Sussex IFCA
Inshore Fisheries and Conservation Authority

Sussex IFCA Fish ID Guide

Focussing on species and life stages caught on small fish surveys

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Acknowledgements

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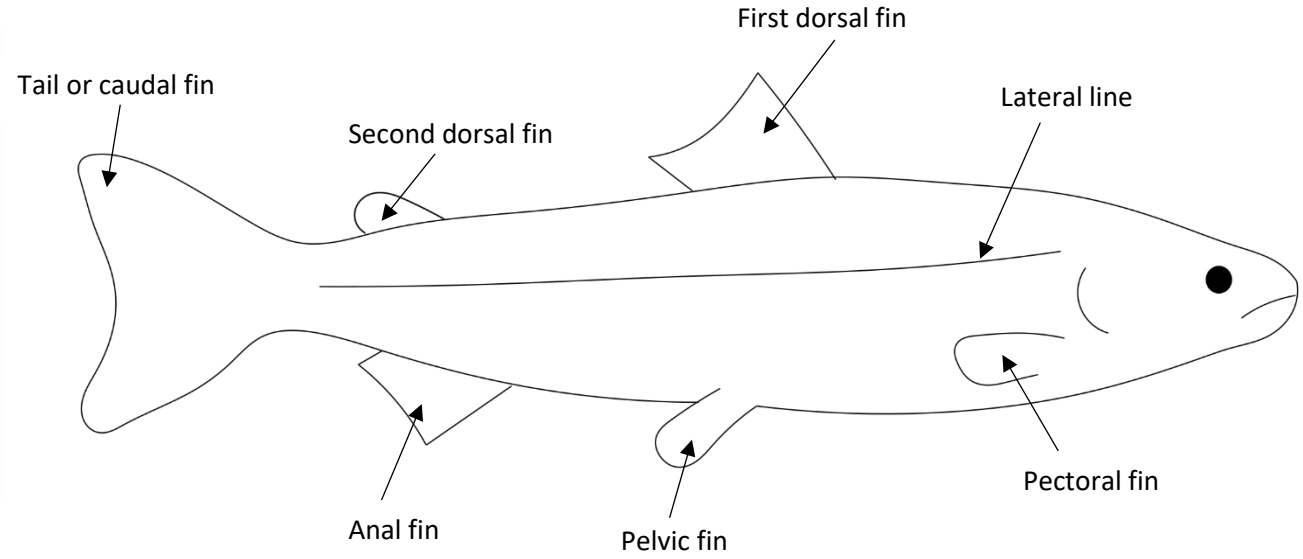
Introduction

For a number of years, Sussex IFCA has been conducting fish surveys in collaboration with a range of partner organisations. During this time, we have gained a great deal of experience in identifying small fish - both the juvenile stages of larger fish and those fish which are relatively small when fully grown. Whilst there are a number of fantastic fish identification books available, we have found that they focus on the adult features. For some species, the juveniles look quite different to the adults. We also found it frustrating to be looking through a book with several hundred species, when we have caught 'only' seventy different species in Sussex and catch only a fraction of these regularly. In addition, we wanted some simple, key features to look for whilst out on the beach or on a boat. We didn't want to be counting fin rays or judging the size of the caudal peduncle compared to the operculum, for example, or comparing a feature relative to another species which we had not caught.

To that end, this guide aims to:

- Minimise technical language,
- Highlight clear, simple, key identifying features,
- Provide photographic examples of what the species is likely to look like at various life stages, in particular as a juvenile. The photographs used in this guide were taken on fish surveys in Sussex. This is what the fish we catch actually look like.

Whilst we have endeavoured to minimise technical language, a basic understanding of the parts of a fish are useful, as indicated below.



There is a mnemonic (FLEMMS) that can help you systematically look at the features of a fish for identification purposes:
Fins: number, shape, colour and relative size of the dorsal, tail, anal, pelvic and pectoral fins
Lateral line: shape, colour and prominence
Eyes: position on the head, relative size
Mouth: position and angle on the head, relative size, shape, relative length of the jaws, lips, barbels, spines
Markings: spots, lines, patterns, stripes, blotches, colour (although this can be very variable)
Shape: the general body shape or outline of the fish, size

Bass *Dicentrarchus labrax*

Key identification features

Bass have two dorsal fins, the first spiny and the second with soft rays. The tail fin is large and concave. The scales are large and obvious and the curved lateral line is clearly visible. Young fish may have scattered dark spots on the back and sides. Very young bass are pale, almost translucent, with dark lines dorsally and ventrally in front of the tail.

Age class	Size mm
Gp-0	1-69
	70-89
Gp-1	90-139
	140-169
Gp-2	170-209
	>210

Similar species

Juvenile bass can sometimes be confused with juvenile mullet, but bass have a distinctive lateral line, and often spots on the group 0-1 age classes.

Habitat preference

Bass can be found in a range of habitats, depending on their age. Adults are usually found in the vicinity of inshore rocky reefs but can be caught offshore down to 100 m. Young fish are often in estuaries and saltmarsh creeks. Young fish up to 40cm also tend to live close inshore up to the surf zone. Young bass are able to cope with a wide range of salinities.

Distribution

Bass are widely distributed across the northeast Atlantic ranging from northwest Africa to southern Scandinavia and are also present in the Mediterranean and Black Seas. Genetic studies show limited distinction between stocks and tagging studies have shown large migration patterns.

Breeding behaviour

Bass aggregate to spawn in the English Channel from February to May. The eggs are planktonic and hatch after a few days. As the larvae grow, they begin to aggregate and move steadily inshore. Upon reaching a specific development stage, they begin to swim towards their estuarine nursery habitats. The young bass remain in the nursery habitats for two years and then stay in inshore areas within 50 miles of their nursey grounds until 4-6 years old when they join the adult stock.

Other behaviour

Young fish often form shoals but older bass are more solitary, unless spawning.

Diet

Bass are predominantly carnivorous, feeding on fish, crustaceans and squid but will also take cephalopods and worms.

Predators

Bass are high in the marine food chain and thus have few predators but amongst these are larger bass, seabirds and marine mammals.

Fisheries

Bass are important for commercial and recreational fisheries. The stock has been in severe decline over the past few years. As bass don't mature until 6-8 years old, stock recovery could be slow. Bass are caught commercially by netters, trawlers and hook and lines, as well as by recreational anglers.

There is a minimum size of 42cm in EU waters. There are EU commercial catch limits and restrictions on recreational fishers. Bass Nursery Areas, such as Chichester Harbour, are designated areas to protect juvenile bass.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
8278	532	5851	1563	332
Average length = 66 mm			Range = 12-472 mm	
Relative abundance = 13%				

Maximum size	100 cm Common: 60 cm
Life span	25+ years
Size at reproductive maturity	Female: 40-45 cm Male: 31-35 cm
Age at reproductive maturity	Female: 5-8 years Male: 4-7 years

Gobies


Juvenile goby

Gobies are a family of small, mostly bottom dwelling fish. 14 species of goby have been found in British waters, 8 of which have been caught on Sussex IFCA fish surveys. They are a difficult group to identify to species level as the characteristics they share, such as their markings, size and colour, can be similar. Gobies less than 40mm are recorded as 'juvenile' as they are too small to identify to species level. Juvenile gobies made up 14% abundance of all gobies found. Gobies could be confused with blennies, but gobies have two separate dorsal fins, whereas blennies have a single long dorsal fin. Here are the eight species which have been found in Sussex.

Common – sandy colour, stout body, tolerant of low salinity

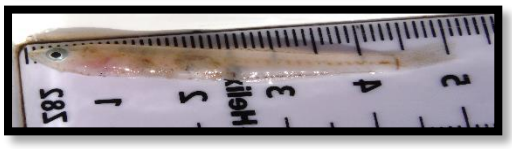
Sand – sandy colour, slim body

Rock – free fin rays on top edge of pectoral fins, stout tail

Black – black pelvic fin, triangular first dorsal fin, stout body

Painted – tall dorsal fins with dots in rows

Two spot – one spot at the base of the tail, slender body



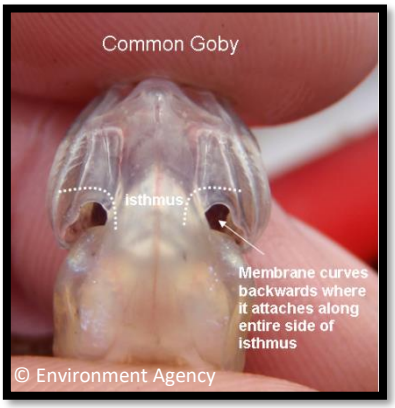
Transparent – pink area behind head, brown pigmentation dots along lateral line and top and bottom of body

Crystal – white with a few black pigmentation dots along top and bottom of body

Common goby *Pomatoschistus microps*

Key identification features
A moderately stout, tadpole shaped, sandy-coloured goby with darker patches on the sides. The common goby has black tinted pelvic and anal fins. They also have small, black triangular marks at the base of their pectoral fins. Males have a dark spot on the rear of the first dorsal fin. The membrane connecting the gill cover to the throat connects along its whole length and creates a smooth circular shape.

Similar species
Common gobies are very similar to sand gobies (page 8) but the common is stouter and its shape reminiscent of a tadpole, whereas the sand is more slender and carrot shaped. The common goby has black mark at the base of the pectoral fins but this is not always distinct. Another technique, used to separate these two species is to carefully hold the goby upside down and gently push its head back. The opening between the gill cover and the throat is more rounded and smaller than the sand. Consider fish welfare when using this technique. If unsure, record as juvenile goby.



Habitat preference
Common gobies preferably inhabit shallow waters with a soft, sand or mud substrate and estuaries. Common gobies can tolerate reduced salinities and are often found in estuaries and coastal lagoons; dominating upper less-saline reaches.

Distribution
The common goby is abundant around the coasts of the British Isles and they also occur in the North and Baltic Seas. Their range extends south to Mauritania on the North West coast of Africa. They also inhabit the western regions of the Mediterranean Sea.

Breeding behaviour
The common goby moves into shallow water from July to September to breed. The female can have a number of egg batches in one season and can lay up to 3,400 eggs. After the eggs are laid, the male will maintain and guard them.

Diet
The common goby feeds on small crustaceans, small molluscs, polychaete worms and some small fishes.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017					
Total	**Rye**	**Chichester**	**Newhaven**	**Medmerry**	**Cuckmere**
6166	23	5168	35	916	24
Mean size = 40.8 mm			Range = 15-70 mm		
Relative abundance = 10%					

Maximum size	9 cm
Life span	1-2 years
Size at reproductive maturity	6 cm
Age at reproductive maturity	7 – 12 months

Sand goby *Pomatoschistus minutus*

Key identification features
A slender, carrot shaped, sandy-coloured goby with dark spots or cross hatching across the back. Male sand gobies have a dark spot outlined in pale blue or white the rear of the dorsal fin. The membrane connecting the gill cover to the throat connects only at the front and creates a right angle, with the gill cover reminiscent of a bat wing.

Similar species
Very similar to the common goby (page 7) but the sand goby is generally more slender and carrot shaped. If you very carefully hold the goby upside down and gently push its head back, the opening between the gill cover and the throat is more open and like a bat wing, compared to the common. Consider fish welfare when using this technique. If unsure, record as juvenile goby.

