



# Overview of the Welsh sea bass fishing fleet

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## 1 Executive Summary

- Here the ‘Welsh sea bass fishing fleet’ is defined as Welsh-registered commercial fishing vessels that derive the largest proportion of their fishing income in the given year from sea bass. In 2015 the Welsh sea bass fishing fleet comprised of 85 vessels.
- The Welsh sea bass fleet is characterised by an average vessel length of 5.7m and engine power of 49kW (2008 to 2015). These small vessels are restricted to fishing inshore waters in good weather conditions.
- The primary gear types used by the Welsh sea bass fleet to target sea bass are low impact rod and line and nets, including drift and fixed nets.
- On average fleet is 72% reliant on sea bass as a primary target species in terms of total catch weight, and 90% reliant on this species in terms of its contribution to total fishing income.
- Between 2008 and 2015 Wales contributed an average of 2% to total European sea bass landings.
- The socio-economic contribution of the Welsh sea bass fishery to coastal communities ranges from direct income and employment, the supply of high quality product to local retail and hospitality businesses, to an indirect contribution in operational costs.

## 2 Introduction

This report is being conducted in response to Welsh industry concerns during Seafish’s Annual Economic Fleet survey conducted during the summer of 2016. In particular, Welsh vessel owners and skippers reported concerns about the economic longevity of the commercial fishery for European sea bass (*Dicentrarchus labrax*) as a consequence of the potential incoming 2017 European Commission (EC) regulations.

The aim of this report is to give an overview of the unique size, composition and activity of the Welsh sea bass fishing fleet and to provide information regarding its socio-economic importance to local coastal communities. It is hoped that this report will form the basis of a full economic impact assessment in the future.

### 2.1 Current understanding of the sea bass fishery in Wales

Although the sea bass fishery in Wales is known to be small-scale and artisanal, there is currently little published data regarding the Welsh sea bass fishing fleet size, composition and activity. Furthermore, there is little information available on its contribution to the Welsh economy. This report intends to help fill these knowledge gaps using data collated by Seafish.

### 2.2 Overview of current approaches to management

European Commission (EC) technical conservation measures for sea bass were applied post 2014, following the UK formally requesting a reasoned opinion for the EC to impose emergency measures for the species. Table 1 depicts a time line of implemented conservation measures since 2014. It should be noted that prior to 2015 Minimum Landing Sizes (MLSs)

for sea bass in Wales were regulated through Welsh inshore fisheries byelaws. Under these byelaws the MLS for sea bass was 37.5 cm in the South Wales Sea Fisheries District and 36 cm in the North Western and North Wales Sea Fisheries District.

**Table 1.** EC conservation measures applied to the UK sea bass stock, 2015 to 2016 (Ares, 2016).

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<b>2015</b>
EC emergency conservation measures put in place
Mid water trawling with mesh >70 mm not permitted to catch, retain, or land bass until 30 <sup>th</sup> April 2015 in the Western Channel.
Maximum catch/month by gear type.
➤ 1800kg demersal trawling
➤ 1300kg long-line and line or rod
MLS increased from 36 and 37.5 cm (Wales) to 42 cm in size.
Limit on recreational anglers to 3 fish/day/angler

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<b>2016</b>
Ban on commercial (pelagic) trawlers until 30 <sup>th</sup> June 2016
➤ 1% bycatch for demersal trawlers
➤ Rod and line and fixed nets 1300 kg / vessel January and April to December.
Closed season February and March
Recreational fisheries catch and release only until 30 June 2016.
➤ 1 bass/day from 1 <sup>st</sup> July to 31 <sup>st</sup> December
Prohibited for vessels to fish quantities exceeding 1 tonne/vessel/month until 31 <sup>st</sup> December ICES divisions IVb, IVc, VIId, VIIf VIIa VIIg. and VIIh;

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<b>2017 measures of conservation to be confirmed</b>
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## 3 Overview of the Welsh sea bass fishing fleet

### 3.1 Definition of the Welsh sea bass fishing fleet

In this report ‘Welsh fishing vessels’ are defined as those which have their administration port in Wales (hereafter Welsh-registered). However, it must be noted that the location of the administration port may not be linked to the area in which the vessels catch and land sea bass.

