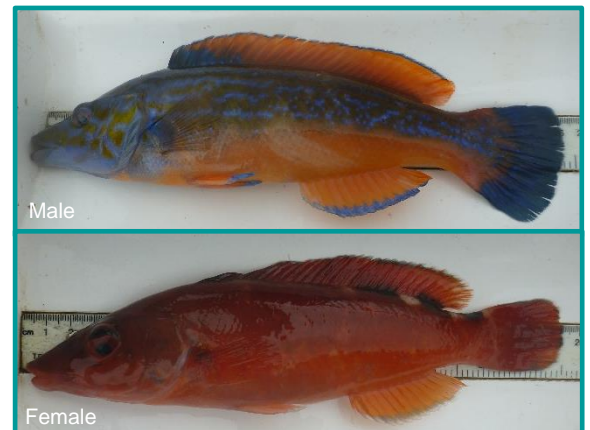


Cuckoo Wrasse

(*Labrus mixtus*)

Summary

Size (total length)	35 cm (Wheeler, 1978)
Lifespan	13-17 years (Matić-Skoko et al., 2013; Wheeler, 1978)
Size of maturity (L₅₀)	15-16 cm female 24-25 cm male
Fecundity	-
Reproductive frequency	Annual
Capture methods	Bycatch pots, nets, trawls
Minimum Conservation Reference Size	-
Fishing Season	Year round



Description

The cuckoo wrasse (*Labrus mixtus*) is distributed in the north east Atlantic from Norway southwards to Senegal, including the United Kingdom, Ireland, Azores and the Canary Islands. The species is also widespread in the Mediterranean (Pollard and Afonso, 2010). Cuckoo wrasse prefer rocky reef habitat with algal cover at depths of 30-90 m and are typically solitary or found living in pairs (Lythgoe and Lythgoe, 1971; Heessen et al., 2015 cited in Riley et al., 2017; Pollard and Afonso, 2010). Their diet is primarily comprised of crustaceans such as crabs and gastropods such as whelk but they will also prey upon bivalves, worms, starfish, small fish and sea urchins (Matić-Skoko et al., 2013).

Reproductive Life history

The cuckoo wrasse is a protogynous hermaphrodite meaning individuals are all born as females and some will change sex to male later in life. The transition from female to male takes around seven months to complete and is dependent on size and the proportion of the sexes in the local population (Sadovy and Shapiro, 1987; Naylor, 2005). The spawning season for cuckoo wrasse spans from May to July and involves complex nest building behaviour by the male (Darwall et al., 1992). Males create a nest, usually by selecting a depression in a gravel bottom or by building with seaweed and put on an elaborate display to attract females (Lythgoe and Lythgoe, 1971; Wheeler, 1978; Pollard and Alfonso, 2010). The female lays sticky benthic eggs in the nest for the male to fertilise and then leaves the male to guard the nest (Darwall et al.,

1992). The number of eggs laid is not fully known but Golani et al, (2006) (cited in Riley et al., 2017) states that females lay around 1,000 eggs. Once the eggs hatch the larvae feed on zooplankton until metamorphosis at 9-10 mm in length (Darwall et al., 1992). The ability of the larvae to disperse in the plankton is limited due to the reproductive method of benthic spawning in contrast to pelagic spawning.

During the first four years of life growth is relatively fast before slowing down considerably once individuals have matured. Males grow at a slightly higher rate than females (Matić-Skoko et al., 2013). Cuckoo wrasse grow to a maximum length of 35 cm and can live for 17 years (Wheeler, 1978). However estimated longevity for cuckoo wrasse in the Adriatic Sea, based on more recent data collection, is 13 years (Matić-Skoko et al., 2013). Cuckoo wrasse is a non-migratory species which can inhabit the same area for much of its life (Gomon and Forsyth, 1990 cited in Matić-Skoko et al., 2013).

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).