Habitat preference
The sand goby has a strong preference for clean sand substrates, but can be found over other substrates such as mud and small gravel. The sand goby has no tolerance for low salinities and is not found in estuaries or coastal lagoons. During the winter months, most sand gobies migrate into deeper water.

Distribution
The sand goby is very common around the British Isles and their range stretches from the northern coasts of Norway to Gibraltar. The sand goby is also abundant in both the Mediterranean and Black Seas.

Breeding behaviour
Sand gobies lays eggs between March and July. The male will build a nest and make a drumming sound to attract a mate. The female will deposit her eggs into the nest, often the empty shell of a bivalve. The eggs and nest are then guarded by the male.

Diet
Sand gobies feed on a number of different organisms, a large proportion of their diet consists of small crustaceans but also includes small polychaetes, molluscs and fish larvae.

Fisheries
No commercial fishery exists for this species.

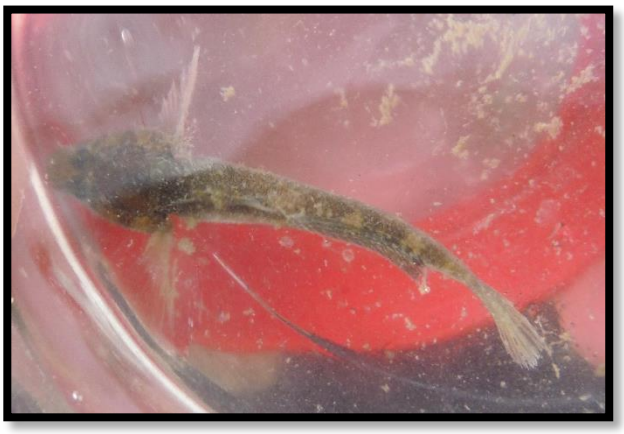
Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
5993	3670	600	1602	121
Mean size = 44.1 mm			Range = 5-72 mm	
Relative abundance = 10%				

Maximum size	7 cm
Life span	1 - 2 years
Size at reproductive maturity	6.5 cm
Age at reproductive maturity	10-12 months

Rock goby *Gobius paganellus*

Key identification features
Rock gobies are highly varied in their colour, from green to brown with mottled dark blotches and some specimens can be almost black. They have a creamy orange band along the top edge of the first dorsal fin. The upper fin rays of the pectoral fins are not connected by a membrane. Stout tail.

Similar species
Rock gobies may be confused with black gobies (page 10), as they can be similar in size, shape and colour. However, the rock goby has free rays on the upper edge of its pectoral fin, it has a creamy orange band along the top edge of the first dorsal fin and the pelvic fin of the rock goby is not black.



Habitat preference
The rock goby prefers hard substrates and is commonly found in rock pools and on rocky reefs, down to 15 m depth. Rock gobies can tolerate lower salinities and can be found in estuarine habitats.

Distribution
The rock goby is a common inshore species around the British Isles. The range of the rock goby extends from the coastal waters of southern Norway down to the coast of Senegal. They are also abundant in both the Mediterranean and Black Seas.

Breeding behaviour
The breeding season of the rock goby starts in April and continues until June. During this time, a female may lay multiple batches of eggs. The female deposits her eggs in crevices or under rocks and the nest site is guarded by the male.

Diet
Rock gobies are omnivores and their diet is quite general. Rock gobies frequently eat molluscs, worms and crustaceans, they will also feed on small fish and graze on a number of algal species.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
331	5	323	2	1
Mean size = 63.6 mm			Range = 36-115 mm	
Relative abundance = 0.55%				

Maximum size	13 cm
Life span	10 years
Size at reproductive maturity	6-7 cm
Age at reproductive maturity	3 years

Black goby *Gobius niger*

Key identification features
The black goby is a heavy-set goby with a broad body shape. Despite their name, only some individuals are black. Black gobies can vary in colour from light brown/grey to black. They often have dark spots or blotches and a black pelvic fin. They have two, comparably tall dorsal fins which have a black mark near the front edge. As adults, the rays of the first dorsal fin are elongated, forming a triangular shape and stand taller than the second dorsal fin.

Similar species
Black gobies may be confused with rock gobies (page 9), as they are similar in size, shape and colour. However, the black goby has a black pelvic fin and is chunkier in body shape with a taller, triangular first dorsal fin.

Habitat preference
Black gobies are an inshore species and can be found at depths ranging from 1 to 50 m. They prefer highly vegetated habitats over gravel, sand or mud substrates. Black gobies can tolerate lower salinities and can be found in estuaries and tidal lagoons.

Distribution
Black gobies are found all around the coastlines of the British Isles and also are found throughout the North and Baltic Seas. The range of the black goby extends from Norway to Mauritania and they also occur in both the Mediterranean and Black Seas.

Breeding behaviour
The black goby breeds between May and August. During the breeding season a female may produce a number of batches of eggs. The female will attach her eggs to the underside of a stone or shell and the males fertilises and then guard the eggs until they hatch.

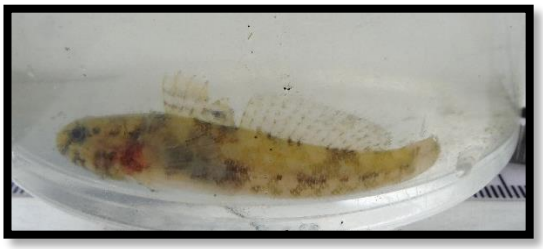
Diet
The black goby feeds on small crustaceans, small molluscs, polychaete worms and some small fishes.

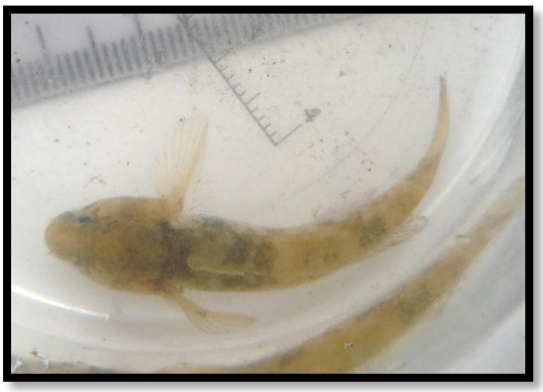
Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
200	1	198	1	0
Mean size = 64.4 mm			Range = 34-111 mm	
Relative abundance = 0.33%				

Maximum size	18 cm
Life span	5 years
Size at reproductive maturity	6 cm
Age at reproductive maturity	1-2 years

Painted goby *Pomatoschistus pictus*





Key identification features
The painted goby is slender and a light brown to yellow-olive in colour with darker brown patches. It has a row of four double dark brown spots along the sides, although these can be difficult to distinguish. It has tall dorsal fins with rows of dots, orange to dark brown in colour, sometimes with bands of iridescent pink and blue. There is often a dark spot on the front edge of the first dorsal fin.

Similar species
Painted gobies may be confused with common (page 7) or sand (page 8) gobies as the colouration, size and shape can be similar. However, the painted goby has taller dorsal fins with rows of spots across them.

Habitat preference
Painted gobies can be found at depths down to 55m. They prefer sandy or gravelly seabeds.

Distribution
Painted gobies can be found all around the UK coast, although they're rarely seen on the east coast of England, and are distributed in Western Europe from Norway to Spain, including the Canary Islands.

Breeding behaviour
Reproduction occurs January to July. Like other goby species, males establish territories and build nests under rocks and in crevices. Females enter the nest, attracted by the male's display, and lay their eggs in a single layer on the ceiling of the nest. The male provides parental care for the eggs. Males compete aggressively over nesting sites during the breeding season and actively defend their nest from other male intruders. Their displays include a variety of vocalisations, including thumping and drumming sounds.

Diet
Painted gobies feed on small crustaceans such as amphipods and copepods.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
40	0	40	0	0
Mean size = 53.1 mm			Range = 30-80 mm	
Relative abundance = 0.066%				

Maximum size	6cm, occasionally up to 9.5 cm
Life span	2 years

Two spot goby *Gobiusculus flavescens*

Key identification features
Only the male two spot, or two-spotted, goby actually has two spots; one at the base of the tail fin and one just behind the pectoral fins. The female only has one spot at the base of the tail. It is a slender goby, yellow to pale brown in colour with darker brown patches and cross hatching. They can be red to green-brown in colour. There can be bands of blue/white across the dorsal fins and tail fin. Breeding males have blue marking along the sides of their bodies. The eyes are more on the sides of their heads than on top, compared to other gobies.

Similar species
The two spot goby could be confused with the common (page 7), sand (page 8) or painted gobies (page 11) but it has a distinct spot at the base of the tail.

Habitat preference
Two spot gobies live in seaweed and seagrass in coastal areas down to 20m deep, often in loose shoals.

Distribution
They are common around the coast of the UK and can be found from Norway to Spain.

Breeding behaviour
Breeding occurs in the summer. The male makes a nest in the sand or under a rock. The female lays her eggs in the nest and the male guards them. The adults usually die after reproducing once. The juveniles move into deeper water over winter.

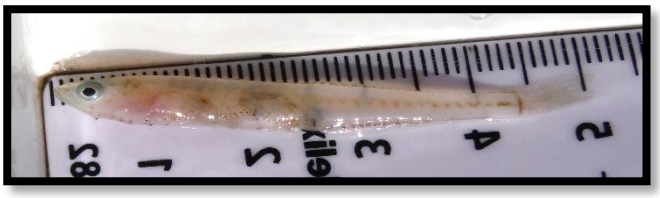
Diet
Two spot gobies feed on small crustaceans such as amphipods and copepods

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
24	1	23	0	0
Mean size = 40.5 mm			Range = 19-49 mm	
Relative abundance = 0.04%				

Maximum size	6cm
Life span	2 years

Transparent goby *Aphia minuta*



Key identification features
The transparent goby is, as the name suggests, almost transparent. Their internal organs can be seen clearly through their body. The body often has a pink tinge and a few lines of pigmented spots can be seen near the bases of the dorsal and anal fins as well as down the lateral line.

Similar species
The transparent goby may be confused with the crystal goby (page 14) but the transparent goby has a slightly larger dorsal fin and more colouring. The crystal goby has less pronounced or even no pigmentation down the lateral line and its body shape is more rounded.

Habitat preference
The transparent goby is a pelagic species of goby, living in the water column rather than near the seabed. They occur at a range of depths from 5 m down 100 m. Due to the pelagic nature of transparent gobies, they can be found over a range of seabed types. However, they are more abundant over soft substrates and eel grass beds.

Distribution
The transparent goby is a widely distributed species and is abundant off the coasts of many European nations. Their natural range covers the Faroe Islands and northern Norway down to Morocco. They are also abundant in the Mediterranean and Black Seas.

Breeding behaviour
The breeding season of transparent gobies starts in May and continues until August. The females will lay up to 2000 eggs on the seabed. A female transparent goby will lay two batches in a breeding season after which they die.

Diet
Transparent gobies feed entirely on small planktonic animals. These include, copepods, mysids and barnacle larvae.