The ‘Welsh sea bass fishing fleet’ has been defined as all Welsh-registered commercial fishing vessels for which sea bass is the ‘top target species’, i.e. sea bass represents the largest contribution to annual fishing income for a given calendar year. The size and composition of this fleet is presented in Section 3.2.1.

In addition to the Welsh sea bass fleet, other Welsh vessels land sea bass in Wales, but as a secondary target species or a bycatch species, rather than a top target species. These vessels are discussed separately in Section 3.2.2.

### 3.2 Fleet size and composition

#### 3.2.1 The Welsh sea bass fishing fleet

The number of vessels within the Welsh sea bass fishing fleet is shown in Table 2. This has been split into ‘active’ and ‘less active’ vessels, as well as into the main gear types utilised (i.e. those used for the largest number of days at sea). For the purpose of this analysis an active vessel is defined as vessels that earned over £10,000 revenues from value of landed fish in a given calendar year. A less active vessel is a vessel that earned less than £10,000 of revenues from fish landings in a given calendar year. When the number of vessels is less than 5 within a given year for a particular vessel category, the economic information is not provided for confidentiality reasons.

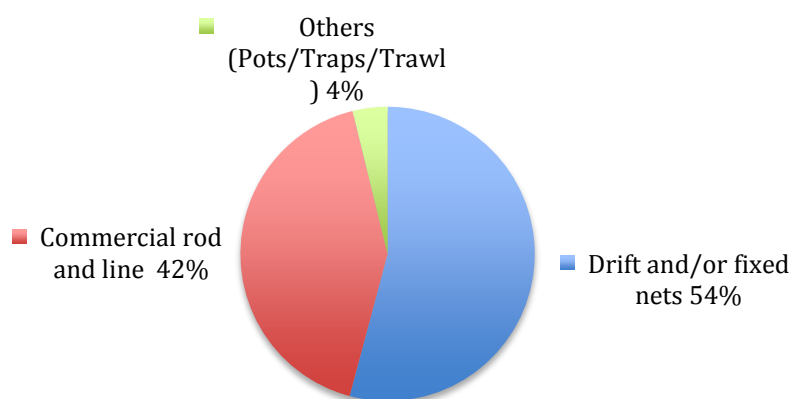
Table 2 shows that the number of vessels landing below £10,000 per annum is significantly larger than the number of active vessels with value of landing above £10,000. For example, in 2015 only 16 active fishing vessels across Wales were targeting sea bass, compared to 69 less active vessels. This low level of activity at an annual scale can be expected of a seasonal fishery.

Due to the seasonal, low activity nature of the sea bass fishery, it is uncommon for this fishing activity to be a vessel owner’s only means of income and many fishermen will complement their activity with a secondary employment, either targeting a different fishery or through non-fishing related work. During the interview phase of the 2016 Seafish Annual Fleet Economic Survey, for example, some local full-time fishermen informed the fleet researcher that they supplemented their sea bass fishing with cockle gathering.

**Table 2.** Number of vessels in the Welsh sea bass fishing fleet and the main gear types utilised. The total number of vessels has been split into ‘active’ and ‘less active’ vessels. Active vessel are defined as vessels that earned over £10,000 revenues from value of landed fish in a given calendar year, whereas less active vessels are vessels that earned less than £10,000 of revenues from fish landings in a given calendar year.

