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Science

Aquaculture statistics for the UK, with a focus on England and Wales

2012

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Contents

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Executive summary

The UK aquaculture (finfish and shellfish) industry in 2012 employed 3,231 people and produced over 205,000 tonnes valued at over £0.59 billion at first sale (Table 1). The UK remains a leading aquaculture producer within the European Union (1st by value, 3rd by production tonnage). Atlantic salmon production in Scotland continues to dominate UK aquaculture harvest tonnage and value. The changes in value of the finfish and shellfish sectors between 2011 and 2012 are largely due to changes in estimated unit values (i.e. £/tonne).

Table1: Summary of UK aquaculture production in 2012.

		Production (tonnes)			Value (£)			Number of employees
		2010	2011	2012	2010	2011	2012	2012
Finfish	England	8,404	7,311	8,709	24,499,580	19,117,825	21,526,536	823
	Wales	790	761	453	2,965,050	2,840,400	1,438,144	100
	Scotland	159,496	162,777	168,006	453,785,230	599,197,910	532,951,280	1,540
	Northern Ireland	1,155	1,060	>607.6	3,116,120	2,941,040	>1,345,755	63
	UK	169,845	171,909	>177,775	484,365,980	624,097,175	>557,261,715	2,526
Shellfish	England	4,001	3,681	6,915	3,400,000	2,782,415	10,060,882	258
	Wales	8,963	8,376	8,999	6,100,000	5,740,050	9,008,000	34
	Scotland	7,483	7,285	6,525	8,300,000	5,130,160	8,773,900	358
	Northern Ireland	11,081	7,716	4,920	7,700,000	5,476,985	5,347,120	55
	UK	31,528	27,058	27,360	25,500,000	19,129,610	33,189,902	705
Total (finfish + shellfish)	England	12,405	10,992	15,624	27,899,580	21,900,240	31,587,418	1,081
	Wales	9,753	9,137	9,452	9,065,050	8,580,450	10,446,144	134
	Scotland	166,979	170,062	174,531	462,085,230	604,328,070	541,725,180	1,898
	Northern Ireland	12,236	8,776	>5528	10,816,120	8,418,025	>6,692,875	118
	UK	201,373	198,967	>205,134	509,865,980	643,226,785	>590,451,617	3,231

Introduction

The UK is required to collect, collate and report statistics on UK aquaculture under EC Regulations:

- (EC) No 762/2008 requires submission of data on aquaculture production (tonnages of fish harvested; egg and juvenile output from hatcheries and nurseries and destination; eggs for human consumption, e.g. caviar; inputs to aquaculture from the wild; aquaculture systems used);
- (EC) No 199/2008 requires submission of data on employment, numbers of enterprises and various indicators of economic performance.

These data are also reformatted for submission to international bodies that monitor the global status of aquaculture, i.e. FAO (Food and Agriculture Organization of the United Nations), OECD (Organisation for Economic Co-operation and Development), and OIE (World Organisation for Animal Health).

Aquaculture statistics are collated and published because they enable regional, national and European administrations to:

- gauge the importance of aquaculture;
- examine trends over time;
- develop national and regional strategies for aquaculture. For example, in April 2014 Defra published the United Kingdom Multiannual National Plan for the Development of Sustainable Aquaculture (**https://consult.defra.gov.uk/fisheries/european-maritime-and-fisheries-fund-in-the-uk/supporting_documents/Multiannual%20National%20Plan%20for%20the%20Development%20of%20Sustainable%20Aquaculture.pdf**);
- target grant funding to sectors and regions appropriately;
- identify priority areas for funding research and development.

Publication of statistics also helps individual enterprises and trade associations to assess how they are performing with respect to the wider industry.

Within the UK, statistics are collected by the regulatory bodies responsible for authorising aquaculture production businesses as required under aquatic animal health legislation:

- Marine Scotland Science collects data for Scotland. This national data is published in long-standing annual production survey reports for finfish and shellfish (**www.scotland.gov.uk/Topics/marine/Publications/FRS-Reports/FRS-Surveys**)
- The Department of Agriculture and Rural Development (DARD) collects data for Northern Ireland
- Cefas collects data for England and Wales, and collates UK statistics for submission to the various European and international organisations.

Data reporting from finfish and shellfish farms approaches 100% and the continued cooperation of producers is greatly appreciated.

Cefas has traditionally presented summary statistics for UK aquaculture, and more extensive statistics for England and Wales in its publications *Finfish News* and *Shellfish News*. The extent and format of the statistics reported has changed over time, due to changes in EC requirements and interpretations of these requirements. The UK aquaculture industry is very diverse, encompassing a wide variety of species, markets, techniques and businesses. Going forward, we aim to provide:

- more comprehensive data, including production of coarse and ornamental finfish, and crustaceans.
- time series (where available) to enable recognition of trends, and inter-annual changes. Inter-annual changes can be introduced by collation of differing subsets of data, or errors.

Aquaculture statistics are published to provide data to interested parties. We therefore welcome feedback from readers on the extent of the data and how it is presented.

Finfish aquaculture in England and Wales in 2012

Data are collected from finfish farms in England and Wales producing fish for the table, restocking to augment wild populations, release into angling waters, and for the coldwater ornamental (pet) trade. No data is collected on tropical fish species cultured for the ornamental trade or research. There is a very diverse finfish farming industry in England and Wales, with production being reported for 35 different species/ varieties.