Fisheries
Transparent gobies are a popular dish in both Spain and Italy, where they are eaten deep fried. Both of these nations support commercial fisheries

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
64	60	1	3	0
Mean size = 35.5 mm			Range = 16-55 mm	
Relative abundance = 0.11%				

Maximum size	6 cm
Life span	1 years
Size at reproductive maturity	5-6 cm
Age at reproductive maturity	9 months

Crystal goby *Crystallogobius linearis*

Key identification features
The crystal goby is almost transparent. Their internal organs can clearly be seen through their body. The body often has a pink tinge and a few lines of pigmented spots can be seen near the bases of the dorsal and anal fins.

Similar species
The crystal goby may be confused with the transparent goby (page 13) but the crystal goby has less pronounced or no pigmentation down the lateral line. It is a transparent, white crystal colour, compared to the transparent goby's brown/pink clear colour.

Habitat preference
The crystal goby can be found at depths of between 20 and 400 m. This pelagic species is not particularly influenced by the type of seabed but during the breeding season, crystal gobies prefer a soft substrate such as sand.

Distribution
The crystal goby is a pelagic species that occurs in the eastern Atlantic Ocean.

Breeding behaviour
Eggs are laid on the seabed May-August which are guarded by the adults. They breed when one year old and die shortly afterwards.

Diet
Small planktonic organisms, including copepods and rotifers.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
209	208	1	0	0
Mean size = 28.7 mm			Range = 20-42 mm	
Relative abundance = 0.34%				

Maximum size	5 cm
Life span	1 year
Size at reproductive maturity	4.5 cm
Age at reproductive maturity	10-12 months

Grey mullet

There are three grey mullet species in Sussex, which all have a torpedo-shaped body, large scales and two separate dorsal fins. They feed on the rich organic layer on the surface of the muddy seabed and browse on the algae found on rocks, and are often seen in marinas. They have a thick-walled gizzard-like stomach and a very long intestine. The adults leave these feeding marks on the surface on the mud.

Mullet less than 50 mm can be recorded as 'juvenile' as they are too small to identify to species level. Any handling is likely to be fatal with individuals smaller than this. Juvenile grey mullet made up 14% abundance of all grey mullet found. They are pale underneath and dark grey on top with rainbow-coloured dots, and no visible scales.

Golden grey mullet: Golden spot on gill cover. Pectoral fin is long, if bent forward it reaches to or beyond the eye.

Thin lipped grey mullet: Black mark at base of pectoral fin. Pectoral fin is short, does not reach eye if bent forward.

Bottom fish - Thick lipped grey mullet: Upper lip thick, at least half the diameter of the eye. Pectoral fin is long, if bent forward it reaches past the pupil of the eye.

Golden grey mullet *Chelon aurata*

Key identification features

The golden grey mullet has a long torpedo-shaped body with large scales and two separate dorsal fins. They are silver grey with longitudinal stripes. Golden grey mullet have a golden yellow spot on the gill cover. They also have a long pointed pectoral fin which, if folded forward, would reach the eye.

Similar species

The golden grey mullet could be confused with other grey mullets but the golden spot is distinctive, even on small fish.

To separate the golden grey mullet from thin lipped grey mullet (page 17), a comparison of the length of the pectoral fins is required with the fin reaching the eye in golden grey mullet, but not in thin lipped grey mullet.

To separate golden grey mullet from thick lipped grey mullet (page 18) a comparison of the size of the upper lip is required. The upper lip is over half the diameter of the eye in thick lipped grey mullet and under half the diameter of the eye in golden grey mullet.

Be very careful if moving their fins. If unsure of species, record as juvenile.

Habitat preference

Golden grey mullet is tolerant of brackish water and during the summer they can be found close inshore in sheltered bays, estuaries and lagoons over sand and mud. During the winters months they move offshore in to deeper waters.

Distribution

The golden grey mullet is found around many coastlines of European nations. The golden grey mullet prefers warmer waters and are abundant through the Mediterranean and the Atlantic coasts of Africa, Spain and Portugal. They are found through the English Channel and into the southern regions of the North Sea.

Breeding behaviour

Spawning of the golden grey mullet occurs in deeper water offshore, between July and November. Immature mullet spends the early part of their lives close inshore.

Diet

Golden grey mullet feed mostly on organic matter from the seabed. They will scoop up sediment and filter out algae and invertebrates from the mud. Golden grey mullet can leave grazing marks which can be seen on the surface of the mud.

Fisheries

All grey mullet species are targeted by small scale netting. Trawlers catch grey mullet species as non-target catch with 15t landed annually in Sussex. There is some recreational angling for mullet.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
1536	59	1365	47	65
Mean size = 124 mm			Range = 38-580 mm	
Relative abundance = 2.5%				

Maximum size	60 cm
Life span	20-25 years
Size at reproductive maturity	Female: 34 cm Male: 27 cm
Age at reproductive maturity	Female: 4 years Male: 3 years

Thin-lipped grey mullet *Chelon ramada*

Key identification features
The thin-lipped grey mullet has a long torpedo-shaped body with large scales and two separate dorsal fins. The key distinctive feature of the thin-lipped grey mullet is their short pectoral fins that do not reach the eye if folded forward. Thin lipped grey mullet also has a dark spot at base of pectoral fin.

Similar species
The thin-lipped grey mullet may be confused with other grey mullets but thin-lipped grey mullet has a dark spot at base of their pectoral fin. They can sometimes have a golden sheen on the gill cover but it is not a distinct spot like with the golden grey mullet (page 16). Be very careful if moving their fins. If unsure of species, record as juvenile.

Habitat preference
Thin lipped grey mullet is tolerant of brackish water and during the summer they can frequently be found in the inshore waters of sheltered bays, estuaries and lagoons. Thin lipped grey mullet prefers soft substrates such as sand and mud. During the winter months thin lipped grey mullet move offshore in to deeper waters.

Distribution
Thin lipped grey mullet is found around most of the coastal waters of the British Isles except for Scotland. They also occur along the eastern coasts of the Atlantic Ocean and North Sea from southern Norway South to North Africa. Thin lipped grey mullet can be found throughout the Mediterranean and Black Seas.

Breeding behaviour
Thin lipped grey mullet aggregate in inshore regions to spawn, September to February. The free-floating eggs drift out to sea where they develop and hatch. The juveniles then return back to inshore regions and spend the first few years of their lives in estuaries and sheltered bays.

Diet
Adult thin-lipped grey mullet feed primarily on benthic diatoms, algae, small invertebrates and detritus. Thin lipped grey mullet juveniles feed primarily on zooplankton.

Fisheries
All grey mullet species are targeted by small scale netting. Trawlers catch grey mullet species as non-target catch with 15t landed annually in Sussex. There is some recreational angling for mullet.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
726	386	70	116	154
Mean size = 103 mm			Range = 31-485 mm	
Relative abundance = 1.2%				

Maximum size	70 cm
Life span	10 years
Size at reproductive maturity	26 cm
Age at reproductive maturity	3 years

Thick-lipped grey mullet *Chelon labrosus*

Key identification features
The thick lipped grey mullet has a long torpedo-shaped body with large scales and two separate dorsal fins. A key distinctive feature of the thick lipped grey mullet is the length of the pectoral fin, when it is folded forward it reaches beyond the pupil of the eye. Another identifying feature is the thickness of their upper lip which is thicker than half the diameter of the eye.

Similar species
The thick lipped grey mullet could be confused with other grey mullet species. The thick lipped grey mullet does not have a dark spot at the base of the pectoral fin found on thin lipped grey mullet (page 17). They also do not have the golden spot on the gill cover that identifies the golden grey mullet (page 16). The thick lipped grey mullet has a thick upper lip which is at least half the diameter of its eye. Be very careful if moving their fins. If unsure of species, record as juvenile.

Habitat preference
The thick lipped grey mullet is highly tolerant of low salinities and adults are frequently found inshore in estuaries and brackish water bodies. Thick lipped grey mullet prefers soft substrates such as sand and mud but do occur over hard substrates as well.

Distribution
The thick lipped grey mullet is commonly found throughout the coastlines of Britain, Europe and northern Africa. They range from Iceland and Norway in the north down to Senegal in the south.

Breeding behaviour
Spawning occurs offshore during the winter and spring. The small immature fish spending the early part of their lives inshore.

Diet
Adult thick lipped grey mullet feed primarily on benthic diatoms, algae, small invertebrates and detritus. Thick lipped grey mullet juveniles feed primarily on zooplankton.

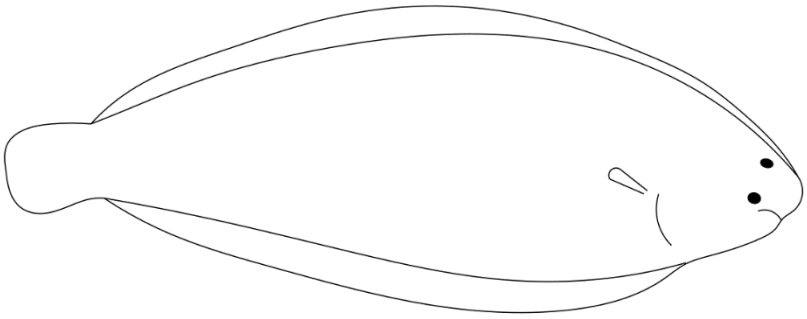
Fisheries
All grey mullet species are targeted by small scale netting. Trawlers catch grey mullet species as non-target catch with 15t landed annually in Sussex. There is some recreational angling for mullet.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
40	2	27	6	5
Mean size = 150 mm			Range = 27-625 mm	
Relative abundance = 0.066%				

Maximum size	75 cm
Life span	25 years
Size at reproductive maturity	25 cm
Age at reproductive maturity	3 years

Flat fish

Flatfish all start out as round fish, metamorphosing into flat fish when they settle on the seabed, usually at a few weeks old. Some settle out to be right-eyed (sole, dab, flounder, plaice) or left-eyed (brill, turbot). Turn the fish so that the eyes are above the mouth. If it is facing right, it is a right-eyed fish. Both eyes have migrated round to the right side of the fish.