There is very limited, accessible data available for the maturity of cuckoo wrasse. Darwall et al, (1992) reviewed the life histories of wrasses and summarised that female cuckoo wrasse become sexually mature at 16 cm in length and two years of age and males mature at 24 cm between 6-9 years old. However, it is not clear whether these figures refer to 50% maturity. One study was found that assessed 50% maturity in cuckoo wrasse located in the Adriatic Sea. SOM was estimated at 15.2 cm and 25.2 cm for females and males, respectively (Matić-Skoko et al., 2013). These figures are very close to those outlined by Darwall et al, (1992). The smallest mature female encountered was 13 cm and all females above 19 cm were mature. All males were mature at 29 cm and the size at which sexual inversion takes place was estimated around 26 cm (Matić-Skoko et al., 2013).

Table 1. Size at maturity (L_{50}) estimates for cuckoo wrasse (*Labrus mixtus*) in European waters. All measurements given in cm. Please refer to the Appendix for more information. *may not refer to 50% maturity

Location	Male	Female	Reference
Northern Europe	24*	16*	Darwall et al., 1992
Eastern Central Adriatic Sea	25.2	15.2	Matić-Skoko et al., 2013

Southern IFCA Fishery

Fishing activity

A live wrasse fishery emerged in the Southern IFCA district in 2015 to supply ballan, corkwing, goldsinny, rock cook and baillon's wrasse to UK Salmon farms for use as live pest control within salmon cages. Under Southern IFCA's 'Wrasse Fishery Guidance Measures' cuckoo wrasse are a prohibited species and must be immediately returned if caught. The live wrasse fishery predominantly takes place around the ports of Weymouth and Portland using fish traps and rod and line (Smith and Henly, 2021).

Cuckoo wrasse may be caught as bycatch in pot, net, and trawl fisheries but as wrasse species are generally not viewed as edible and are rarely sold for consumption in the UK they are often discarded or used as bait (Riley et al., 2017).

Recreational

Wrasses are important recreational angling species with the two main species of interest being the cuckoo wrasse and ballan wrasse. Cuckoo wrasse can be caught by shore anglers, but they tend to inhabit deeper water. Charter boats offer inshore trips to target multiple species including wrasse throughout the year in the District.

Landings & Value of Fishery

Landings of wrasse are recorded under a generic wrasse species code therefore it is not possible to identify wrasse landings down to species level (excl. ballan wrasse from 2018 onwards). However, there is thought to be no landing of cuckoo wrasse in the Southern IFCA district (IFC Officer, personal communication, 19 April 2021).

Associated management

In 2017 Southern IFCA developed 'Wrasse Fishery Guidance Measures' as a first alternative to a byelaw to protect the long-term sustainability of wrasse populations within the Southern IFCA district and maximise the enjoyment of the species by other users. Should the non-statutory approach prove ineffective, Southern IFCA will consider the introduction of regulatory measures to manage the wrasse fishery. Under the Wrasse Fishery Guidance Measures cuckoo wrasse are a prohibited species and should be returned to the fishery immediately if caught. Measures also include minimum and maximum conservation reference sizes for ballan, corkwing, rock cook and goldsinny wrasse, six no take zones and a suite of additional effort limitation, biosecurity and husbandry measures (Southern IFCA, 2017).

Outside of the live wrasse fishery there are no existing management measures for cuckoo wrasse in the Southern IFC District.

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Appendix

Table A. Size at maturity estimates (L_{50}) for cuckoo wrasse (*Labrus mixtus*) in European waters. Measurements given in cm for total length (L_{50}). *figures provided as part of a review on wrasse life histories. No information provided on sample size and if values represent 50% maturity

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 sexual inversion	Age at 50% maturity (years)		
		M	F	M	F		M	F	M	F	M	F				
Eastern Central Adriatic Sea	197	84	107	19.7-38.2	13-34	-	-	-	-	13	25.2	15.2	26	-	-	Matić-Skoko et al., 2013
Northern Europe	-	-	-	-	-	-	-	-	-	-	24*	16*	-	6-9*	2*	Darwall et al., 1992