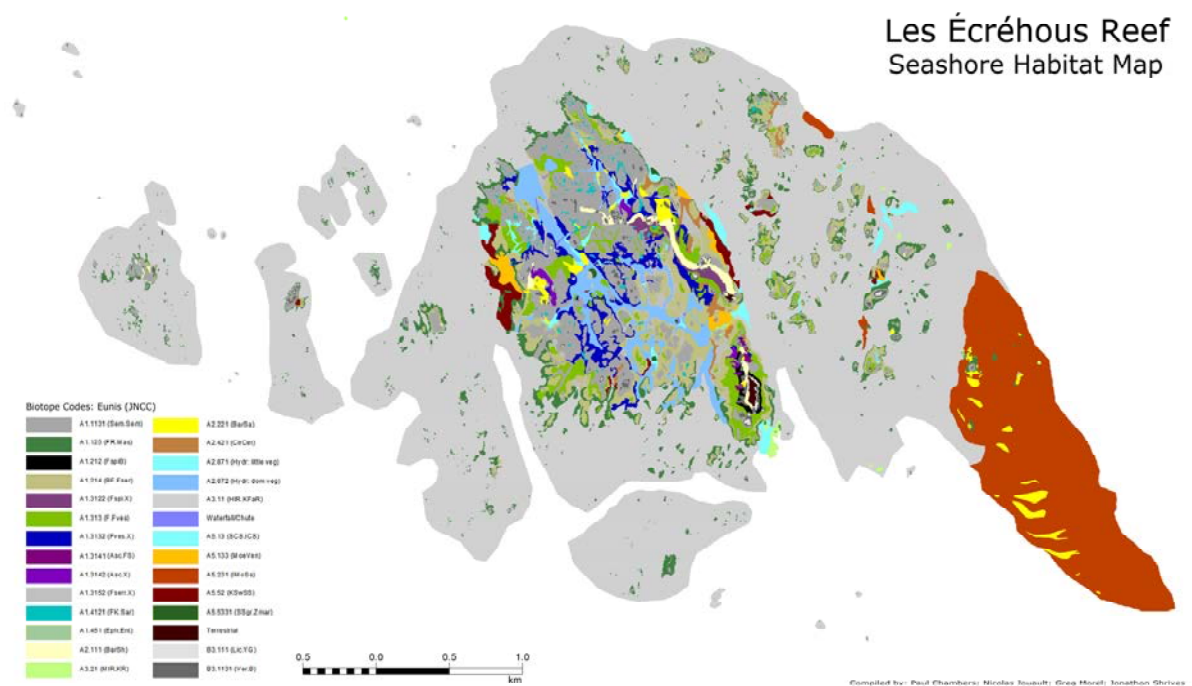


Figure 11. Les Écréhous reef habitat map

6.3. CETACEANS

Dolphins were sighted on 24 separate occasions in 2012, an increase on 2011's figures. (Fig. 10). All sightings were identified as bottlenose dolphins. Sightings occurred mainly to the north, east and south of the Island ranging from Les Écréhous in the north to Les Minquiers in the south. In total 201 adult dolphins and 23 Juveniles were observed. Juveniles represented 11% of sightings in 2012, compared to 12% in 2011, 10% in 2010 and just 3% in 2008.

Pattern and frequency of patrols was reduced in 2012, with days at sea slightly less than in 2010 and 2011 due to section re-structuring. Grey seals were sighted on two five occasions, with a total of 13 adults and 2 pups recorded. 6 adults and 1 pup was recorded at Les Minquiers and 7 adults and 1 pup were sighted at Les Écréhous.