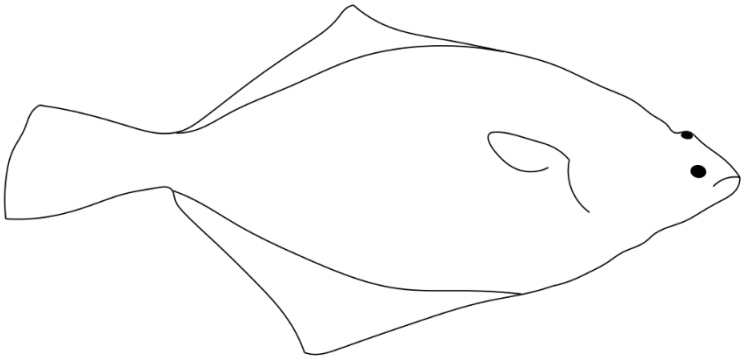
Soles - right eyed, general oval shape

Dover sole – dorsal and anal fins joined to tail fin, fringe around head

Sand sole – nostril on blind side rosette-shaped and as large as eye

Thickback sole – dorsal and anal fins separate from tail fin

Solenette – black lines on dorsal and anal fins, every 4^{th}-6^{th} ray

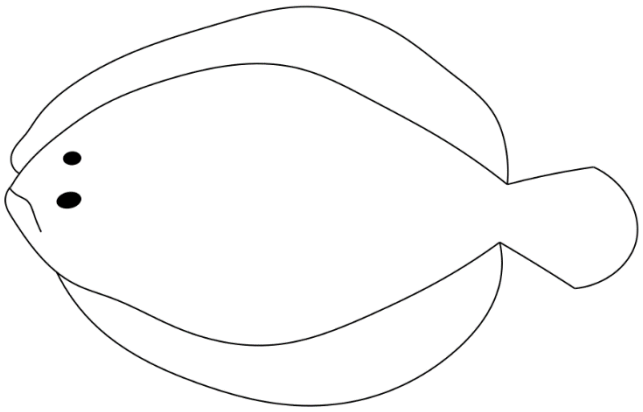


Plaice/flounder/dab - right eyed, general diamond shape

Plaice – topside smooth, apart from bony tubercles (lumps) between eyes (on larger plaice)

Flounder –rows of short prickles along where the dorsal and anal fins join the body

Dab – lateral line curved above pectoral fin



Brill/turbot - left eyed, general circular shape

Brill – the front of the dorsal fin is branching with partially free rays, forming a frill

Turbot – lack of frill, bony tubercles over the body (in larger turbot)

Dover sole *Solea solea*

Key identification features
Dover soles are right-eyed flatfish. Their colouration is medium to dark brown with irregular dusky patches on the eyed side, while the underside is creamy-white. Dover sole has small filaments fringing the head, these filaments resemble white stubble. The upper side pectoral fin has a black mark at the edge. The lower side pectoral fin is about the same size as the upper one. The dorsal and anal fins are joined to the tail fin.

Similar species
Dover sole may be mistaken for other sole species. Sand sole have a large, rosette-shaped nostril on the lower side. The thickback sole has a gap between the tail fin and the dorsal and anal fins. Solenettes (page 21) are very similar to young Dover sole, but the solenette has regular black lines on the anal and dorsal fins, and a smaller maximum size.

Habitat preference
Dover sole are more commonly found over soft substrates such as sandy or muddy sea beds. Dover sole occur at a range of depths from 5 m down to 100 m, although Dover sole occupy shallow inshore waters during the summer months.

Distribution
Found all around the British Isles, throughout the North Sea and as far as southern Norway.

Breeding behaviour
Dover sole spawn in spring and early summer during the months of March to May in shallow coastal waters. The female lays between 100,000 and 150,000 pelagic eggs. After 5 days, the eggs hatch and the fish larvae continue as pelagic for the next 35 days. At this point, the young sole descends to the seabed and adopt a benthic lifestyle.

Diet
Dover sole are nocturnal hunters and they feed predominately on small crustaceans, polychaete worms, small molluscs and occasionally small fish.

Fisheries
Dover sole are important and valuable food fish and are highly prised by commercial fishers. Dover sole are mainly caught in beam trawls and static nets.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
237	231	5	1	0
Mean size = 113 mm			Range = 40-295 mm	
Relative abundance = 0.39%				

Maximum size	70 cm
Life span	24 years
Size at reproductive maturity	26 cm
Age at reproductive maturity	3 years

Solenette *Buglossidium luteum*

Key identification features
The solenette is a left eyed flat fish with coarse scales and small eyes. The solenette is a sandy or light brown coloured fish with small spots of brown. Solenette, like other members of the sole family, have a relatively long and narrow, oval body shape. A key identifying feature of the solenette is the presence of black fin rays on both the dorsal and anal fins. These black rays occur every 4th to 6th fin ray.

Similar species
Solenette may be confused with other species of sole. The most common error occurs between solenette and juvenile Dover sole (page 20). However, solenette have regular black lines on the dorsal and anal fins.

Habitat preference
Solenette are predominately found over sandy or muddy substrates. Solenette are frequently found in inshore regions at depths of between 5 m and 50 m.

Distribution
Solenette are abundant in all the coastal waters of the UK. Solenette are also abundant throughout the North and Baltic Seas. Their range extends south to the Canary Islands and through the Mediterranean Sea.

Breeding behaviour
The breeding season of solenette varies depending on the location. The population that occurs within the English Channel breed during the months of July and August. The eggs and larvae are pelagic. A few weeks after hatching, the young solenette reach approximately 12 mm. At this point, the young fish descend to the seabed and adopt their benthic lifestyle.

Diet
Solenette feed on a variety of small benthic crustaceans, worms and molluscs.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
3559	3559	0	0	0
Mean size = 67 mm			Range = 23-215 mm	
Relative abundance = 5.9%				

Maximum size	15 cm
Life span	13 years
Size at reproductive maturity	8 cm
Age at reproductive maturity	3 years

Plaice *Pleuronectes platessa*

Key identification features
The plaice is a right eyed flat fish with a small head and mouth. They have a series of bony tubercles or nodules on the head (in larger fish) but the rest of the body is smooth. The plaice is a sandy brown colour with bright red or orange spots in some individuals, less commonly present on juveniles. When at rest, the overall body shape is roughly diamond. The dorsal fin does not extend pass the eyes.

Similar species
Plaice may be confused with flounder (page 23) or dab (page 24). However, if you very gently run a finger along the base of the anal and dorsal fins from tail to head, a plaice will feel smooth whereas the flounder will feel rough. Dab have a semi-circular curve above the pectoral fin, much like the letter D, whereas the plaice's lateral line has a much more subtle curve. Very young plaice may also be confused with solenette (page 21) but plaice have a more pointed head shape.

Habitat preference
Plaice prefer soft substrates such as sand, although they also live on gravel and mud. They are most common between 10 – 50 m but do occur from the tide line down to 200 m. Young fish in their first year can be found in sandy tidal pools; living mostly in very shallow water. Plaice will rarely enter freshwater, unlike the flounder.

Distribution
Plaice are abundant in all the coastal waters surrounding the British Isles. Their distribution ranges from the western Mediterranean, throughout the North Sea and into the White Sea; including the coasts of Iceland.

Breeding behaviour
Female plaice mature between 3 – 7 years and spawn between December and May when the water temperature reaches around 6°C. Females can produce up to half a million eggs, laid in shallow waters between 20 – 40 m. The eggs and larvae are planktonic and the young fish, upon metamorphosis, will settle in shallow water off sandy beaches.

Diet
Plaice predominately eat benthic invertebrates, including crustaceans, polychaete worms and molluscs. They migrate up shore to feed at high tide and are more active at night.

Fisheries
Both commercial and recreational fisheries exist for plaice and they are the most important commercial flatfish in Europe.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
583	572	3	8	0
Mean size = 65.7 mm			Range = 15 – 430 mm	
Relative abundance = 0.96%				

Maximum size	1m Common: 40 cm
Life span	20-30 years
Size at reproductive maturity	32 cm
Age at reproductive maturity	3 years

Flounder *Platichthys flesus*

Key identification features
Flounder are right-eyed flatfish, although some specimens can be left eyed. Flounder are a sandy brown colour; however, this is variable and dependent on their habitat. A key distinguishing feature of flounder is the presence of small, sharp spines along the bases of the dorsal and anal fins. These spines can be felt on very small flounder by stroking gently from tail to head.

Similar species
Flounder may be confused with plaice (page 22) or dab (page 24). However, if you very gently run a finger along the base of the anal and dorsal fins from tail to head, a plaice will feel smooth whereas the flounder will feel rough. Dab have a semi-circular curve above the pectoral fin, whereas the flounder's lateral line is straight.

Habitat preference
Flounder prefer soft substrates such as sand and mud, they are frequently found from the tide line down to depths of 100 m. Flounder are tolerant of low salinities (the only juvenile flatfish found in low salinities) and can be found in estuaries.

Distribution
Flounder are widespread throughout northern Europe. They occur in all coastal waters surrounding the British Isles. Flounder are abundant in the North, Baltic, Barents and White Seas. The northern extent of their range is Iceland and they extend south to the Azores and Gibraltar. Although less common, they also occur in both the Mediterranean and Black Seas.

Breeding behaviour
Flounder spawn between February and May, in shallow water, at depths of 25-40 m. Flounder release their eggs into the water column and a single spawning event can produce between 400,000 and 2,000,000 eggs. The eggs and larvae are pelagic. After 3-4 weeks, the larvae reach 15-30 mm and they descend to the seabed and adopt their adult life style.

Diet
Flounder predominately eat benthic invertebrates, including crustaceans, polychaete worms and molluscs. They migrate up shore to feed at high tide and are more active at night.

Fisheries
Both commercial and recreational fisheries exist for flounder. Flounder are often caught in mixed species fisheries and are rarely targeted specifically; this is due to the relatively low market value.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
109	53	7	29	20
Mean size = 112 mm			Range = 25-380 mm	
Relative abundance = 0.18%				

Maximum size	60 cm Common: 40 cm
Life span	15 years
Size at reproductive maturity	20-25 cm
Age at reproductive maturity	2-3 years

Dab *Limanda limanda*

Key identification features
A right-eyed flatfish with a diamond body shape and rounded caudal fin. Colouration is often mottled and sandy-brown, although this is habitat dependent. A dab may or may not have faint orange spots on the upper side of its body. Dab have two key identifying features; a distinct curve in their lateral line above their pectoral fin (D for dab) and the upper side of their body feels rough when gently stroked from tail to head.

Similar species
This species is very similar to flounder (page 23) and plaice (page 22). However, dab have a distinct curve in their lateral line above their pectoral fin.

Habitat preference
Dab prefer to live on sandy substrates, from a few meters of water depth down to about 100 m. Some individuals have been found down to 150 m. Juvenile dab are more common in inshore waters and move out into deeper water as they mature. Adults move inshore during the summer as a part of their breeding behaviour.

Distribution
Dab are found throughout the coastal waters of Northern Europe, from the Bay of Biscay to Iceland and Norway. Dab are also commonly seen in the Barents, White and Baltic Seas.

Breeding behaviour
Dab spawn during spring and early summer, across the months of April, May and June. The eggs and larvae are pelagic. After a few weeks the young fish moves down through the water column toward the seabed and metamorphose into their adult body shape. Male dab become mature at 2 years old, while females take a little longer and do not fully mature until they are 3 years old.

Diet
Dab predominantly feed on small benthic crustaceans such as brown shrimps, as well as polychaete worms and molluscs.

Fisheries
Some commercial fisheries for dab operate through the English Channel and the North Sea.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
571	569	2	0	0
Mean size = 60 mm			Range = 30-234 mm	
Relative abundance = 0.94%				

Maximum size	40 cm Common: 25 cm
Life span	11-12 years
Size at reproductive maturity	Female: 19 cm Male: 17 cm
Age at reproductive maturity	Female: 2-3 years Male: 2-3 years

Brill *Scophthalmus rhombus*

Key identification features
Brill are a left-eyed flatfish with a circular body shape and a rounded tail fin. They are brown with dark and light brown spots in a highly speckled pattern, although colouration is habitat dependent. A key identifying feature of brill is the presence of a frill formed of branched fin rays at the front of the dorsal fin between the eyes and the mouth.

Similar species
Brill may be mistaken for with other flat fish, in particular turbot (page 26). However, brill have a frill at the front end of their dorsal fin between their eyes and upper jaw. Brill are also slightly more oval in their body shape and lack the bony tubercles present on the back of turbot.