Production

Data on production is collected separately for numbers (of eggs and juveniles produced by hatcheries and nurseries) and tonnages (where fish are sold by weight).

Data on egg production is only collected for salmonid species. Within England, 5.7 M rainbow trout eggs, 1.9 M salmon eggs and 1.4 M brown trout eggs were produced in 2012 (Table 2). Within Wales, 0.013 M salmon eggs were produced. The rainbow trout eggs were triploid and all female, the salmon eggs were mixed sex, and brown trout eggs were mixed sex, triploid and all female.

Table 2: Salmonid eggs production reported by finfish farms in England and Wales. Totals (by species and country) are given for 2010-2012, and 2012 production is broken down by type (mixed sex, triploid, all female) and whether laid down on site, or moved to another site.

		2010	2011	2012	2012 breakdown					
					Own eggs laid down			Eggs moved offsite		
		Total	Total	Total	Mixed	Triploid	All Female	Mixed	Triploid	All Female
		1000s	1000s	1000s	1000s	1000s	1000s	1000s	1000s	1000s
ENGLAND	Rainbow trout	4,880	24,940	5,725	-	958	1,660	-	1,906	1,201
	Atlantic salmon	2,966	2,920	1,878	28	-	-	1,850	-	-
	Sea/brown trout	1,235	1,600	1,397	-	353	93	170	511	270
WALES	Atlantic salmon	455	-	13	13	-	-	-	-	-
	Sea trout, brown	16	9	-	-	-	-	-	-	-
	Arctic char	11	-	-	-	-	-	-	-	-

Production of juveniles is recorded for: ongrowing (i.e. within a farm environment), restocking and fishing/sport (i.e. release into the wild), or sale to the ornamental trade. Of the 27.2 M juvenile fish reported as hatchery/nursery production in England in 2012 (Table 3), the bulk went for ongrowing (24.5 M, mainly salmonids), with smaller numbers being released into the wild (1.5 M) or destined for the ornamental trade (1.3M). A similar pattern was evident for the 2.6M juvenile fish produced in Wales.

Table 3: Juvenile finfish production reported from finfish farms in England and Wales. Totals (by species and country) are given for 2010-2012, and 2012 production is broken down by destination (i.e. on-growing within a farm environment, release to the wild, or for the ornamental trade) .

		2010	2011	2012	2012 breakdown		
		TOTAL excluding ornamental	TOTAL excluding ornamental	TOTAL including ornamental	On-growing	Release to wild	Ornamental
		1000s	1000s	1000s	1000s	1000s	1000s
ENGLAND	Rainbow trout	15,887	21,000	15,390	15390.20	-	-
	Atlantic salmon	5,403	4,360	5,199	4460.00	738.97	-
	Sea/ brown trout	1,518	440	4,206	4192.41	13.25	-
	Common carp (koi, mirror, ghost, hybrid-crucian)	224	2,710	1,391	348.00	121	922
	Chub	-	520	134	-	133.02	1.00
	Freshwater bream	-	30	135	75.00	59.60	0.30
	Barbel	-	370	110	-	110.31	0.15
	Orfe (golden, common, blue)	-	-	136	-	4.40	131.92
	Tench (green, golden, varieties)	-	130	97	3.00	52.08	42.19
	Goldfish (common, varieties, shubukin)	-	-	167	1.00	-	167
	Roach	-	140	70	0.36	69.35	-
	Rudd	-	40	55	-	49.19	5.66
	Grayling	-	-	54	-	54.30	-
	3 Spined stickleback	-	-	27	-	-	27.15
	Crucian carp	-	-	24	1.00	23.29	0.16
	Dace	-	80	18	-	18.35	-
	Arctic char	-	-	14	-	13.97	-
	Gudgeon	-	-	4	-	1.00	3.02
	Nile tilapia	-	-	4	4.00	-	-
	Perch	-	-	1	-	0.96	-
	Siberian Sturgeon	-	-	1	0.50	-	-
	Eel	-	-	0	-	0.03	-
	TOTAL	23,032	29,820	27,238	24,474	1,463	1,301
WALES	Rainbow trout	2,008	2,400	1,971	1970.50	-	-
	Atlantic salmon	595	-	498	-	497.97	-
	Sea/brown trout	71	3	73	25	48.45	-
	Common carp (koi, mirror, ghost, hybrid-crucian)	-	-	46	30.00	-	16.48
	Goldfish, varieties	-	-	20	-	-	20.00
	Arctic char	-	-	1	-	1.10	-
	Nile tilapia	-	-	1	0.50	-	-
	TOTAL	2,674	2,403	2,610	2,026	548	36

Production of larger fish (recorded by weight in tonnes) is reported as harvest for human consumption (i.e. for the table), for further on-growing on a fish farm, for release into the wild (for restocking or angling) or for the ornamental trade. In 2012, finfish farms produced 8,709 tonnes in England and 453 tonnes in Wales, the bulk of this production being rainbow trout (Table 4). A value is attributed to this production, based upon estimated farm gate price (Table 4). These figures value the finfish farming industries in England and Wales in 2012 at £21.5M and £1.4M respectively; it must be recognised that these figures are under-estimates as they omit the value of juvenile production.