	2008	2009	2010	2011	2012	2013	2014	2015
<b>Active Vessels</b>	<5	11	5	12	13	15	20	16
<b>Less active vessels</b>	58	58	60	71	66	64	61	69
<b>Total</b>	62	69	65	83	79	79	81	85
<b>Active vessels</b>								
<b>Drift and/or fixed nets</b>	<5	10	<5	10	13	12	11	11
<b>Rod and Line</b>	<5	10	<5	7	11	9	14	11
<b>Less active vessels</b>								
<b>Drift and/or fixed nets</b>	30	32	34	50	48	33	32	44
<b>Rod and Line</b>	42	47	49	51	45	45	38	42

The two primary gear types currently used by the Welsh sea bass fishing fleet are nets (including drift and fixed nets, hereafter drift and / or fixed nets) and rod and line. These make up 54% and 42% of the total effort (days at sea) by the Welsh sea bass fishing fleet, when averaged over the time period 2008 to 2015 (Figure 1). Other gear types such as pots and traps and demersal trawling are used by this fleet segment, primarily to target other species, e.g. crab and lobster. Figure 1 indicates that use of these other gear types makes up only 4% of the total effort (days at sea) by the Welsh sea bass fishing fleet.



**Figure 1.** Fishing effort (days at sea) by the Welsh sea bass fishing fleet (including active and less active vessels) between 2008 and 2015.

Anecdotal information from fishermen suggest vessels are not restricted to one mode of fishing and in many cases a vessel geared up for drift and/or fixed netting will also utilise rod and line methods, as indicated by Table 2. Both Table 2 and Figure 1 indicate that total fishing effort on sea bass, in terms of number of vessels utilising the gear and total days at sea, is distributed fairly equally between netting and rod and line methods.

The average vessel length (m) of the Welsh sea bass fishing fleet is 5.7m with an average engine power of 49 kW (Table 3). These small fishing vessels can only operate at a limited, safe range from the shore and particularly in poor weather conditions. This restricts the activity of the Welsh sea bass fishing fleet.

**Table 3.** Average vessel length (m) and engine power (kW) of the Welsh sea bass fishing fleet, 2008 to 2015.

	2008	2009	2010	2011	2012	2013	2014	2015	Average
<b>Vessel Length (m)</b>	5.6	5.6	5.6	5.7	5.6	5.7	5.8	5.7	5.7
<b>Power (kW)</b>	50.0	48.6	45.3	47.6	47.0	51.8	50.1	49.8	48.8

Due to the close inshore nature of the Welsh sea bass fishing fleet activity, the use of drift and / or fixed nets or rod and line to target sea bass in Wales cannot be compared to large-scale oceanic versions of their counterparts, such as oceanic netting or long-lining. In comparison to large oceanic gill nets, for example, which can span several kilometres, those utilised by the Welsh fishing fleet are usually 200m. In addition to being negligible in terms of size, evidence presented by fishermen show that the mesh size used is often above the statutory size of 90mm. This has been seen to increase the survivability of bycatch, and the selectivity of nets for larger sea bass (Reis and Pawson, 1992; Cambiè et al., 2013).

At the small-scale at which the Welsh domestic fleet operate, the two primary methods used to commercially target sea bass in Welsh coastal waters (nets and rod and line) are considered to be highly selective and have very limited environmental impact (Pantin et al., 2015). This gear selectivity, together with the low level of fishing effort and the small size of vessels, is synonymous with the artisanal and sustainable nature of inshore bass fishery in Wales.

### 3.2.2 Other Welsh vessels for which sea bass is a secondary or bycatch species

In addition to the 85 vessels of the Welsh sea bass fishing fleet, for which sea bass is a ‘top target species’, a number of other Welsh vessels land sea bass as an occasional, secondary target or bycatch species. Table 4 indicates the number of these additional Welsh vessels that land sea bass, broken down into active and less active vessels. These additional vessels target a range of species, primarily using pots and traps and drift or fixed nets.

**Table 4.** The number of Welsh vessels for which sea bass is a secondary or bycatch species, including total vessels and a breakdown of active and less active vessels.

	2008	2009	2010	2011	2012	2013	2014	2015
<b>Active vessels</b>	42	44	43	47	53	43	41	38
<b>Less active vessels</b>	39	40	41	45	48	40	36	40
<b>Total</b>	81	84	84	92	101	83	77	78

Sea bass also supports a large recreational industry in Wales. A report by Monkman et al. (2015) on the Socio-economic and Spatial Review of Recreational Sea Angling in Wales estimated there were 76,000 anglers resident in Wales in 2012. Further analysis found that resident recreational sea anglers under took ~340,000 trips per annum, split between shore charters and private boat trips (Monkman et al., 2015).