Habitat preference
Frequently found on sandy or mixed sea beds at depths of 10-70 m, may occasionally be found in estuaries as they are tolerant of brackish water. Juveniles occur close inshore.

Distribution
Brill are found in the coastal waters around the British Isles. Brill occur in the coastal waters of the North Eastern Atlantic from Iceland and Scandinavia south to Morocco. Also frequently found throughout the Mediterranean and Black Seas.

Diet
Brill are carnivorous fish that feed on bottom-living fishes such as sand eels, whiting and sprat, alongside larger crustaceans and other invertebrates.

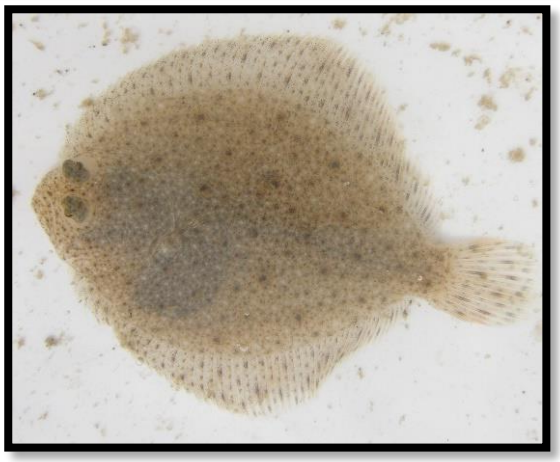
Breeding behaviour
Brill spawn in the late spring and early summer months between May and June. Each female release about 1 million planktonic eggs which hatch after 14 days. The larvae remain pelagic until they reach approximately 20-35 mm where metamorphosis occurs and they become bottom dwelling flatfish.

Fisheries
Brill are fished commercially as part of mixed fishery for large flat benthic species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
75	73	1	1	0
Mean size = 68 mm			Range = 21-189 mm	
Relative abundance = 0.12%				

Maximum size	75 cm Common: 50 cm
Life span	6 years
Size at reproductive maturity	Female: 30-40 cm Male: 25 cm
Age at reproductive maturity	3 years

Turbot *Psetta maxima*



Key identification features
Turbot are left-eyed flatfish. They are a sandy brown, with dark and light speckles across their back and white underneath. The dorsal and anal fins do not reach the tail fin. Turbot have a circular body shape. They have bony bumps known as tubercles which are irregularly scattered on their upper side. These tubercles are present even on very small specimens of turbot.

Similar species
Turbot could be confused with other flat fish, particularly brill (page 25). However, brill lack the bony tubercles across their backs that are found on turbot. Also, brill have a frill.

Habitat preference

Turbot predominantly live in the inshore shelf region in areas of around 80 m depth, with the juveniles closer inshore. Turbot prefer to inhabit areas of sandy and gravel substrates but have been found on both shell and mud-based substrates. Turbot are tolerant of low salinities and are often found in the brackish waters of estuaries.

Distribution
Turbot are widespread throughout northern Europe. They occur in all coastal waters surrounding the British Isles. Flounder are abundant in the North, Baltic, Barents and White Seas. The northern extent of their range is Iceland and they extend south to the Azores and Gibraltar. Although less common, they also occur in both the Mediterranean and Black Seas.

Breeding behaviour
Turbot breed between April and August. During this period, they conduct sequenced spawning events every 2-4 days. Both the eggs and larvae are pelagic. The larval stage is quite long, with the larvae remaining pelagic for up to 40-50 days, before descending to the seabed.

Diet
Turbot are voracious predators with large mouths. They predominately feed on other fish species such as sprat, whiting and other flatfish. Turbot will also eat crustaceans and molluscs.

Fisheries
Turbot are a highly prized and valuable fish within commercial fisheries. They are often targeted alongside other large bottom dwelling species such as brill and rays.

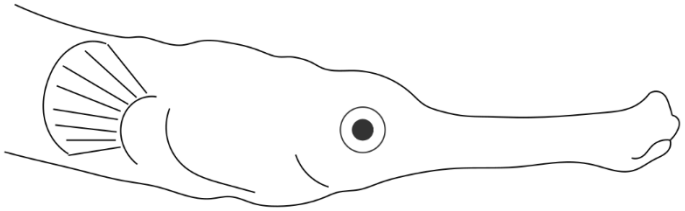
Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
32	32	0	0	0
Mean size = 61 mm			Range = 20-170 mm	
Relative abundance = 0.053%				

Maximum size	81 cm Common: 40 cm
Life span	25 years
Size at reproductive maturity	35 cm
Age at reproductive maturity	3-5 years

Pipefish

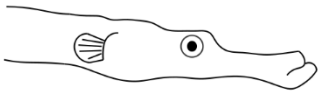
Pipefish are in the same family as seahorses. They have small mouths and tubular snouts. They live in shallow water and hide in seaweed and seagrass. Like seahorses, the male carries the eggs in a pouch on his underside.

There are six species of pipefish found in the British Isles, all of which have been caught on Sussex IFCA fish surveys. Look at the tail and pectoral fins, the shape of the head and whether they have angular body rings to distinguish them.



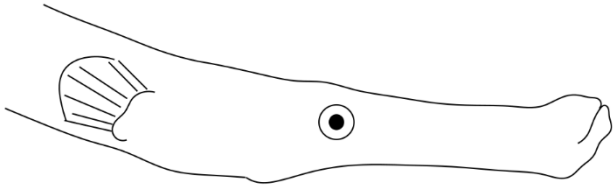
Distinct hump behind the head.
Distinct tail and pectoral fins.
Distinct body rings.
Largest maximum size.

Greater pipefish



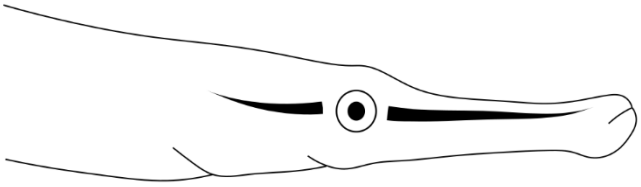
Lesser pipefish

No distinct hump behind the head and shorter snout than the greater.
Distinct tail and pectoral fins.
Distinct body rings.



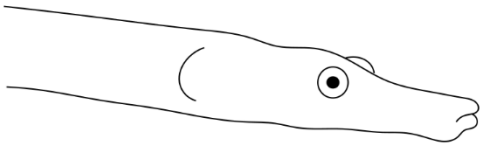
Broad nosed pipefish

Snout almost as deep as head.
Distinct tail and pectoral fins.
Distinct body rings.



Snake pipefish

Distinct marking through eye.
No distinct pectoral fins, tail fin minute.
No distinct body rings.



Straight nosed pipefish

Straight snout.
Tail and pectoral fins absent.
No distinct body rings.

Worm pipefish

Upturned snout.
Tail and pectoral fins absent.
No distinct body rings.

Greater pipefish *Syngnathus acus*

Key identification features

The greater pipefish has a brown-green colour with darker saddles across its back, with a pale cream underside. The greater pipefish has pronounced body rings and four-sided tail rings. This pipefish has a long snout which is more than half the length of its head and rounded in the cross section. There is also a distinctive hump on the top of the head behind the eye, in the midline of the nape.

Similar species

The greater pipefish may be confused with other pipefish, particularly the lesser pipefish (page 29) but the greater pipefish has a longer snout and distinct hump behind the head.

Habitat preference

Greater pipefish are frequently found in a range of habitats including rocky, muddy and sandy sea beds as well as seagrass beds and sometimes can be found in outer estuarine environments.

Distribution

Greater pipefish are found in the eastern coastal waters of the Atlantic Ocean from as far north as Iceland, down to South Africa. They are also found all around the British Isles and throughout the North, Barents and Mediterranean Seas.

Breeding behaviour

Breeding greater pipefish swim together moving up through the water column with their bodies entwined in courtship. Males brood the eggs in a specialised pouch between May and July and release the young after a 4-5-week gestation.

Diet

Greater pipefish feed on small planktonic organisms including crustaceans, fish eggs and larvae. Due to a limited digestive system all pipefish have to eat a large number of food items every day.

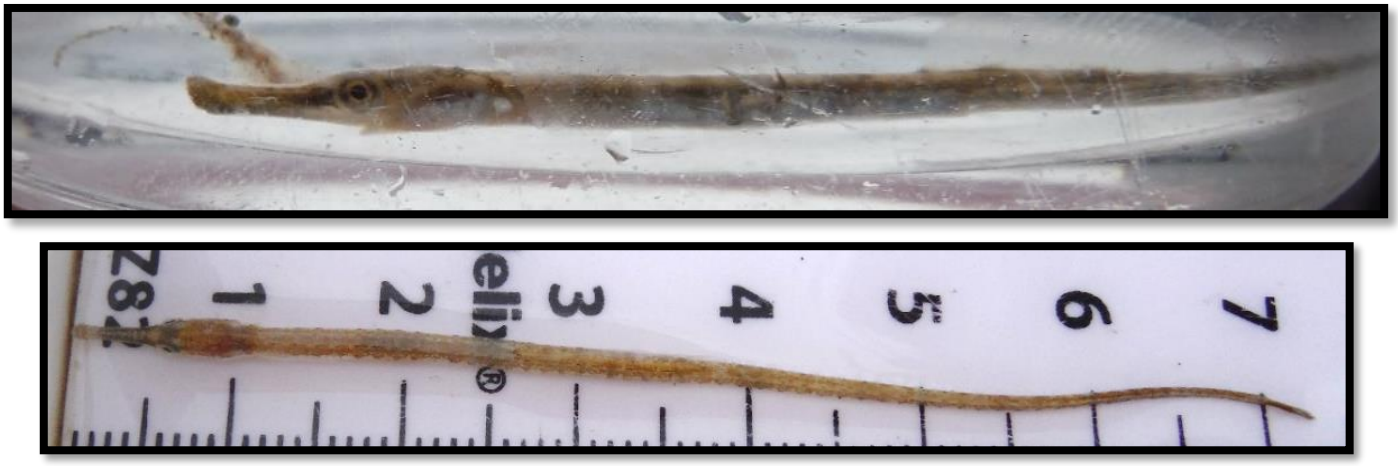
Fisheries

No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
35	14	17	4	0
Mean size = 233 mm			Range = 74-437 mm	
Relative abundance = 0.058%				

Maximum size	45-50 cm
Life span	5-8 years
Size at reproductive maturity	20 cm
Age at reproductive maturity	2 years

Lesser pipefish *Syngnathus rostellatus*



Key identification features
Lesser, or Nilsson's, pipefish have a mottled brown colouration with saddles across its back with a pale cream underside. Lesser pipefish also have distinct body and tail rings and well-developed pectoral and tail fins. The snout is rounded in the cross section and relatively short, being less than half the head length.

Similar species
Lesser pipefish could be confused with other pipefish, particularly a juvenile greater pipefish (page 28), but the lesser pipefish has no distinct hump on its head and it has a shorter snout relative to its head length.

Habitat preference
Predominately found in sandy habitats, amongst floating or attached seaweeds. Lesser pipefish are also commonly found in estuaries.

Distribution
The lesser pipefish is found in the coastal waters surrounding the British Isles and the southern and eastern coastlines of the North Sea.

