

# European Seabass

## (*Dicentrarchus labrax*)

### Summary

<b>Size (total length)</b>	Max 100 cm Common length 50 cm (FAO,2021)
<b>Lifespan</b>	30 years (Freyhof and Kottelate, 2008)
<b>Size of maturity (L<sub>50</sub>)</b>	35 cm Male 41 cm Female
<b>Fecundity</b>	200,000 eggs/kg (Haffray et al., 2000)
<b>Reproductive frequency</b>	Annual
<b>Capture methods</b>	Hooks and lines Bycatch – nets and trawls
<b>Minimum Conservation Reference Size</b>	42 cm
<b>Fishing Season</b>	April – January (peak in summer) Recreational March-November



### Description

The geographical range of the European seabass (*Dicentrarchus labrax* - referred to as bass throughout this document) extends from Norway to the Mediterranean and the coast of Morocco (Pawson and Pickett, 1987). Atlantic and Mediterranean fish could be considered almost subspecies due to differences in morphology, genetics, and life history traits (Lemaire et al., 2005).

Bass inhabit shallow coastal and estuarine habitats, favouring rocky reefs and sand banks (Pawson and Pickett, 1987). They are a predatory species that feed on a wide range of small schooling fishes, squids, crustaceans, and marine worms (Wheeler, 1978). Juveniles feed on invertebrates before progressing to fish (Freyhof and Kottelat, 2008).

### Reproductive Life history

In the mid-western English Channel bass begin spawning offshore from February and gradually move inshore over the spawning season, which ends in June (Pawson and Pickett, 1987). As surface water temperatures increase and exceed 9°C spawning activity spreads eastwards. From May, bass spawn in coastal waters between the Isle of Wight and Beachy Head (Pawson and Pickett, 1987; Pawson, 1995). Once the eggs have hatched the pelagic larvae slowly move inshore over a 2–3-month period (Haffray et al., 2000; Pawson and Pickett, 1987). After reaching 15 mm in length the larvae actively swim into estuaries, shallow bays and brackish water and remain in these nursery habitats for two years (Pawson, 1995). In their second- or third-year juveniles

migrate to overwintering grounds in deeper water, returning each summer to large estuaries until 5-years of age (Pawson, 1995). As adults, bass become more widely distributed throughout coastal waters and demonstrate strong site fidelity, returning to the same inshore foraging grounds each summer before migrating offshore in the winter (Pawson et al., 2007; ICES, 2012; Pawson and Pickett, 1987; Frehof and Kottelat, 2008). Large bass in the Channel migrate as far as northern Spain to spend the winter before returning to the south coast in the spring/summer (Pawson and Pickett, 1987).

Bass grow at a slower rate than other northern temperate round fish species, reaching approximately 33 cm in length after 4 years (Pawson and Pickett, 1987). Male and female juveniles grow at the same rate until they reach maturity with males maturing earlier than females (Pawson and Pickett, 1987). Subsequently females tend to be larger than males at a given age. Growth rates are also influenced by year class and location as areas or years with warmer water temperatures allow for greater growth conditions (Pawson and Pickett, 1987). Bass can grow to a maximum of 100 cm in length but more commonly grow to 50 cm and live up to 30 years (FAO, 2021; Freyhof and Kottelate, 2008).

### Size of maturity (SOM)

Size of maturity (SOM) is often used to help establish an appropriate Minimum Conservation Reference Size (MCRS) to ensure individuals can reproduce at least once before capture. For finfish, SOM is commonly accepted as the total length (L) at which 50% of a population are mature and is referred to as the  $L_{50}$ . Maturity in finfish is determined by the classification of gonad development based on macroscopic (external appearance of the gonad) or microscopic (histology) methods. Histological techniques (analysis of microscopic morphological features) provide the most accurate results, but it is a time consuming and expensive process. Maturity classification based on the external appearance of the gonad is quick, simple, and cheap however, it is not as accurate as histology and results may be subjective (Brown-Peterson et al., 2011).