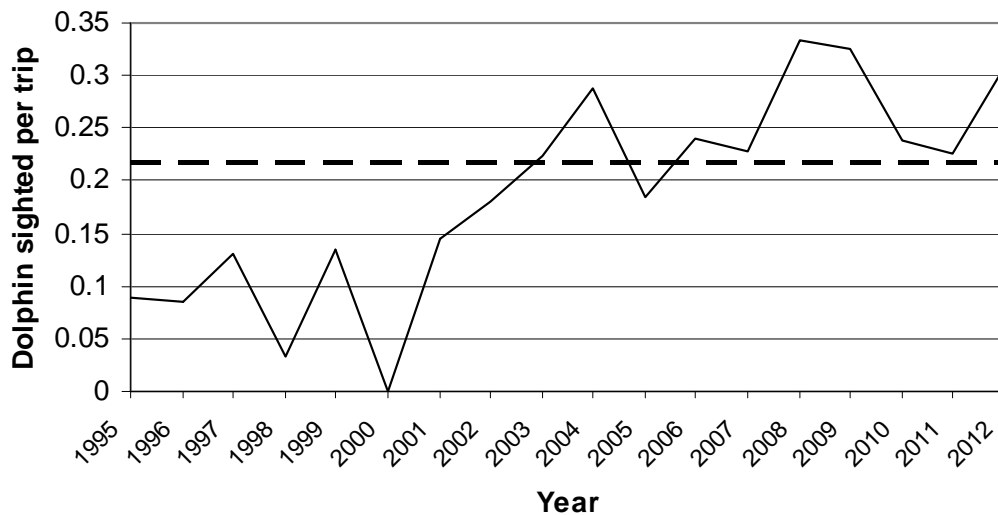


Figure 12. Total dolphin sightings from Fisheries Protection Vessels. The dotted line is the 2000-2010, ten year average. (Note Vessel and patrol pattern changed 1997/1998)

Table 11. Reported marine mammal strandings

Date	Location	Species	Comments
03/01/12	Le Hocq	Harbour Porpoise	Decomposed specimen. NHM form completed
28/12/12	Greve D'Azette	Common Dolphin	Recently deceased, no sign of damage, NHM form completed

Table 12. ASCOBANS report 2012

A. HABITAT CONSERVATION AND MANAGEMENT	
1. Direct Interaction with Fisheries	
Investigations of methods to reduce bycatch	None reported or observed bycatch
Implementation of methods to reduce bycatch	None
2. Reduction of Disturbance	
Anthropogenic noise	No investigations undertaken
Ship strike incidents	None reported or observed
Major incidents affecting significant numbers of cetaceans	None reported or observed
Pollution and hazardous substance	No pollution incidents or presence of hazardous substances reported or recorded that impacted on cetaceans.
Other forms of disturbance	None observed or reported
3. Marine Protected Areas for small cetaceans	
Specific measures for cetaceans	Ramsar Managements Plans published highlighting importance of cetaceans. Monitoring strategy includes monitoring on cetacean activity.
B. SURVEYS AND RESEARCH	
Abundance, distribution and population structure	The marine biology section of the Societe Jersiaise receive and collate information from the public concerning cetacean sightings. This data is available online. Sighting data is also recorded by the States of Jersey Fisheries Protection Vessel.
New technology developments	None
Other relevant research	Jersey continues to participate in the NHM's strandings programme. Two acoustic receivers have been set by Groupe d'Etude des Cetaces du Cotentin, at Les Minquiers reef as part of a wider study in the Normano-Breton gulf. UPDATE

C. USE OF BY CATCH AND STRANDINGS	
Post-Mortem Research Scheme	None undertaken
D. LEGLISATION	
Relevant new legislation, regulation and guidelines	No new legislation
E. INFORMATION AND EDUCATION	
Any public awareness and education activities	Code of conduct available for fishermen and general public. Code reviewed and updated as necessary. WiSe courses run as required for commercial operators and other interested individuals.

6.4. CRITICAL HABITATS AND SPECIES

Under various International Agreements, Jersey is obliged to monitor and assess the status of critical marine habitats and species. For certain species groups specific monitoring programmes are well established (e.g. cetaceans) or part of a wider reporting obligations (e.g. fishing vessel logsheets and landing declarations). Monitoring of critical habitats is undertaken as part as other programmes such as Ramsar monitoring plans or as specific assessments (e.g. seagrass and maerl).