Breeding behaviour
Breeding lesser pipefish swim together moving up through the water column with their bodies entwined in courtship. Breeding occurs between June and August. Males brood the eggs in a specialised pouch and releases the juveniles after 4 weeks. The larvae are approximately 14 mm long when they hatch.

Diet
Lesser pipefish feed on small planktonic organisms including crustaceans, fish eggs and larvae. Due to a limited digestive system pipefish have to eat a large number of food items every day.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
58	52	3	3	0
Mean size = 109 mm			Range = 74-181 mm	
Relative abundance = 0.095%				

Maximum size	17 cm
Life span	5-6 years
Size at reproductive maturity	10 cm
Age at reproductive maturity	2 years

Broad nosed pipefish *Syngnathus typhle*

Key identification features
The broad nosed, or deep snouted, pipefish has a green-brown back with a pale brown to yellow underside. The deep snouted pipefish has distinct body and tail rings and well-developed pectoral and tail fins. They have a laterally flattened snout which is almost as deep as the head.

Similar species
The deep snouted pipefish could be confused with other pipefish, particularly the greater (page 28) or the lesser (page 29), but it has a deeper snout than other pipefish.

Habitat preference
Broad nosed pipefish are commonly found in shallow coastal waters and are particularly common in sea grass beds to a depth of 20 m.

Distribution
The deep snouted pipefish is found throughout the coastal waters of Europe and North Africa.

Breeding behaviour
Breeding pipefish swim together, moving up through the water column with their bodies entwined in courtship. Breeding occurs between June and August. Males brood the eggs in a specialised pouch (like seahorses) and releases the juveniles after 4 weeks. The larvae are approximately 25 mm long when they hatch.

Diet
Deep snouted pipefish feed on small planktonic organisms including crustaceans, fish eggs and larvae. Due to a limited digestive system, pipefish have to eat a large number of food items every day.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
1	0	1	0	0
Mean size = 167 mm			Range = 167 mm	
Relative abundance = 0.0016%				

Maximum size	35 cm
Life span	5 years
Size at reproductive maturity	12 cm
Age at reproductive maturity	2 years

Worm pipefish *Nerophis lumbriciformis*

Key identification features
Worm pipefish have a green to brown colouration and is often habitat dependent. These pipefish often have lighter markings under their throat and on their abdomen. Worm pipefish have a long, slender body with smooth body rings and lack pectoral, anal and tail fins. The body is rounded in cross section. The key distinguishing feature of this species is the short, upturned snout

Similar species
Could be confused with other pipefish in particular both the snake and straight nosed pipefishes. The main distinction from these species is the very short snout which is slightly upturned.

Habitat preference
Worm pipefish are often found in rocky areas where algae is abundant. This species is frequently found in rock pools within the intertidal zone and down to depths of 30 m.

Distribution
Abundant throughout the coastal waters of the British Isles, also frequently recorded on many of the coast lines of the eastern Atlantic Ocean and North Sea from Norway to North West Africa.

Breeding behaviour
Unlike many of the other pipefish species, worm pipefish courtship occurs in close proximity to the seabed. It is the female who exhibits the stronger colour change during the breeding season. Breeding occurs between May and September with a peak in breeding June – August. Once fertilised, the males carry the eggs in a brood pouch on their underside. The juvenile pipefish are released when they are 10 mm.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	Rye	Chichester	Medmerry	Cuckmere
4	0	2	2	0
Mean size = 101 mm			Range = 86-120 mm	
Relative abundance = 0.0066 %				

Maximum size	Male: 15 cm Female: 16 cm
Life span	5 years
Age at reproductive maturity	2 years

Sand smelt *Atherina presbyter*

Key identification features
Sand smelt are small, slender fish with two dorsal fins, large eyes and a forked tail. Sand smelt have a silvery line which runs horizontally along the length of the fish. The area above the silvery line is yellow/green, and the edges of the scales have small black speckles, which forms a cross-hatch appearance. The underside of the fish is silver. The diameter of their eye is equal to the length of their snout.

Similar species
Sand smelt are a completely different species to smelt (page 33), so be careful not to misrecord. Smelt have a distinctive cucumber smell, a more pointed snout, one dorsal fin and an adipose fin. Anchovy also look similar but have a protruding upper jaw.

Habitat preference
Sand smelt prefer warmer waters and as such they inhabit inshore regions during the summer months. Sand smelt can also be found in harbours, estuaries, rivers and can tolerate very low salinities. Sand smelt are frequently found over sandy or muddy sea beds at depths of 20 m. Large shoals can be caught inshore in the autumn.

Distribution
They can be found on all coasts around the British Isles and from Denmark to Mauritania in Western Africa as well as the western Mediterranean.

Breeding behaviour
Sand smelt spawn April to August. The female will attach individual eggs to either seaweed or a stone before the male fertilises them. Spawning frequently occurs in coastal lagoons, salt marshes and rock pools.

Diet
Sand smelt feed primarily at the surface of the water column on planktonic crustaceans.

Fisheries
Sand smelts are not targeted commercially within the UK. However, sand smelt is sold as whitebait across Europe and the UK.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
11,156	216	4113	6702	0
Mean size = 64 mm			Range = 22-152 mm	
Relative abundance = 18%				

Maximum size	20 cm
Life span	5 years
Age at reproductive maturity	1 year

Smelt *Osmerus epurlanus*

Key identification features
Smelt (sometimes called sparling) have a single dorsal fin and a smaller adipose (non-bony) fin nearer to the tail. Closer examination shows a black shading to the caudal fin. The back of the fish is a light olive green which changes to silver/cream beneath the lateral line. The mouth is large with sharp teeth. Smelt have a distinctive smell of cucumber when freshly caught. The eye is approximately a third of the snout length.

Similar species
Smelt can be mistaken for sand smelt (page 32) but sand smelt have a much larger eye, which is equal to the snout length. Be careful not to misrecord the two species as they have similar names. The closest relatives of smelt in British waters are trout and salmon.

Habitat preference
Smelt are an inshore species and are commonly found in coastal waters, close to river mouths and estuaries. Some populations of smelt can be found in landlocked lakes in Northern Europe and live their entire lives in fresh water.

Distribution
Smelt are frequently found in the coastal waters and eustaries of Northen Europe, this includes the North, Baltic, White and Barents Seas as well as the English Channel.

Breeding behaviour
Spawning takes place in fresh water February to April. Smelt lay their eggs in shallow fresh water over sand. The eggs are coated in an adhesive mucus that attaches them to the sand. The young fish hatch from their eggs after 15-28 days. Young smelt will often stay within fresh water systems such as rivers and estuaries until they mature.

Diet
Young smelt feed on planktonic crustaceans, whereas the diet of the older fish is primarily small fish, including herring and gobies.

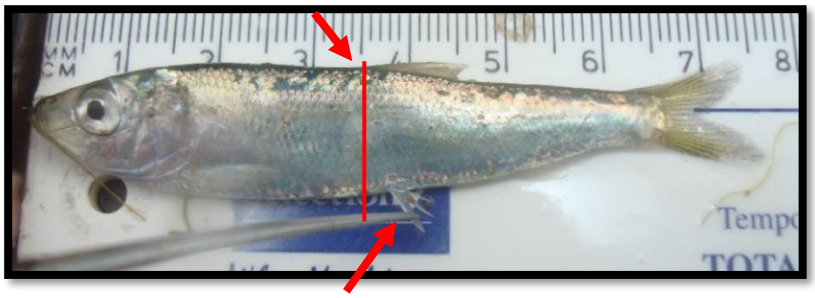
Fisheries
Smelt are not usually targeted by commercial fishermen in the UK but they are caught in Europe. Smelt populations are threatened by increasing levels of pollution and habitat loss. Smelt are a UK Biodiversity Action Plan (BAP) species – those which are globally threatened or have undergone rapid decline.

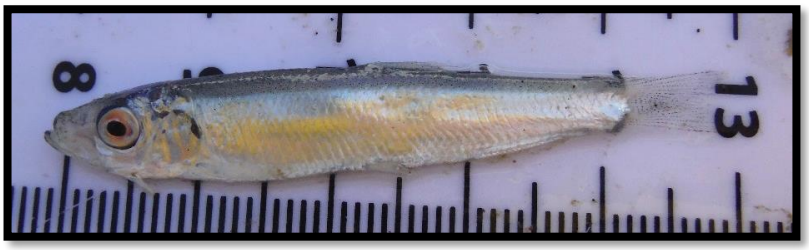
Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
2	2	0	0	0
Mean size = 106 mm			Range = 106 mm	
Relative abundance = 0.0033 %				

Maximum size	30 cm
Life span	6 years
Size at reproductive maturity	23-24 cm
Age at reproductive maturity	2 years

Herring *Clupea harengus*

Key identification features
Herring are a pelagic species with a blue green back and silver sides. They have a large eye with a smooth keel. Herring have fragile scales which are easily removed upon handling of the fish. They have a single dorsal fin, the origin of which is in front of the pelvic fin.





Similar species
Herring could be confused with sprat (page 35), with mixed shoals of juvenile sprat and herring occurring together. The position of the dorsal fin relative to the pelvic fin is one way of separating these two species. In herring, the dorsal fin begins in front of the pelvic fin, whereas sprat have a dorsal fin which is either in line with or behind the pelvic fin. Another technique to separate these two species is the presence of a serrated keel on larger sprats.

Habitat preference
Herring are a pelagic species and they live in large shoals in coastal waters at depths ranging from the surface to 200m.

Distribution
Herring are commonly found in the coastal waters of both sides of the North Atlantic Ocean. Populations of herring occur near the USA, Canada and Greenland in the West. In the East, herring occur from Iceland and Russia in the north and down through the Kara, Barents and Norwegian Seas and into the North and Baltic Seas as well as through the English Channel and as far south as Gibraltar.

Breeding behaviour
Herring have distinct breeding stocks each with their own specific areas and seasons. Some populations breed close inshore during the spring while other populations breed offshore in the summer and autumn. The eggs are laid on gravel in large congregations. The eggs hatch after approximately 3 weeks, both the eggs and larvae are planktonic. The juveniles often form large inshore shoals.

Diet
Zooplankton, predominately crustaceans.

Fisheries
Historically herring have been an important fishery. Unfortunately, due to over exploitation in many areas these fisheries have now been closed or severely restricted. A small-scale netting fishery for herring occurs in Sussex.

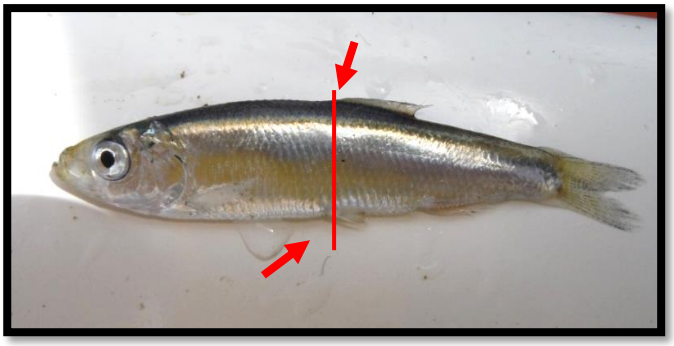
Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
7346	1420	5817	106	3
Mean size = 54 mm			Range = 27-235 mm	
Relative abundance = 12%				

Maximum size	40 cm
Life span	23 years
Size at reproductive maturity	23-24 cm
Age at reproductive maturity	4 years

Sprat *Sprattus sprattus*

Key identification features

Sprat have a dark blue/green back with silver sides and belly. The scales on the keel of a sprat point backwards, so if you gently run a finger along the keel towards the head, the keel will feel sharp and serrated. The start of the dorsal fin is in line with or behind the start of the pelvic fin.