In UK waters female bass have been estimated to reach 50% maturity at 41 cm, whilst males have been recorded to range between 35-40 cm (table 1). ICES (2018) estimated 75% of female and male bass in the UK are mature at 44 cm and 37 cm, respectively. In the English Channel size at first maturity (note first maturity is different to 50% maturity) has been shown to range from 31-41 cm for male bass and 36-46 cm for females (Dorel, 1987). Bass sampled in the Bay of Biscay mature at a similar size to individuals in UK waters (table 1).

Males generally mature earlier than females and at a smaller size (Kennedy and Fitzmaurice, 1972; Pawson and Pickett, 1987). Age at 50% maturity ranges from 4-7 years for males and 5-8 years for females (Armstrong and Readdy, 2013; Kennedy and Fitzmaurice, 1972). After reaching maturity bass can continue to spawn for up to 20 years (Pawson and Pickett, 1987).

Table 1. Size at maturity ( $L_{50}$ ) and size at first maturity\* estimates for European Seabass (*Dicentrarchus labrax*) in UK waters and the Gulf of Biscay. All measurements given in cm. Please refer to the Appendix for more information.

Location	Male	Female	Reference
UK	35	41	ICES, 2018
UK	40	-	Armstrong and Readdy, 2013
England & Wales	32-36*	>42*	Pawson and Pickett, 1996
English Channel	31-41*	36-46*	Dorel, 1987
Gulf of Biscay	32-37*	42*	Dorel, 1987

\*values represent size at first maturity not size at which 50% of the population are mature

The Minimum Conservation Reference Size (MCRS) for bass caught within the Southern IFC District is 42 cm total length. The most recent research provided by ICES concludes in UK waters 50% of male and female bass are mature at 35 cm and 41 cm respectively and 75% of males are mature at 37 cm. The current MCRS therefore provides an element of protection for immature bass by preventing their removal from the fishery before they have had the opportunity to reproduce at least once.

## Southern IFCA Fishery

### Fishing activity

Bass is the second most expensive commercial species caught in the North East Atlantic after the European Lobster (European Union, 2020). It is an important target species within the Southern IFC District and is mainly caught by hook and lines using handlines and pole-lines. This is a highly selective and low impact method of fishing where undersized specimens can quickly be returned to the sea unharmed upon capture. The sustainability of hook and line caught bass attracts higher prices compared to other methods (European Union, 2020). Bass used to be targeted by net and trawl fisheries within the District but the introduction of conservation measures in recent years only allows limited amounts of bass to be caught as bycatch by these gear types. Commercial bass fishing can take place throughout the year (excluding prohibited months outlined by the EU conservation measures) but the peak fishing season tends to be in the summer when mature bass move to shallow inshore waters to feed.

### Recreational

Bass is a highly prized sport and eating fish amongst recreational anglers and as such anglers play a significant role in the exploitation of bass with 25% of bass catches in England in 2012 estimated to be by anglers (Armstrong et al., 2013). Current regulations limit anglers to two bass per day from March to November. All bass caught between December and February must be released. Bass can be caught throughout the year in the Southern IFC District from the shore or a vessel. Many charter boats in the District offer trips to specifically target bass in the summer and autumn.

A recent review undertaken by the MMO to map recreational sea angling activity in England found bass to be the third most valued shore-based species in England after cod and whiting (MMO, 2020a). In the South Inshore Marine Planning Area (Devon and Severn, Southern and Sussex IFCA districts) bass is the most popular shore species targeted in the summer and spring, and second in autumn after cod (MMO,2020a).

## Landings & Value of Fishery

In 2019, 400 tonnes of bass was landed into England by UK vessels valued at £3.9 million (MMO, 2019). Alongside sole and turbot, bass commands the highest price of demersal species landed into the UK at over £10,000 per tonne (MMO, 2019). The high price is likely a result of a reduced supply due to restrictions placed on vessels fishing for bass since 2015 (MMO, 2019).