### 3.3 Fleet activity

#### 3.3.1 Total sea bass landings

Table 5 indicates that the total weight of sea bass landed in Wales in 2015 was 61 tonnes. The majority of this sea bass was landed by the core Welsh sea bass fishing fleet, equating to a total of 54 tonnes. The 78 vessels that occasionally land sea bass as a secondary or bycatch species (Table 4) landed a total of 7 tonnes of sea bass in comparison in the same year, indicating that their fishing activity makes a minor contribution to total sea bass landings in Wales (Table 5).

Since 2008 Wales has contributed an annual average of 8% of the total weight of the UK sea bass landings, equating to 2% of the EU total sea bass landings (Table 5). This very small contribution further highlights the small-scale, artisanal nature of the Welsh sea bass fishery.

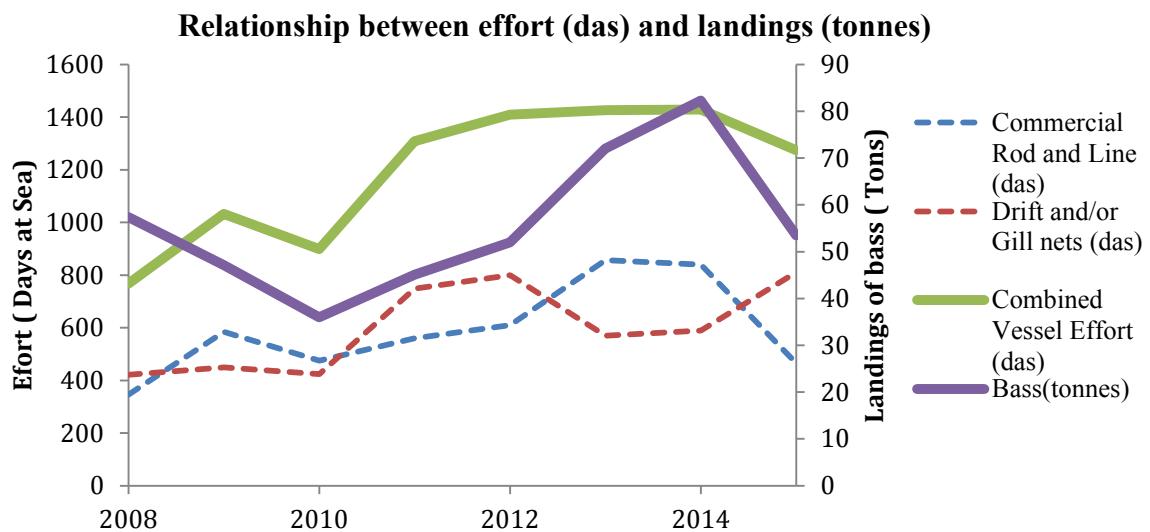
**Table 5.** Sea bass landings (tonnes) by the core Welsh sea bass fleet, other Welsh vessels (\*sea bass is a secondary target or bycatch species), all Welsh vessels, and the percentage contribution of these landings to UK and EU total landings (sourced from Seafish and ICES data, 2016)

Year	Wales – sea bass landings by the core Welsh sea bass fleet (tonnes)	Wales - sea bass landings by other Welsh vessels* (tonnes)	Wales – total bass landings by all Welsh vessels (tonnes)	% of UK weight of sea bass landings	% of total EU weight of sea bass landings
2008	57	16	73	9	3
2009	47	11	58	8	1
2010	36	10	46	6	1
2011	45	7	53	7	1
2012	52	13	65	7	2
2013	72	6	78	10	2
2014	82	9	91	9	3
2015	54	7	61	9	3
<b>Average</b>	56	10	66	8	2



A decline in sea bass landings in Wales has been observed 2014 to 2015 (Table 5). Changes in conservation strategies aimed at reducing fishing mortality were first implemented in 2014 (see Table 1), and this is expected to have had an effect on the weight of sea bass being landed.