Similar species

Sprat may be confused with herring (page 34). Sprats often form mixed shoals with juvenile herring. The easiest way to separate sprat and herring is to look at the relative positions of the dorsal and pelvic fins. In sprat, the front of the dorsal fin is behind the front of the pelvic fin. Whereas, in herring the dorsal fin starts in front of the pelvic fin.

Habitat preference

Sprat are a pelagic species that forms large shoals in inshore areas and estuaries. Sprat can be very tolerant of low salinities. Sprats exhibit both seasonal and diel migrations. During the summer, sprats occur inshore at depths ranging between 10 m and 50 m, while during the winter months the shoals move offshore into deeper water down to approximately 150 m. Sprats also migrate through the water column throughout the course of a day, occurring closer to the surface during the night and in deeper water during the day.

Distribution

Sprat occur in the coastal waters surrounding the British Isles and their range extends south to the Mediterranean.

Breeding behaviour

Sprat spawn multiple times during the spring and summer from February to July. The eggs hatch after 2 to 4 days and both the eggs and larvae are planktonic.

Diet

Zooplankton, predominately crustaceans.

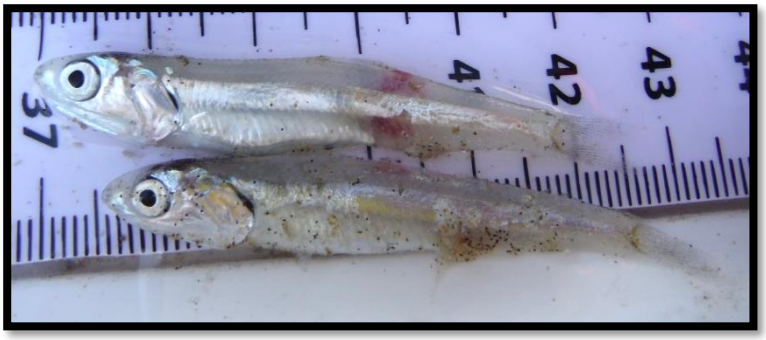
Fisheries

Sprat are targeted commercially and support a large fishery in the North Sea. Sprat are not frequently eaten in the UK due to their small size and numerous small bones.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
1601	291	1288	22	0
Mean size = 46 mm			Range = 20-108 mm	
Relative abundance = 3%				

Maximum size	16.5 cm
Life span	6 years
Size at reproductive maturity	11.5 cm
Age at reproductive maturity	2 years

Anchovy *Engraulis encrasicolus*



Key identification features
Anchovy have a rounded snout which extends past the lower jaw. The mouth extends back well past the eye. Anchovy have a slender, rounded body without a serrated keel. Anchovy have a yellowy-green back, with bright silvery sides and underneath and large scales which can be easily detached. Juveniles have a silver strip along their flank which disappears with age as the fish matures.

Similar species
Anchovy are similar to sand smelt (page 32) which are also yellowy-green on top with a silver stripe, but anchovy have a pronounced, rounded snout. Anchovy also only have a single dorsal fin. Sand smelt have a more pointed snout and two dorsal fins. Anchovies are in the same order as herring and sprat, but the lower jaw of both sprat and herring extends past the upper jaw. Sprats also have a serrated keel, which is absent in anchovy.

Habitat preference
Anchovy are an open water pelagic species. During the summer, they can be found in shallow inshore waters and may enter estuaries especially during spawning. They move further offshore into deeper water during the winter. Anchovy are tolerant of a range of salinities.

Distribution
Anchovy is a widely distributed species and is found in the coastal waters surrounding the British Isles but are less common around the northern coasts of Scotland. Anchovy are found throughout the eastern coastlines of the Atlantic Ocean, from Norway to the southern coasts of South Africa.

Breeding behaviour
Spawning occurs throughout the summer June to August, with multiple spawning events. The eggs float in the upper 50 m of the water column and hatch in 1-3 days depending on temperature.

Diet
Anchovy feed exclusively on pelagic zoo plankton including mysids and copepods.

Fisheries
Main commercial fisheries occur in the Mediterranean and Black Sea with some commercial fisheries operating in the North Sea and English Channel.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
17	17	0	0	0
Mean size = 51 mm			Range = 36-62 mm	
Relative abundance = 0.028%				

Maximum size	20 cm
Life span	7 years
Size at reproductive maturity	11-13 cm
Age at reproductive maturity	1-2 years

Lesser weever *Echiichthys vipera*

HANDLE WITH CAUTION

Key identification features

The lesser weever is a sandy coloured fish with pale silvery sides and underneath. The first dorsal fin is black. The second dorsal fin is much longer and sandy coloured. The tail fin is yellow with black band on its edge. It has an upward facing mouth and eyes on the top of the head.

Lesser weevers have venomous spines on their first dorsal fin and gill covers. The sting is similar to a wasp sting. If someone is stung, the best remedy is to immerse the sting in water as hot as the person can tolerate, ideally hotter than 45°C, as this will denature the toxin. Some people can have an anaphylactic shock from the sting, so call the emergency services if there is any swelling.

Similar species

The lesser weever may be confused with a juvenile greater weever. However, the greater weever is predominately found in deeper offshore waters. The greater weever also has a larger maximum size of 410 mm and spines in front of and above each eye.

Habitat preference

Mostly found on soft substrates including sand and mud. They are often inactive during the day and burrow in the sand. Lesser weevers migrate into inshore regions during spring and reach a maximum abundance in May.

Distribution

Found throughout the coastal waters of the British Isles, it can also be found in coastal waters from the southern North Sea to the Mediterranean.

Breeding behaviour

Lesser weevers spawn between May and September with a peak in breeding occurring during July. The eggs are pelagic, spherical and slightly yellow in colour.

Diet

The lesser weever is an ambush predator and they feed predominately on small fish, benthic crustaceans, or worms.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
523	522	1	0	0
Mean size = 86 mm			Range = 15-149 mm	
Relative abundance = 0.84 %				

Maximum size	15 cm
Life span	13 years

Common dragonet *Callionymus lyra*

Key identification features
The common dragonet has a dorsally flattened body. They are a light brown to yellow speckled colouration with darker saddles. Common dragonets have broad pectoral fins and two dorsal fins, the first triangular and mostly black, the second rectangular. A key distinction for common dragonets is the presence of four spines on the gill cover, three of these spines point backward and the remaining spines forward.

Similar species
Common dragonets look very similar to reticulated dragonets (page 39) but the common has four spines on the gill cover, three pointing back and up and one pointing forwards (although these can be difficult to see). The reticulated has three spines on the gill cover all pointing back. The common has a larger maximum size, so anything over 100mm long is likely to be common. If unsure, record as dragonet unspecified.

Habitat preference
Common dragonets prefer sand and mud substrates, they can be found across a range of depths from 5 m down to 100 m and occasionally have been found as deep as 430 m.

Distribution
Common dragonets can be found throughout the coastal waters of the British Isles, as well as the Mediterranean and Black Seas. The common dragonet can also be found along the eastern Atlantic coasts from Iceland and Scandinavia down to the North West of Africa.

Breeding behaviour
Common dragonets spawn in late winter to early spring. During the breeding season, the males develop a bright blue colouration on their flanks and fins and they become territorial. The eggs and larvae are pelagic.

Diet
Common dragonets feed primarily on small benthic invertebrates such as, worms and crustaceans.

Fisheries
No commercial or recreational fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
24	13	11	0	0
Mean size = 144 mm			Range = 53-201 mm	
Relative abundance = 0.04%				

Maximum size	Female: 25 cm Male: 30 cm
Life span	Female: 7 years Male: 5 years
Age at reproductive maturity	2 years

Reticulated dragonet *Callionymus reticulatus*

Key identification features

The reticulated dragonet has a dorsally flattened body with a speckled light brown to yellow colouration and dark saddles across the back. Reticulated dragonets have two dorsal fins, the first triangular and mostly black, the second rectangular. They have three spines on the gill cover, all of which point backwards and up.

Similar species

Reticulated and common dragonets (page 38) look very similar. The key distinction between the two species is the number of spines on the gill cover. The reticulated dragonet has three spines on the gill cover, all of which point back and up. The common dragonet has four spines on the gill cover, three pointing back, one pointing forwards. The common has a larger maximum size, so anything over 100mm long is likely to be common. If unsure, record as dragonet unspecified.

Habitat preference

Reticulated dragonets predominately occur in inshore waters, at depths of between 1-40 m. Reticulated dragonets prefer a sandy seabed, but can be found over gravel or mud.

Distribution

Reticulated dragonets are predominately found around the coasts of the UK. Some populations occur along the Atlantic coastlines of France, Spain and Portugal.

Diet

Feeds primarily on small benthic invertebrates such as worms and crustaceans.

Breeding behaviour

Spawning of Reticulated dragonets occurs between March and June. During this time the males become territorial and develop bright blue markings down their flanks and fins. The resulting eggs and larvae are planktonic.

Fisheries

No commercial or recreational fishery exist for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
389	363	26	0	0
Mean size = 144 mm			Range = 45-97 mm	
Relative abundance = 0.64%				

Maximum size	Female: 8 cm Male: 10 cm

Ballan wrasse *Labrus bergylta*

Key identification features
Ballan wrasse are the largest species of wrasse found in British waters. Ballan wrasse have a highly varied colouration and can occur as either a greenish brown through to red. A key distinguishing feature for Ballan wrasse is the lack of dark spots on either the dorsal fin or on base of the tail fin. Another identifying feature is a smooth edge at the front of the gill cover. Any specimen over 20 cm in length is almost certainly a Ballan wrasse.

Similar species
Juvenile Ballan wrasse may be mistaken for corkwing (page 41), Baillon's wrasse or goldsinny. Ballan wrasse can be separated from both of these species by the smooth edge at the front of the gill cover. Ballan wrasse also lack the dark spot near the base of the tail fin that can be found on both corkwing and Baillon's wrasse.

Habitat preference
Ballan wrasse are commonly found close to rocky seabeds or around rocky reefs and kelp forests. They are usually found at depths between 10 m and 50 m.

Distribution
Ballan wrasse can be found all around the British Isles and throughout the North Sea. The range of the Ballan wrasse covers the coastal waters of Norway in the North down to the Canary Islands in the South.

Breeding behaviour
Ballan wrasse move into shallow inshore waters to breed. Spawning occurs April to August. During the breeding season, a male will use algae to build a nest within a rocky crevice. Throughout the breeding season, one or more females will lay eggs within the nest. After egg laying, the male will stay and guard the nest for up to 2 weeks, until the eggs hatch. All Ballan wrasse are born female and within a small group, the most dominant female will become male; changing colour from the drab and variable mottled brown and green, to vibrant red and yellow colouration.

Diet
Ballan wrasse feeds predominately on bivalve molluscs such as mussels. Their diet will also include small crustaceans and some small fish.