Landings of bass into ports within the Southern IFC District between 2006 and 2015 remained fairly consistent ranging between 110 to 140 tonnes each year (excl. 2014) (figure 1\*). In 2014 landings increased substantially to 211 tonnes before falling back to 122 tonnes in 2015. From 2015 onwards annual landings declined slightly to an average of 106 tonnes per year except for 2018 when landings fell to 76 tonnes. The slight decline is in line with the introduction of bass fishing restrictions. As previously mentioned, the price of bass has increased since the introduction of restrictions from around £8,800 per tonne in 2015 to £11,000 per tonne in 2019.

The number of bass removed from the fishery through recreational angling is not known, neither is the economic value of the recreational bass fishing sector.

\*these figures represent vessels that land into ports in the Southern IFC District, some of which would have fished outside the district and be >12 metres in length.

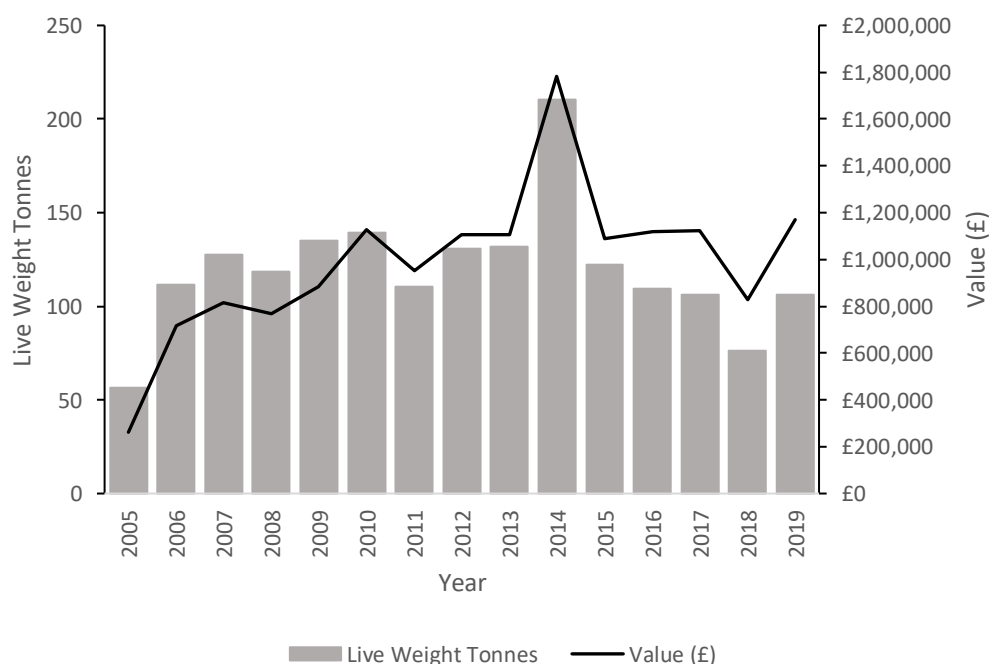


Figure 1. Landings of European seabass (*Dicentrarchus labrax*) into ports within the Southern IFC District from 2005 to 2019. Data sourced from the Marine Management Organisation (MMO)

In 2014, ICES recommended an 80% reduction in bass landings across Europe. Since 2015 emergency measures have been in place to reduce fishing mortality of bass stocks (commercial and recreational). The latest ICES advice (2020) outlines fishing pressure on bass stocks in the English Channel is low and within sustainable limits. Spawning stock size, however, is below sustainable levels (ICES, 2020, 2019). ICES advises in 2021 total bass removals in the English Channel, central and southern North Sea, Irish Sea, Bristol Channel and Celtic Sea should range between 1,680

tonnes and 2,000 tonnes (ICES, 2020). This is a slight increase on total removals advised for 2020 (between 1,634-1,946 tonnes) (ICES, 2019).