Table 4: 2012 Finfish production recorded as tonnage reported from finfish farms in England and Wales. Production is broken down by destination (i.e. for the table), for further on-growing on a fish farm, for release into the wild or for the ornamental trade. Estimated farm gate price (£/tonne) and imputed species value (tonnage x estimated price) are also provided.

		Table	Ongrowing	Release to wild	Ornamental	Species total	Estimated price	Estimated value
	Species	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**£/tonne**	**£**
ENGLAND	Rainbow trout	3774.9	2220.4	2113.9	-	8109.2	2,200	17,840,341
	Common carp (mirror, hybrid-crucian)	5.0	15.8	112.2	-	133.0	13,000	1,728,805
	Brown trout	32.0	19.5	266.7	-	318.2	2,400	763,582
	Freshwater bream	-	8.1	10.8	-	19.0	18,188	344,899
	Nile tilapia	101.8	-	-	-	101.8	3,200	325,901
	Tench (green, golden, varieties)	-	0.5	7.4	-	7.9	31,911	251,746
	Atlantic salmon	-	-	4.0	-	4.0	26,000	104,000
	Arctic char	7.3	-	0.4	-	7.7	5,500	42,240
	Crucian carp	-	-	1.8	-	1.8	19,731	34,727
	Roach	-	-	1.7	-	1.7	15,432	26,605
	Orfe (common, golden)	-	-	0.7	0.8	1.5	15,432	23,426
	Chub	-	-	0.7	-	0.7	25,904	17,200
	Eel	-	1.3	-	-	1.3	5,000	6,500
	Brook trout	0.5	-	-	-	0.5	10,000	5,000
	Barbel	-	-	0.1	-	0.1	32,518	4,650
	Rudd	-	-	0.3	-	0.3	17,030	4,292
	Perch	-	-	0.1	-	0.1	18,739	2,623
	TOTAL	3921.5	2265.6	2520.8	0.8	8708.8		21,526,536
WALES	Rainbow trout	102.5	-	145.39	-	247.8	2,200	545,248
	Sea-bass	190.0	-	-	-	190.0	4,500	855,000
	Brown trout	0.1	-	14.44	-	14.5	2,400	34,896
	Brook trout	-	-	0.3	-	0.3	10,000	3,000
	TOTAL	292.6	0.0	160.1	0.0	452.7		1,438,144

Time series (2010-2012) are collated for production tonnages, farm-gate price and value in Table 5. Two changes are of note for 2012: there was an increase in the production and value of rainbow trout in England; sea bass production decreased markedly, halving the apparent value of the Welsh finfish farming industry (Table 5). However, no longer term trends are discernible. Fluctuations in the estimated farm gate price are recognised, and suggestions to improve the accuracy of these estimates would be welcome.

Table 5: Time series (2010-2012) of production tonnages, estimated farm gate price, and value of finfish species farmed in England and Wales.

	Species	Annual production (tonnes)			Estimated farm gate price (£/tonne)			Estimated value (£)		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
ENGLAND	Rainbow trout	7,524.5	6,567.0	8,109.2	2,400	2,200	2,200	18,058,800	14,447,400	17,840,341
	Common carp (mirror, hybrid-crucian)	247.7	138.0	133.0	13,000	13,000	13,000	3,220.100	1,794,000	1,728,805
	Brown trout	447.9	393.0	318.2	5,000	5,000	2,400	2,239,500	1,965,000	763,582
	Freshwater bream	6.7	-	19.0	15,000	-	18,188	100,500	-	344,899
	Nile tilapia	135.0	186.0	101.8	2,200	3,200	3,200	297,000	595,200	325,901
	Tench (green,- golden, varieties)	11.9	4.9	7.9	18,000	18,000	31,911	214,200	88,200	251,746
	Atlantic salmon	8.1	4.5	4.0	26,000	26,000	26,000	210,600	117,000	104,000
	Arctic char	12.2	11.0	7.7	5,500	5,500	5,500	67,100	60,500	42,240
	Crucian carp	3.1	2.2	1.8	20,000	20,000	19,731	62,000	44,000	34,727
	Roach	3.9	4.5	1.7	6,000	1,250	15,432	23,400	5,625	26,605
	Orfe (common, golden)	-	-	1.5	-	-	15,432	-	-	23,426
	Chub	-	-	0.7	-	-	25,904	-	-	17,200
	Eel	-	-	1.3	-	-	5,000	-	-	6,500
	Brook trout	-	-	0.5	-	-	10,000	-	-	5,000
	Barbel	-	0.3	0.1	-	3,000	32,518	-	900	4,650
	Rudd	-	-	0.3	-	-	17,030	-	-	4,292
	Perch	-	-	0.1	-	-	18,739	-	-	2,623
	North African catfish	2.9	-	-	2,200	-	-	6,380	-	-
	TOTAL	8,403.9	7,311.4	8,708.8	-	-	-	24,499,580	19,117,825	21,526,536
WALES	Rainbow trout	288.0	257.0	247.8	2,400	2,200	2,200	691,200	565,400	545,248
	Sea-bass	473.2	490.0	190.0	4,500	4,500	4,500	2,129,400	2,205,000	855,000
	Brown trout	28.2	14.0	14.5	5,000	5,000	2,400	141,000	70,000	34,896
	Brook trout	0.3	-	0.3	11,500	-	10,000	3,450	-	3,000
	TOTAL	789.7	761.0	452.7	-	-	-	2,965,050	2,840,400	1,438,144

Rainbow trout continues to be the dominant finfish species farmed in England. Time series of statistics assembled from published sources are provided for rainbow trout production in England and other UK nations (Figure 1). In relation to Figure 1, please note that:

- Statistics for 1974-1976 were extracted from Lewis (1979)[1].
- Statistics for Scotland (1979-2012) were extracted from annual Scottish Fish Farm Production Survey reports[2].
- All other statistics were extracted from Trout News and Finfish News[3]. Data for 2008 are missing due to reporting of table production only (i.e. excluding restocking production). Data for Northern Ireland (and hence UK) were not published for 2002 and 2003. Data for England and Wales were not differentiated 1992-1993.