Two specific studies were undertaken during the year, on looking at the subtidal seagrass, *Zostera marina*, and the other at Maerl.

Table 13. Critical habitats and species monitoring status

Species	Listing	Monitoring Status	Key Pressures
MOLLUSC			
Dog Whelk, <i>Nucella lapillus</i>	OSPAR	●	●
Flat Oyster, <i>Ostrea edulis</i>	OSPAR		●
Ocean Quahog, <i>Arctica islandica</i>	OSPAR	●	
FISH			
Sea Lamprey, <i>Petromyzon marinus</i>	BERN OSPAR, Habitats Directive	●	● ●
Porbeagle Shark, <i>Lamna nasus</i>	OSPAR	●	●
Basking Shark, <i>Cetorhinus maximus</i>	BERN OSPAR	●	● ● ●
Spiny Dogfish, <i>Squalus acanthias</i>	OSPAR	●	●
Angel Shark, <i>Squatina squatina</i>	OSPAR	●	●
Thornback Ray, <i>Raja clavata</i>	OSPAR	●	●
Spotted Ray, <i>Raja montagui</i>	OSPAR	●	●

European Sturgeon, <i>Acipenser sturio</i>	BERN OSPAR Habitats Directive CITES	●	●	●		
European Eel, <i>Anguilla Anguilla</i>	OSPAR	●	●	●		
Allis Shad, <i>Alosa alosa</i>	BERN OSPAR, Habitats Directive	●	●			
Twait Shad, <i>Alosa fallax</i>	BERN	●	●			
Atlantic Salmon, <i>Salmo salar</i>	BERN OSPAR, Habitats Directive	●	●			
Short-snouted Seahorse, <i>Hippocampus hippocampus</i>	BERN OSPAR CITES	●				
Common Goby, <i>Pomatoschistus microps</i>	BERN	●				
Sand Goby, <i>Pomatoschistus minutus</i>	BERN	●				
Atlantic Bluefin Tuna, <i>Thunnus thynnus</i>	OSPAR	●	●			
REPTILE						
Loggerhead Turtle, <i>Caretta caretta</i>	BERN CMS OSPAR Habitats Directive	●	●	●	●	●
Hawksbill Turtle, <i>Eretmochelys imbricata</i>	BERN CMS Habitats Directive	●	●	●	●	●
Leatherback Turtle, <i>Dermochelys coriacea</i>	BERN CMS OSPAR Habitats Directive	●	●	●	●	●
MARINE MAMMAL						
Harbour Seal, <i>Phoca vitulina</i>	BERN CMS Habitats Directive	●	●			
Grey Seal, <i>Halichoerus grypus</i>	BERN CMS Habitats Directive	●	●			
Striped Dolphin, <i>Stenella coeruleoalba</i>	BERN ASCOBANS	●	●			

	Habitats Directive CITES			
Short-beaked Common Dolphin, <i>Delphinus delphis</i>	BERN ASCOBANS Habitats Directive CITES	●	●	
Bottlenose Dolphin, <i>Tursiops truncatus</i>	BERN ASCOBANS Habitats Directive CITES	●	●	
Atlantic White-sided Dolphin, <i>Lagenorhynchus acutus</i>	BERN ASCOBANS Habitats Directive CITES	●	●	
White-beaked Dolphin, <i>Lagenorhynchus albirostris</i>	BERN ASCOBANS Habitats Directive CITES	●	●	
Orca Whale, <i>Orcinus orca</i>	BERN ASCOBANS Habitats Directive CITES	●	●	
Risso's dolphin, <i>Grampus griseus</i>	BERN ASCOBANS Habitats Directive CITES	●	●	
Harbour Porpoise, <i>Phocoena phocoena</i>	BERN ASCOBANS OSPAR Habitats Directive CITES	●	●	●
Fin Whale, <i>Balaenoptera physalus</i>	BERN Habitats Directive	●		
ALGAE				
Maerl, <i>Phymatolithon calcareum</i>	Habitats Directive	●	●	
FLOWERING PLANT				
Shore dock, <i>Rumex rupestris</i>	BERN Habitats Directive	●	●	
Seagrass, <i>Zostera marina</i>	BERN	●	●	●