## Associated management

Commercial and recreational catches of bass within the Southern IFC District are subject to a Minimum Conservation Reference Size (MCRS) of 42 cm under EU regulation (EU regulation 2015/523). The MCRS was increased from 36 cm to 42 cm in 2015 to protect immature individuals from being removed from the fishery as female bass within the region mature around 42 cm in size. The MCRS is consistent around the UK.

Additional emergency measures were also introduced in 2015 to avert the collapse of the declining bass stock. Measures include restrictions for both recreational and commercial fisheries and as of July 2021 comprise of the following:

### **Recreational Bass Fishing Restrictions from a vessel or shore within the Southern IFC District (ICES divisions 7d & 7e)**

- Catch and release only between 1<sup>st</sup> January to 29<sup>th</sup> February and 1<sup>st</sup> December to 31<sup>st</sup> December
- Two bass per day may be retained by recreational anglers from 1<sup>st</sup> March to 30<sup>th</sup> November
- No bass to be taken by fixed nets

### **Commercial Bass Fishing Restrictions**

- Only commercial fishers with an authorisation from the Marine Management Organisation (MMO) are permitted to catch and retain bass
- Only certain gear types can be used under authorisation to retain un-avoidable bycatches of bass: fixed gill nets, demersal trawls and seines. Each gear type has specific associated catch limits.
- Vessels which have been authorised to fish for bass using hooks and lines may retain up to 5.7 tonnes per calendar year (correct as of 2021)
- In the ICES Divisions that cover the Southern IFC District (7d and 7e) fishing for bass is prohibited in February and March. Fishing can take place from April to January
- All bass bycatch must be discarded unless a fisher has authorisation to retain bycatch outside of the prohibited months of February and March

Although catch limits are in place bass are not a quota species and therefore not subject to EU TACs (Total Allowable Catch).

In 1990, 34 designated bass nursery areas were introduced in England and Wales to protect juvenile bass and in 1999 the number of nursery areas was increased to 37 (Statutory Instrument 1999 No 75 The Bass (Specified Areas) (Prohibition of Fishing) (Variation) Order 1999). In the Southern IFCA district there are seven bass nursery areas that prohibit bass fishing from a vessel between 30<sup>th</sup> April and 1<sup>st</sup> November.

For more details on the emergency bass measures refer to the MMO's statutory [Bass Fishing Guidance 2021](#).

## References

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## Appendix

Table A. Size at maturity estimates ( $L_{50}$ ) for European bass (*Dicentrarchus labrax*) in the United Kingdom and Gulf of Biscay. Measurements given in cm for total length ( $L_{50}$ ).

Study location	Total No. surveyed	No. of individuals (n)		Length Data		Size at Maturity Data										Reference	
				Size range		Total No. of individuals	No. of individuals (n)		Size of smallest mature individual		Size at 50% maturity ( $L_{50}$ )		Size at 100% maturity ( $L_{50}$ )		Age at 50% maturity (years)		
		M	F	M	F		M	F	M	F	M	F	M	F	M		F
UK	-	-	-	-	-	1320	590	730	-	-	35	41	-	-	-	-	ICES, 2018
UK	-	-	-	-	-	-	-	-	300	-	40	-	50-55		6	-	Armstrong and Readdy, 2013
England & Wales	2205	-	-	-	-	1657	-	-	-	-	32-36*	>42*	-	-	-	-	Pawson and Pickett, 1996
English Channel	498	-	-	2-69		-	-	-	-	-	31-41*	36-46*	-	-	-	-	Dorel, 1987
Gulf of Biscay	1567	-	-	6-82		-	-	-	-	-	32-37*	42*	-	-	-	-	Dorel, 1987

\*first maturity not 50% maturity