- The quality of the statistics can change over time. For example, Lyons (1991)[4] states that trout production in England over the period of 1988-1990 was stable despite the statistics showing a decline: this was because some major farms did not return data in the voluntary survey of the time.

Trout production in 2012 in all home nations was below previous peaks, with long-term declines apparent in Wales and Northern Ireland. England and Scotland remain the main producers of rainbow trout. Only Scotland reports production of sea-water grown rainbow trout, where the decline in production from freshwater has been partially offset by increased production from seawater.

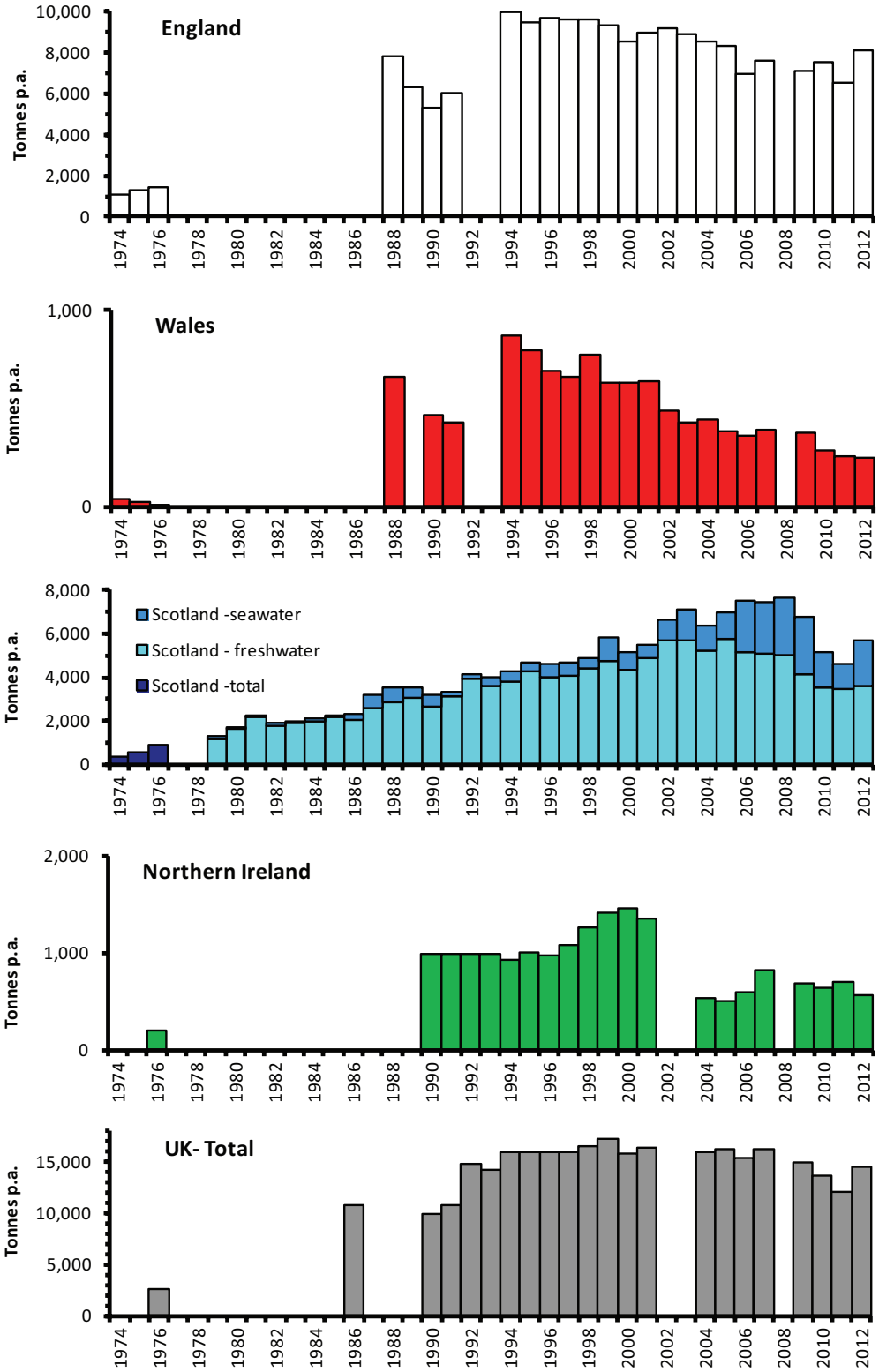

Figure 1: Time series of farmed rainbow trout (table and restocking) production in England, Wales, Scotland, Northern Ireland and whole UK. Scottish production split between freshwater and seawater production. Please note breaks in time series due to missing data rather than nil production.