Habitat	Listing	Monitoring Status	Key Pressures
Intertidal mudflats	OSPAR	●	● ●
Intertidal sandbanks	OSPAR	●	● ●
Zostera beds	OSPAR	●	● ● ●
Maerl beds	OSPAR	●	●

KEY

Monitoring Status	
●	Actively Monitored
●	Part of Wider Monitoring Programme
●	Not Monitored

Key Pressures	
●	Removal of target or non-target species
●	Oil Pollution
●	Hazardous Substances
●	Ship Strike
●	Anthropogenic Disturbance
●	Habitat Loss or Damage

7. MANAGEMENT

7.1. LEGISLATION AND STRATEGIES

On 23 November 2012, the Sea Fisheries (Amendment No. 2) (Jersey) Law 2012 became effective. This amendment effectively allows the Minister to introduce fisheries management measures with less delay than previously and is an important first step in implementing the request by French and Jersey fishermen to restrict netting at Les Minquiers during the spider crab closure.

Work also continued on drafting a law to manage aquatic resources not already covered by the Sea Fisheries (Jersey) Law 1994 and regulations to introduce new requirements on the electronic reporting of fisheries activities. Preliminary work also occurred in relation to amending legislation to enable the online notification of quotas to licensed fishermen.

Work also continued on developing a consultation document to be circulated in 2013 relating to the development of a Marine Resources Strategy.

Ministerial Orders were signed in respect of mariculture concessions and the implementation of the annual closure of the spider crab fishery.

Fishing licence conditions were implemented to restrict any new fishing effort in respect of whelks.

7.2. MARINE STEWARDSHIP COUNCIL ACCREDITATION

In 2011, Jersey and Normandy became one of the first clawed lobster fisheries in Europe to successfully achieve Marine Stewardship Council (MSC) accreditation and one of the few international “cross frontier” fisheries to be certified. Representatives from the Jersey Fishermen's Association, Comite Regional des Peches Maritime de Basse Normandie and the Department collaborated to achieve this important certification, further strengthening the relationship between Jersey and France to manage joint stocks as set out in the Bay of Granville Agreement.

2012 was the first year that the joint MSC accreditation received an annual audit by the independent consultants of MacAlister, Elliott and Partners Ltd. As part of the audit process, a draft multi-annual research plan and road map to management measures was discussed by all parties. Whilst successfully passing the 2012 audit, the auditors did set out targets for 2013; a monitoring programme and associated set of management targets, catch / trend thresholds with attached management responses would need to be agreed by French and Jersey Fishermen, Scientists and Civil Servants by the follow up audit in 2013.

8. APPENDICES

Industry – Economics 2011

Table 14. Estimated value of shellfish landed by the Jersey fleet in 2011

Species	Quantity landed (kgs)	Average Price (£) per kg	Value (£)
Brown crab	433,845	1.75	759,228
Crawfish	5	28.00	140
Lobster	257,112	12.78	3,285,891
Scallop	285,273	1.96	559,135
Spider crab	144,475	1.75	252,831
Whelk	244,480	1.17	286,042
Total	1,365,190		5,143,268

Table 15. Estimated value of wetfish landed by the Jersey fleet in 2011

Species	Quantity landed (kgs)	Average Price (£) per kg	Value (£)
Angler fish	748	8.00	5,984
Brill	4,127	8.00	33,016
Bass	16,379	10.67	174,764
Cod	242	2.50	605
Conger	3,256	0.50	1,628
Dogfish	12,580	0.50	6,290
Gurnard/Latchet	85	0.50	43
Horse mackerel	0	0.50	0
John Dory	11	7.00	77
Ling	475	2.00	950
Mackerel	6,050	2.00	12,100
Mullet – grey	2,202	1.50	3,303
Mullet – red	430	6.00	2,580
Plaice	3,831	2.50	9,578
Pollack	16,553	2.00	33,106
Sea Bream	17,904	3.00	53,712
Skate/Ray	34,611	4.00	138,444
Sole	1,630	10.00	16,300
Tope	270	1.00	270
Turbot	2,004	9.00	18,036
Other species	2,813	1.00	2,813
Total	126,201		513,598