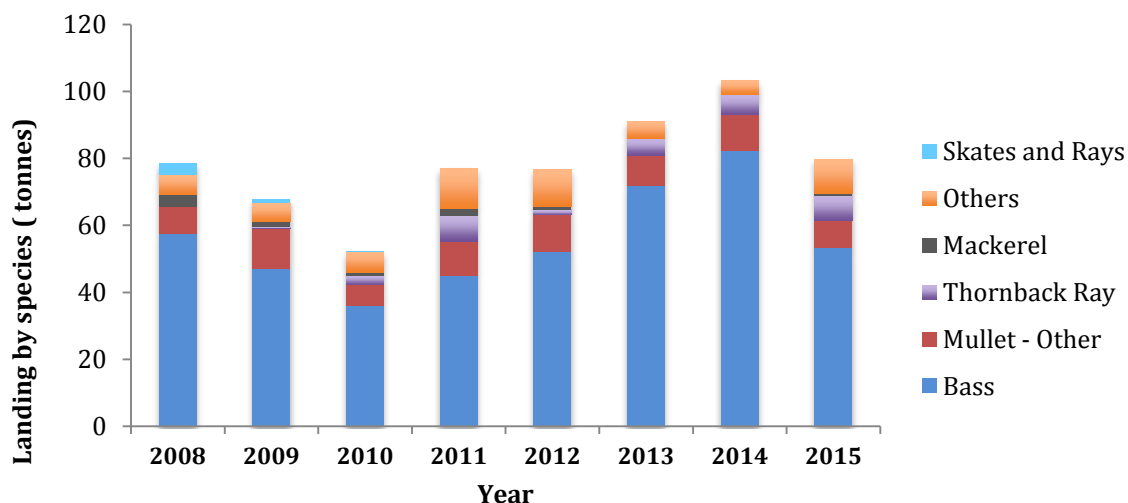
Figure 2 below shows relationship between fishing effort and landings of sea bass (tonnes) for the core Welsh sea bass fishing fleet, 2008 to 2015. The figure is split between commercial rod and line and drift and/or fixed net to show the trend in effort between gear types. This figure indicates that both fishing effort and sea bass landings declined between 2014 and 2015.



**Figure 2.** The relationship between effort (days at sea) and bass landings (tonnes) 2008 to 2015 for the core Welsh sea bass fishing fleet. ‘Combined vessel effort’ represents commercial rod and line and drift and/or fixed nets days at sea, as these are the primary gear types used by the fleet.

### 3.3.2 Catch composition of the Welsh sea bass fishing fleet

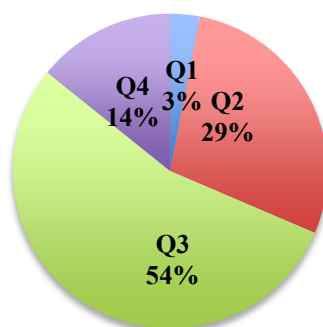
Figure 3 shows the catch or species composition of the total landings made by the Welsh sea bass fishing fleet, 2008 to 2015. After sea bass, mullet, thornback ray and mackerel are the main ‘secondary target’ species for this fleet segment. The figure highlights the limited range of ‘secondary’ species targeted by the Welsh sea bass fleet.



**Figure 3.** Catch or species composition of total landings (weight) made by the Welsh sea bass fishing fleet, 2008 to 2015.

### 3.3.3 Seasonality of the Welsh sea bass fishery

The seasonality of sea bass landings in Wales is demonstrated in Figure 4, which provides the average percentage of total annual landings per quarter, 2001 to 2014. Sea bass landings (weight) are lowest during Q1 (3%), whereas they are highest in Q3 (54%), followed by 29% being landed in Q2. This seasonal pattern is supported by anecdotal information from fishermen which suggests that April to September is the key sea bass fishing season. Anecdotal information also indicates that there is only 12 weeks optimum fishing time during neap tides over the course of a calendar year. During these limited periods of optimal fishing the Welsh sea bass fishing fleet can be further challenged with poor weather conditions.