Numbers of employees

Historically, employment has been reported as numbers of full time and numbers of part time / causal staff. However, requirements for reporting employees have changed, and the breakdown now required is by: sector, gender, and full time equivalent. The data for 2012 is presented in Table 6. In England, 823 staff were employed in finfish farms and 100 were employed in Wales, with the trout sector being the largest employer.

Table 6: 2012 employment across different sectors of the finfish farming industry in England and Wales. Species and employment categories reflect divisions according to EC Regulation No 199/2008. Farms were categorises by main species farmed. Trout includes rainbow trout, brown/sea trout, Arctic char, brook trout. Other freshwater fish includes species farmed for the table and coarse fishing.

		Trout	Salmon	Sea bass	Carp	Other FW fish	Ornamental/ importers	Total
ENGLAND	Male employees	342	20	-	140	63	118	683
	Female employees	58	5	-	23	14	40	140
	Total employees	400	25	-	163	77	158	823
	Male FTE	302	11	-	114	54	110	591
	Female FTE	26	3	-	12	8	27	76
	Total FTE	328	14	-	126	62	137	667
WALES	Male employees	52	8	25	0	1	4	90
	Female employees	5	1	3	1	0	0	10
	Total employees	57	9	28	1	1	4	100
	Male FTE	32	8	20	0	1	3	65
	Female FTE	5	1	0	1	0	0	7
	Total FTE	37	9	21	1	1	3	71

Employment data reported for previous years is collated within Table 7. Inter-annual variations are likely to be due to differences in collation rather than representing real changes.

Table 7: Time series (2009-2010) of total employment reported in finfish farming in England and Wales. Please note that collation and reporting of employment has differed over this time period.

		2010	2011	2012
England	Full-time employees	-	545	563
	Part-time employees	-	248	260
	Male employees	-	-	683
	Female employees	-	-	140
	Total employees	-	793	823
	Male FTE	-	-	591
	Female FTE	-	-	76
	FTE	-	657	667
Wales	Full-time employees	-	40	57
	Part-time employees	-	26	43
	Male employees	-	-	90
	Female employees	-	-	10
	Total employees	-	66	100
	Male FTE	-	-	65
	Female FTE	-	-	7
	FTE	-	52	71
England & Wales	Full-time employees	844	585	620
	Part-time employees	361	274	303
	Male employees	-	-	773
	Female employees	-	-	150
	Total employees	1205	859	923
	Male FTE	-	-	655
	Female FTE	-	-	83
	FTE	1006	709	738

Numbers of enterprises

In 2012, there were 247 authorised finfish enterprises (businesses) in England and 31 in Wales. The vast majority were small, employing less than 5 staff.

Table 8: 2012 enterprise (business) breakdown for different sectors of the finfish farming industry in England and Wales. Species and enterprise size categories reflect divisions according to EC Regulation No 199/2008.

		Trout	Salmon	Sea bass & sea bream	Carp	Other FW fish	Ornamental/ importers	Total
ENGLAND	Number of enterprises <=5 employees	100	5	0	64	25	31	225
	Number of enterprises 6-10 employees	5	2	0	3	3	2	15
	Number of enterprises >10 employees	4	0	0	0	0	3	7
	Total number of enterprises	109	7	0	67	28	36	247
WALES	Number of enterprises <=5 employees	22	3	0	1	1	2	29
	Number of enterprises 6-10 employees	1	0	0	0	0	0	1
	Number of enterprises >10 employees	0	0	1	0	0	0	1
	Total number of enterprises	23	3	1	1	1	2	31

Finfish aquaculture in Scotland and Northern Ireland in 2012

Summary data is provided for Scotland and Northern Ireland in Tables 9-11. Comprehensive data on the finfish farming industry in Scotland can be found in the annual survey report **www.scotland.gov.uk/Publications/2013/09/9210**.

Table 9: 2012 production (numbers) of finfish eggs and juveniles reported by finfish farms in Scotland and Northern Ireland.

		2012	2012
		Eggs	Juveniles
		1000s	1000s
Scotland	Atlantic salmon	90,100	44,000
	Rainbow trout	200	12,000
	Sea trout, brown	500	40
	Halibut	500	10
Northern Ireland	Atlantic salmon	900	37
	Rainbow trout	35,024	-
	Sea trout, brown	945	-

Table 10: 2012 production (tonnage) of finfish reported by finfish farms in Scotland and Northern Ireland.

			Harvest	Estimated price	Estimated value
	Species		tonnes	£/tonne	£
Scotland	Atlantic salmon	Seawater	162,220.4	3,200	519,105,280
	Rainbow trout	Freshwater	3593.8	2,200	7,906,426
		Seawater	2076.0	2,600	5,397,600
	Brown/Sea trout	Freshwater	34.0	2,400	81,528
		Seawater	8.2	2,600	21,346
	Arctic char	Freshwater	0.2	5,500	1,100
	Halibut	Seawater	73.0	6,000	438,000
	TOTAL		168005.6	-	532,951,280
Northern Ireland	Atlantic salmon	Seawater	c*	3,200	c*
	Rainbow trout	Freshwater	563.2	2,200	1,239,109
	Brown trout	Freshwater	44.4	2,400	106,646

c*: Confidential information due to limited number of companies

Table 11: 2012 employment and enterprise (business) breakdown for different sectors of the finfish farming industry in Scotland and Northern Ireland.