Table 16. Estimated total value of the fishing and aquaculture industries at first sale

Sector	2011 Value (£)	% Change (compared to 2010)
Shellfish	5,143,268	-2.56 %
Wetfish	513,598	+29.67%
Aquaculture	3,889,471	+108.87%
UK Landings	457,411	-14.20%
Total	10,003,748	+25.34%

N.B. This data is value only at first sale and does not reflect increased operating costs or other overheads of industry.

Industry – Economics 2012

Table 17. Estimated value of shellfish landed by the Jersey fleet in 2012

Species	Quantity landed (kgs)	Average Price (£) per kg	Value (£)
Brown crab	474,268	2.23	1,057,618
Crawfish	47	34.5	1,622
Lobster	237,395	13.07	3,102,753
Scallop	283,817	2.09	593,178
Spider crab	108,087	2.09	225,902
Whelk	217,520	2	435,040
Total	1,321,134		5,416,111

Table 18. Estimated value of wetfish landed by the Jersey fleet in 2012

Species	Quantity landed (kgs)	Average Price (£) per kg	Value (£)
Angler fish	39	8.00	312
Brill	1,745	8.00	13,960
Bass	10,578	10.25	108,425
Cod	8	2.50	20
Conger	2,093	0.50	1,047
Dogfish	15,975	0.50	7,988
Gurnard/Latchet	907	0.50	454
Horse mackerel	185	0.50	93
John Dory	5	7.00	35
Ling	572	2.00	1,144
Mackerel	6,941	2.00	13,882
Mullet – grey	698	1.50	1,047
Mullet – red	1,526	6.00	9,156
Plaice	2,421	2.50	6,053
Pollack	8,849	2.00	17,698
Sea Bream	85,654	3.00	256,962
Skate/Ray	34,557	3.50	120,950
Sole	1,234	11.00	13,574
Tope	550	1.00	550
Turbot	1,685	9.00	15,165
Other species	7,631	1.00	7,631
Total	183,853		596,143

Table 19. Estimated total value of the fishing and aquaculture industries at first sale

Sector	2012 Value (£)	% Change (compared to 2011)
Shellfish	5,416,111	+5.3%
Wetfish	596,143	+16.07%
Aquaculture	2,802,623	-27.94%
UK Landings	656,604	+43.54%
Total	9,471,481	-5.32%

N.B. This data is value only at first sale and does not reflect increased operating costs or other overheads of industry.