**Figure 4.** The seasonality of the sea bass fishery in Wales demonstrated by average percentage of total annual landings per quarter, 2001 to 2014 (MMO data, received 12/10/15).

## 4 Socio-economic contribution of the Welsh sea bass fishing fleet to Wales

Wales has a vast geographical range and there are distinct differences in fishing activity between different regions. The sea bass fishery is largely concentrated in the south west, however an important fishery also exists in north Wales.

Although the Welsh fishing industry is one of the smallest in the UK, this industry makes an important socio-economic contribution to coastal communities and businesses. The fishing fleet provides direct income and employment, as well as fresh, local seafood to the retail and hospitality trade, helping to support a vibrant, coastal tourism industry. The fishing fleet also contributes indirectly to local businesses through operational costs, such as the purchase of fuel and fishing equipment.

### 4.1 Direct income and employment

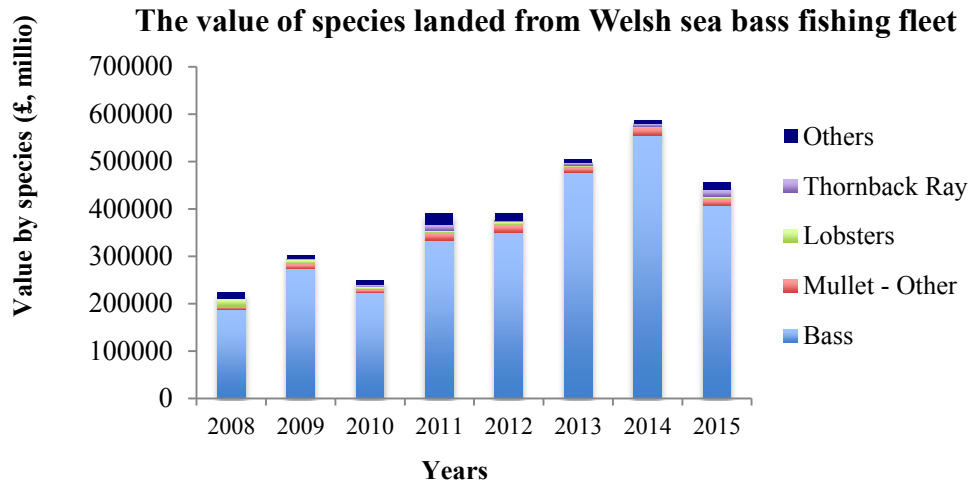
The total value of sea bass landings in Wales peaked at £612,521 in 2014. £554,792 of this total value was contributed by the core Welsh sea bass fishing fleet (Table 6). The value of landings dropped in 2015, corresponding with the observed fall in landing volumes (weight) (Table 5).

**Table 6.** The value of sea bass landings (£) made by all Welsh vessels, the core Welsh sea bass fleet, other Welsh vessels (\*sea bass is a secondary target or bycatch species) (Seafish, 2016)

	Value of sea bass landed (£)*		
	All Welsh vessels	Welsh sea bass fishing fleet	Other Welsh vessels*
<b>2008</b>	278,256	188,571	89,686
<b>2009</b>	341,745	274,169	67,575
<b>2010</b>	288,908	223,641	65,267
<b>2011</b>	382,518	334,045	48,473
<b>2012</b>	426,369	350,494	75,876
<b>2013</b>	521,142	477,585	43,557
<b>2014</b>	612,521	554,792	57,729
<b>2015</b>	459,083	407,153	51,930

\* Nominal value (unadjusted for inflation)

Figure 5 below suggests that 90% of the income generated by the Welsh sea bass fishing fleet vessels relies on sea bass. The limited number of secondary target species, primarily mullet and thornback ray, make a very small contribution to total income



**Figure 5.** The value of landings, by species, made by the core Welsh sea bass fishing fleet.

Not only does bass support local fishermen, but also local fish merchants. Anecdotal information indicates that both Welsh fishermen and Welsh fish merchants sell product directly to local restaurants, hotels, the fish and chip trade, as well as direct to customers (retail), thus supporting local businesses.