		Salmon Freshwater	Salmon Seawater	Trout	Other finfish	Total
Scotland	Full-time employees	235	944	79	25	
	Part-time employees	93	115	28	21	
	Total employees	328	1059	107	46	1,540
	Number of enterprises	28	22	25	22	
	Number of sites	100	257	48	30	
Northern Ireland	Total employees	7	10	46	-	63
	Total FTE	7	8	28	-	
	Number of enterprises <=5 employees	-	-	16	-	
	Number of enterprises 6-10 employees	1	1	4	-	
	Total number of enterprises	1	1	20	-	

Molluscan shellfish aquaculture in the UK in 2012

2012 Production tonnage and value

2012 data on the production and value of the UK shellfish farming industry is presented in Table 12. The total harvest was 27,360 tonnes with an estimated value of £33.2 million. Wales produced the highest tonnage of the UK nations, although the English industry had a higher value (due to higher unit price of Pacific oysters). The UK industry is dominated by mussels and Pacific oyster (95% and 4% of tonnage respectively; 82% and 15% of imputed value).

Table 12: 2012 Bivalve shellfish production in the UK, broken down by species (and technique) and country. Also included are estimated farm gate price and imputed value of production.

	Species	Method	Harvest	Estimated price per tonne	Imputed value
			tonnes	£/tonne	£
ENGLAND	Mussels	On/off bottom	5,965.7	1000	5,965,700
	Pacific (cupped) oyster	On bottom	850.0	4000	3,400,000
	European (flat) oyster	On bottom	85.9	7600	653,106
	Northern quahog (=Hard clam)	On bottom	8.6	3100	26,576
	Japanese carpet shell (=Manila clam)	On bottom	5.0	3100	15,500
	NATIONAL TOTAL		6,915.2	-	10,060,882
	% UK TOTAL		25%	-	30%
WALES	Mussels	On/off bottom	8,996.0	1000	8,996,000
	Pacific (cupped) oyster	On bottom	3.0	4000	12,000
	NATIONAL TOTAL		8,999.0	-	9,008,000
	% UK TOTAL		33%	-	27%
SCOTLAND	Mussels	Off bottom	6,277.0	1200	7,532,400
	Pacific (cupped) oyster	Off bottom	216.0	4400	950,400
	European (flat) oyster	Off bottom	25.0	7600	190,000
	Great Atlantic scallop	On bottom	7.0	14300	100,100
	Queen scallop	On bottom	0.4	2500	1,000
	NATIONAL TOTAL		6,525.4	-	8,773,900
	% UK TOTAL		24%	-	26%
NORTHERN IRELAND	Mussels	Off bottom	76.6	1200	91,920
	Mussels	On bottom	4,706.0	1000	4,706,000
	Pacific (cupped) oyster	On bottom	137.3	4000	549,200
	NATIONAL TOTAL		4,919.9	-	5,347,120
	% UK TOTAL		18%	-	16%
UNITED KINGDOM TOTAL	Mussels	On/off bottom	26,021.3	-	27,292,020
	Pacific (cupped) oyster	On/off bottom	1,206.3	-	4,911,600
	European (flat) oyster	On/off bottom	110.9	-	843,106
	Northern quahog (=Hard clam)	On bottom	8.6	-	26,576
	Japanese carpet shell (=Manila clam)	On bottom	5.0	-	15,500
	Great Atlantic scallop	On bottom	7.0	-	100,100
	Queen scallop	On bottom	0.4	-	1,000
	TOTAL		27,359.5	-	33,189,902

There was very little change (-1%) in the UK total mussel tonnage from 2011 to 2012, although the contributions from the four home nations changed slightly, with an increase from England and a decrease from Northern Ireland (Figure 2). Although UK mussel production is static, it is 31% lower than the 2008 peak in production (Figure 2).

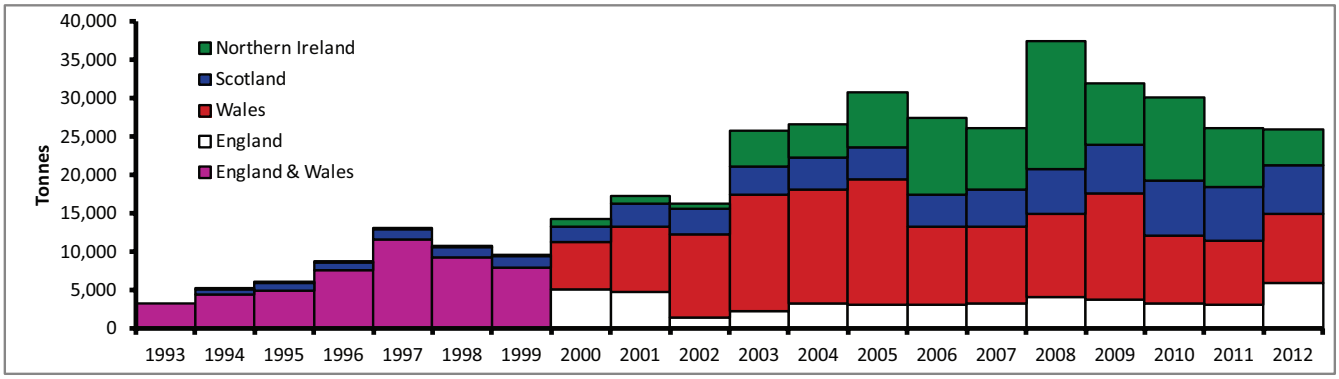

Figure 2: Time series of UK mussel production (tonnage), split by nation where reported.