Figure 13. Estimated total value 2002-2012

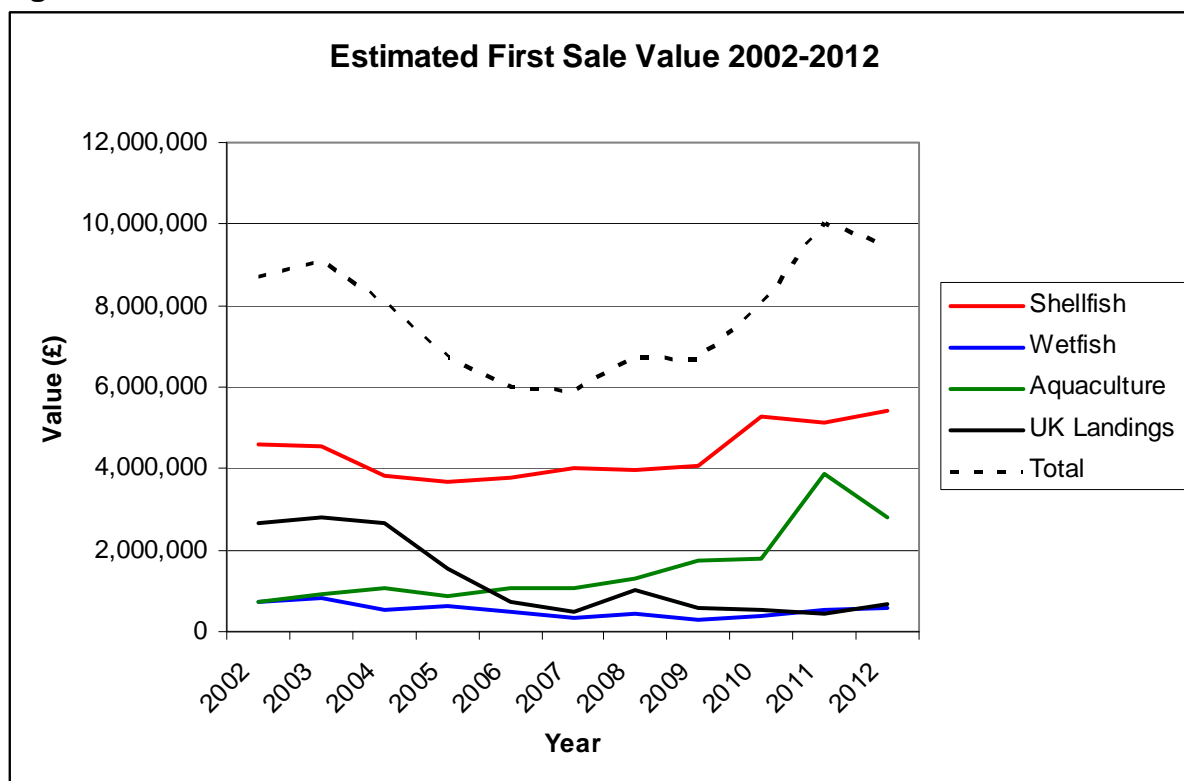
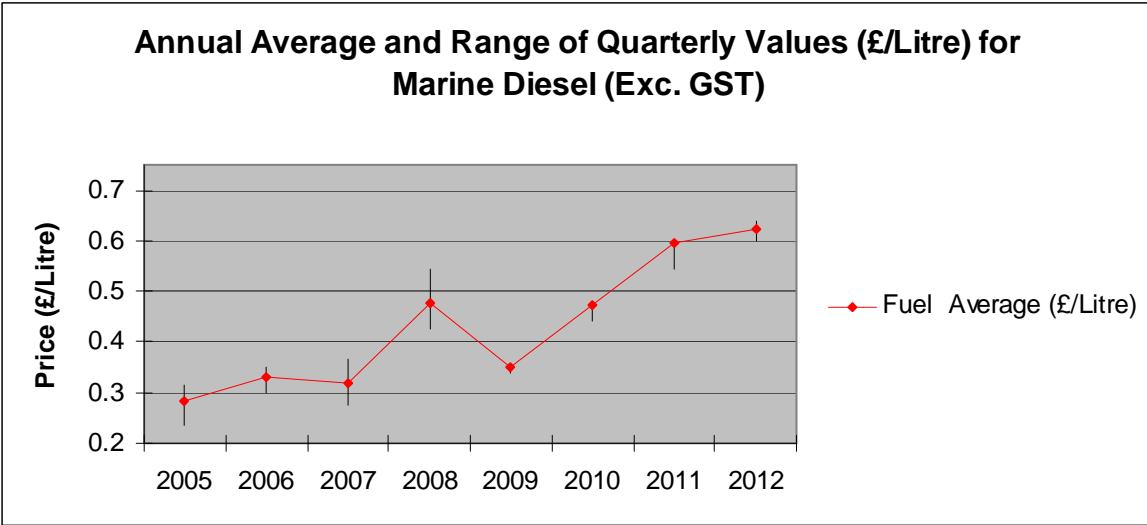


Figure 14. Price of Marine Diesel in Jersey, 2005-2012



Partner Organisations