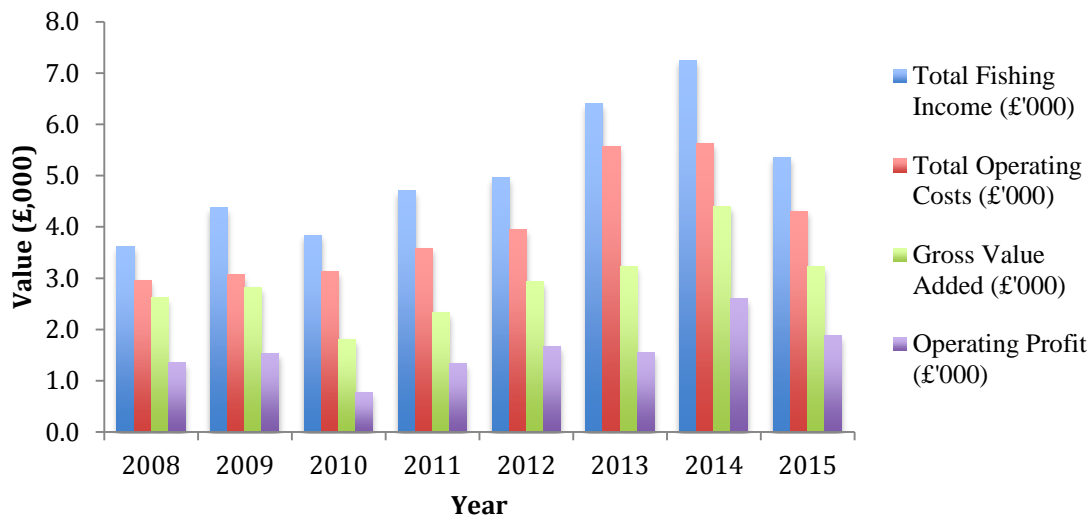
#### 4.2 Indirect value to economy

The Welsh sea bass fishing fleet also contributes to the economy indirectly through the money spent on the operational costs of fishing. Fuel, ice, bait, harbour dues, gear, vessel maintenance, crew share, food and transportation are all operational costs which fishermen incur to run their fishing businesses on a daily basis.

Gross value added is a measure of the value of goods and services produced by an industry. We calculate GVA as the sum of operating profit and crew share. GVA is used as a proxy for GDP, which can further be used as an indicator of the economic performance of a country.

Figure 6 shows an upward trend in the average total operational costs, total income, GVA and operating profit per vessel for the core Welsh sea bass fishing fleet between 2010 and 2014, followed by a decline after 2014. Figure 6 also indicates that on average, operating costs represent nearly 75% of a vessels total fishing income.

Anecdotal evidence suggests that many of the businesses that benefit from the money spent on operational costs are local, as sourcing locally reduces transportation costs to fishermen.



**Figure 6.** Average per vessel total operational costs, total income, GVA and operating profit for the core Welsh sea bass fishing fleet between 2010 and 2014.

## 5 Conclusion

The data in this report supports that the Welsh sea bass fishing fleet is small-scale and artisanal. A total of 85 fishing vessels with an average vessel length of 5.7m are 72% reliant on sea bass as a primary target species. The fleet utilises highly selective gears (drift and / or fixed nets and rod and line), and land low level of catches. The sea bass fishery is seasonal, with a higher proportion of sea bass being landed during quarter 3 (July-September), and the lowest being landed during quarter 1 (January-March). Quarter 1 corresponds with a closed season during February and March.

The total value of sea bass landings in Wales in 2015 was £459,083. £407,153 of this total value was landed by the core Welsh sea bass fishing fleet, for which sea bass contributes 90% of total fishing vessel income. In addition to providing direct income and employment, and supplying the retail and hospitality trade in coastal communities with fresh, local product, the Welsh sea bass fishery is likely to contribute indirect to the Welsh economy through the operational costs of fishing.

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