There was a marked increase (+60%) in the UK Pacific oyster production from 2011 to 2012 (Figure 3): this was largely due to an increase in English production. Nevertheless, 2012 Pacific oyster production was 11% lower than the peak in 2009.

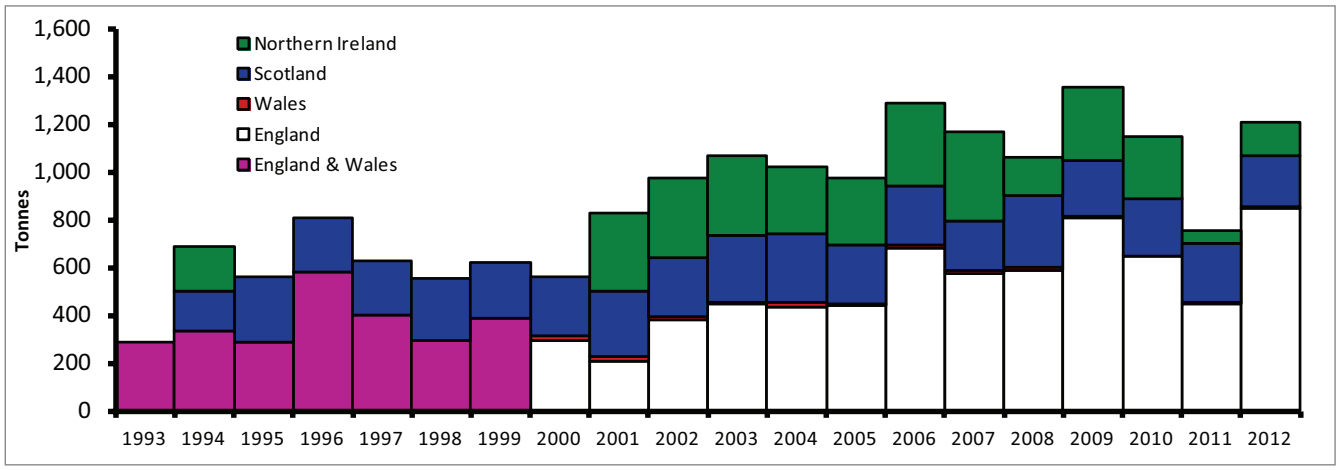

Figure 3: Time series of UK Pacific oyster production (tonnage), split by nation where reported.

The overall estimated value of the UK shellfish industry in 2012 (£33.2 million) represents a 74% increase from 2012 (Figure 4). This is largely attributed to changes in the estimated unit values (£/tonne) used to impute industry values.

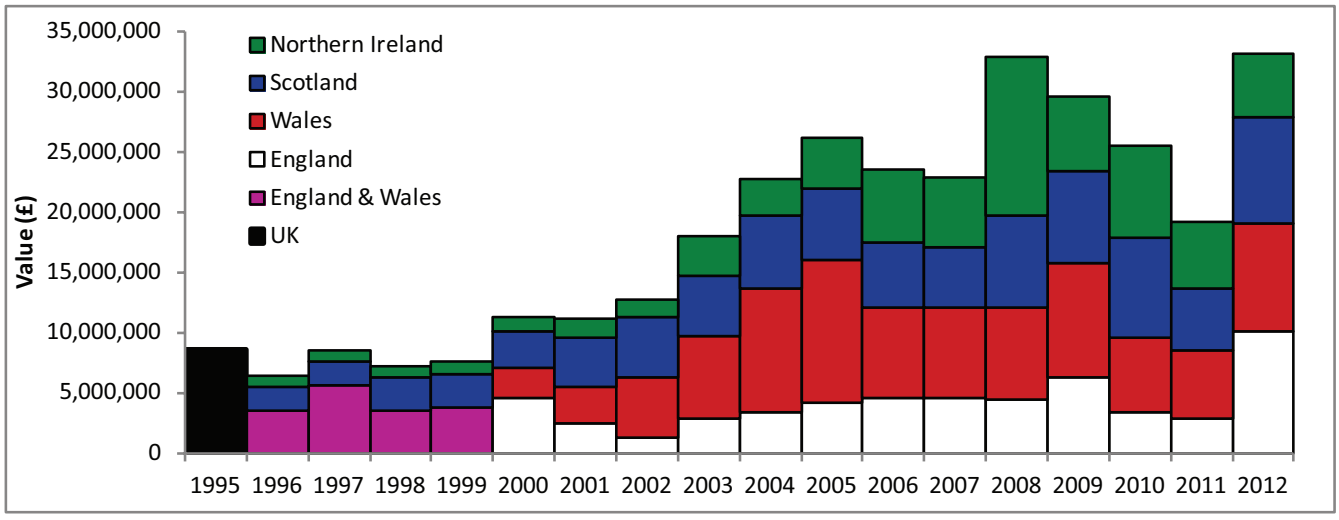

Figure 4: Time series of value of UK farmed bivalves, split by nation where reported.

Bivalve seed production

Production of seed for bivalve farming was only reported in England and Northern Ireland, the vast majority of which were Pacific oyster (Table 13).

Table 13: 2012 production of bivalve seed reported by UK shellfish farms.

	England	Wales	Scotland	Northern Ireland	UK total
	millions	millions	millions	millions	millions
Pacific (cupped) oyster	423.4	-	-	0.1	423.5
European (flat) oyster	-	-	-	0.2	0.2
Japanese carpet shell (Manila clam)	25	-	-	-	25

Bivalve seed taken from the wild

In 2012, the only wild seed reported to have been used by the industry was mussel (7,734 tonnes: Table 14). The available time series is too short to comment on inter-annual changes.

Table 14: Available time series of wild shellfish seed input to UK shellfish farming.

	Seed mussels	Seed flat oysters
	tonnes	tonnes
2010	7,763	-
2011	4,165	200
2012	7,734	-

Number of enterprises and employment

In 2012, 248 shellfish enterprises employed 705 staff across the UK (Table 15). Within England and Wales, the number of enterprises remained static in 2012, whereas employment increased by 35 to 292 (Figure 5). Within England, the coastline is divided into 6 marine plan areas **www.gov.uk/government/publications/marine-plan-areas-in-england**. Although shellfish farming occurs in all areas, the English industry is focussed along the south and east coasts (Table 16).

Table 15: 2012 enterprise and employment information for the UK shellfish farming industry.

	Number of Enterprises	Active Farm sites	FT employees	PT employees	Male employees	Female employees	Total
England	68	-	166	92	250	8	258
Wales	10	-	31	3	32	2	34
Scotland	153	330	171	187	313	45	358
Northern Ireland	17	-	-	-	-	-	55
UK	248	-	-	-	-	-	705

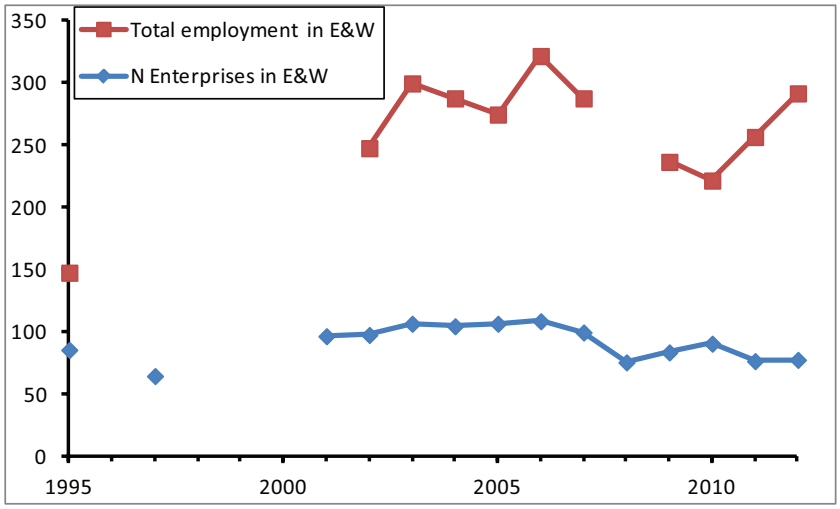

Figure 5: Available time series of total number of employees and number of enterprises engaged in shellfish farming in England and Wales.

Table 16: Enterprise and employment information for the shellfish farming industry in England, broken down by marine plan areas.

		From	To	Enterprises	Full time	Part time	Male	Female	Total
England	1: North East inshore	River Tweed	Flamborough Head	1	0	7	6	1	7
	3: East inshore	Flamborough Head	Felixstowe	15	54	26	79	1	80
	5: South East Inshore	Felixstowe	Folkestone	16	52	16	66	2	68
	6: South Inshore	Folkestone	Dartmouth	16	31	33	63	1	64
	8: South West inshore	Dartmouth	Chepstow	16	18	6	23	1	24
	10: North West inshore	Dee Estuary	Solway Firth	4	11	4	13	2	15
Total				68	166	92	250	8	258

Crustacean shellfish aquaculture in the UK in 2012

Crustacean aquaculture within the UK is limited to production of juveniles for release in stock enhancement and conservation schemes, and culture of tropical prawns. Reported crustacean production for the UK is summarised in Table 17.

Table 17: Time series of available information on production of cultured crustaceans in the UK.

	England	Wales	UK
	European lobster	White-clawed crayfish	Whiteleg shrimp (*Penaeus vannanei*)
	thousands	thousands	tonnes
2001	1	-	-
2002	2.2	-	-
2003	-	-	-
2004	2.2	-	-
2005	43	-	-
2006	7.7	-	-
2007	11	-	-
2008	5	-	2
2009	11	-	-
2010	12	-	-
2011	20	-	-
2012	2.5	0.055	-

References

[1] Lewis, M.R. (1979). Fish farming in Great Britain: an economic survey with special reference to rainbow trout. University of Reading, Department of Agricultural Economics and Management, Miscellaneous Study No 67,74pp.

[2] http://www.scotland.gov.uk/Topics/marine/Publications/FRS-Reports/FRS-Surveys

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[4] Lyons, V. (1991). 1990 survey of registered fish farms in England. Trout News12, 1-4.

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