Fisheries
Ballan wrasse are not targeted as a food fish within British waters. However, Ballan wrasse are targeted as live fish and supplied to salmon fish farms to be used as a biological treatment for the removal of fish lice.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
84	1	83	0	0
Mean size = 67 mm			Range = 27-180 mm	
Relative abundance = 0.14%				

Maximum size	66 cm Common: 50 cm
Life span	29 years
Size at reproductive maturity	18 cm
Age at reproductive maturity	2 years

Corkwing wrasse *Symphodus melops*

Key identification features
Corkwing wrasse, like all wrasse species, have a single long dorsal fin. The colouration of corkwing wrasse is highly variable and often dependent on their habitat and surrounding environment. They often have blue and orange markings on the face, particularly the male during the breeding season. Corkwing wrasse have a dark spot near the base of their tail fin just below the lateral line and a comma shaped mark behind the eye, sometimes obscured by other markings. They have a serrated edge at the front of the gill cover.

Similar species
Corkwing wrasse may be confused with other wrasse species, particularly juvenile Ballan wrasse (page 40). However, corkwing wrasse have a dark spot at the base of the tail fin on the midline and a comma shaped mark behind the eye.

Habitat preference
Corkwing wrasse are territorial fish that are commonly found in the intertidal zone. This species is prominent along rocky coastlines with large amounts of algal cover and also occurs within seagrass beds.

Distribution
Corkwing wrasse can be found around the coastline of the British Isles. Corkwing wrasse are commonly found as far North as Norway. The southern extent of their range is Morocco. They also occur in the western Mediterranean.

Breeding behaviour
The spawning period of the corkwing wrasse is between May and July. During the breeding season a male will use algae to build a nest within a rocky crevice. After a female lays her eggs within his nest the male will stay and guard the nest throughout the gestation of the eggs. All corkwing wrasse are born female and the absence of a male will cause the most dominant female to become male.

Diet
The corkwing wrasse feeds predominately on small crustaceans and molluscs.

Fisheries
Corkwing wrasse are not targeted as a food fish within British waters. However, they are targeted as live fish and supplied to salmon fish farms to be used as a biological treatment for the removal of fish lice.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
268	0	240	28	0
Mean size = 59 mm			Range = 24-169 mm	
Relative abundance = 0.44 %				

Maximum size	28 cm Common: 20 cm
Life span	9 years
Size at reproductive maturity	15 cm
Age at reproductive maturity	3 years

Black seabream *Spondyliosoma cantharus*

Key identification features

Black seabream is laterally compressed with a deep body shape and a forked tail fin. Black seabream is silver grey with faint horizontal bands, although small juveniles may exhibit dark brown and yellow vertical stripes. A faint black line may be present at the margin of the tail fin. Black seabream also has a large eye, a single dorsal fin, and a distinct lateral line.

Similar species

Black seabream is similar to gilthead seabream (page 43), but black seabream lacks the dark spot on the gill cover at the end of the lateral line and also have a more pointed snout. If unsure, record as seabream juvenile.

Habitat preference

Black seabream is commonly found in large schools, amongst seagrass beds and over rocky and sandy sea beds. Black seabream is more common in inshore regions, but can be found at depths of up to 300 m. The juveniles can be found in estuaries and harbours.

Distribution

Black seabream occurs throughout the coastal waters of the British Isles, but they are more commonly found in the English Channel. Black seabream is found throughout the Eastern Atlantic Ocean from Scandinavia to northern Namibia, including the Strait of Gibraltar, the Mediterranean and Black Seas, Madeira, Canary Islands, and Cape Verde Islands.

Breeding behaviour

Black seabream is protogynic hermaphrodites; they first mature as females, then change to males after a few years. The male black seabream makes a nest on the seabed and the female lays her eggs between April and June. The male guards the eggs and the juveniles until they are 7-8cm long. Kingmere Marine Conservation Zone is designated to protect breeding black seabream.

Diet

Black seabream is omnivorous and they feed on a mixture of algae alongside small invertebrates including crustaceans, molluscs and polychaete worm species.

Fisheries

In Sussex, black seabream is targeted by pair trawlers and recreational anglers, in particular, in and around Kingmere Marine Conservation Zone, where there is a byelaw in place to protect their nesting grounds.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
754	0	750	4	0
Mean size = 41 mm			Range = 20-66 mm	
Relative abundance = 1.2%				

Maximum size	60 cm
Life span	13-14 years
Size at reproductive maturity	Female: 17 cm Male: 24 cm
Age at reproductive maturity	Female: 2-3 years Male: 5+ years

Gilthead seabream *Sparus aurata*




Key identification features
The gilthead seabream is silver grey in colour with a single long dorsal fin. They have a distinct lateral line and large eyes. Gilthead seabream have a golden bar that runs between their eyes. They may also have a dark margin at the edge of their forked caudal fin. A key feature of the gilthead seabream is the presence of a dark spot behind the gill cover at the start of the lateral line.

Similar species
The gilthead seabream could be confused with the black seabream (page 42). The juveniles in particular look very similar, however the gilthead has a more rounded snout and a dark mark behind the gill cover at the start of the lateral line. If unsure, record as seabream juvenile.

Habitat preference
Gilthead seabream is commonly found in seagrass beds and sandy seabeds. They range from the littoral zone down to approximately 30 m. There are also some reports that the adults may be found at depths of 150 m. Gilthead seabream are tolerant of low salinity and during the spring, they are often found in the brackish waters of estuaries and coastal lagoons.

Distribution
Gilthead seabream prefer warmer waters and are predominately found in the Mediterranean Sea and the coastal regions of the eastern Atlantic from the Strait of Gibraltar to Cape Verde and around the Canary Islands. When they occur in British waters, they are restricted to the English Channel and the South West coastlines.

Breeding behaviour
Gilthead seabream are a protandric hermaphrodite species, this means that they mature first as males and after the second or third year of age, become female. Spawning happens generally from October to December, with sequenced spawning occurring during the whole period. Gestation of the eggs usually lasts for about 2 days at 16-17°C. The larvae are 2.5-3.0 mm in length when they hatch.

Diet
Gilthead seabream feed predominately on bivalve molluscs such as mussels and oysters. Gilthead seabream will also eat worms, crustaceans and occasionally small fish.

Fisheries
Small opportunistic commercial fishery in Sussex, with larger fisheries existing throughout Europe in both the Atlantic and the Mediterranean. Popular recreational target species. Gilthead seabream are also farmed in the Mediterranean.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
76	0	0	76	0
Mean size = 58 mm			Range = 35-140 mm	
Relative abundance = 0.12%				

Maximum size	70 cm Common: 35 cm
Life span	11 years
Size at reproductive maturity	Female: 33-40 cm Male: 20-30 cm
Age at reproductive maturity	Female: 2-3 years Male: 1-2 years

Tub gurnard *Chelidonichthys lucernus*

Key identification features

The tub gurnard has a wedge-shaped head with eyes near the top of the head. The head and back of the tub gurnard are a reddish-brown to grey colour with a pale creamy white underside. This species has very large pectoral fins. The pectoral fins are often a yellow-green colour with bright blue border. A key feature of this species is a dark blue spot speckled with turquoise dots on the pectoral fins, near the body. The tub gurnard has adapted fin rays in front of the pectoral fins which look like legs that the fish uses to detect prey that is buried under the seabed.

Similar species

The tub gurnard can be mistaken for other gurnards, such as the red and grey gurnards but only the tub gurnard has the colourful markings on the pectoral fins.

Habitat Preference

Tub gurnards prefer to inhabit soft substrates such as sand, mud or small gravel and can be found at depths ranging from 2 m to 200 m.

Distribution

The tub gurnard is found throughout the coastal waters of the British Isles, it also occurs in both the North and Baltic Seas. The southern extent of their range reaches down to the west coasts of North Africa and into the Mediterranean and Black Seas.

Breeding behaviour

The breeding season for tub gurnards occurs from October to April. The female scatters her eggs over the seabed and the male follows her swimming path and externally fertilises the eggs.

Diet

The tub gurnard uses its adapted leg-like fin rays to hunt out food items that are buried beneath the seabed. Tub gurnards feed primarily on small crustaceans, molluscs, worms and small fish.

Fisheries

The tub gurnard is an important commercial species and is captured throughout its range by large offshore vessels, as well as small scale artisanal vessels. This species is typically caught with trawls, gillnets, longlines, hand lines and beach seines.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
51	51	0	0	0
Mean size = 65 mm			Range = 21-155 mm	
Relative abundance = 0.084%				

Maximum size	75 cm Common: 35 cm
Life span	15 years
Size at reproductive maturity	20 cm
Age at reproductive maturity	2 years

Red mullet *Mullus surmeletus*

Key identification features
The red mullet is a misleading name as they are not related to the grey mullet family. Red mullet are actually members of the goat fish family. This distinctive fish is the only type of goat fish that occurs in British waters. Red mullet can be identified by their red and pink colouration with yellow longitudinal stripes down their sides. Red mullet also has two long barbels on the underside of their lower jaw.

Similar species
Red mullet could initially look similar to a gurnard but red mullet has two barbels on their chin and lack the leg-like fins of gurnards.

Habitat preference
Red mullet is found predominately over soft sandy and muddy seabed and are common at depths ranging from 10 m to 100 m.

Distribution
Red mullet is found all around the coastal waters of the British Isles and across the North and Baltic Seas. The range of red mullet extends down the western coasts of Europe and Africa as far South as Senegal. Red mullet is also found in both the Mediterranean and Black Seas.

Breeding behaviour
Red mullet spawn during May, June and July. Red mullet are scatter spawners. During breeding, the female releases spherical eggs into the water column, which are then fertilised by the male. After three to eight days, the eggs hatch and release their pelagic larvae.

Diet
Red mullet are bottom feeders and they use their two barbels to detect prey buried under the surface of the seabed. Red mullet feed on benthic invertebrates and their diet includes small crustaceans and worms alongside other invertebrates such as molluscs.

Fisheries
Before the 1990's, red mullet was considered a bycatch species. However, red mullet is now targeted and are heavily exploited in the Mediterranean and northeast Atlantic, the Bay of Biscay and Eastern English Channel. Red mullet is an important commercial species in Sussex with approximately 40 tonnes being landed in Sussex per year.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
2	0	2	0	0
Mean size = 68 mm			Range = 60-75 mm	
Relative abundance = 0.0033%				

Maximum size	40 cm
Life span	11 years
Size at reproductive maturity	16 cm
Age at reproductive maturity	1 year

Hooknose *Agonus cataphractus*

Key identification features

The hooknose, also known as a pogge, has a mottled dark brown to black colouration on the back with a paler underneath. It has a broad head with many short barbels on the underside. The body is covered with hard bony plates. The hooknose has two short dorsal fins and a spine on each gill cover. They get their name from the two prominent hooks at the end of their snout.

Similar species

The hooknose may be confused with a sea scorpion. The main distinguishing feature for the hooknose is that they have distinct spines on their nose and a smaller mouth and maximum size.

Habitat preference

The hooknose prefers soft substrates such as, sand, mud, shell or gravel down to 270 m. Juveniles often found inshore in shallower water. The hooknose prefers cooler waters and at the southern extent of their range during the height of summer they migrate out into deeper water.

Distribution

Found throughout the coastal waters of the British Isles and north into Scandinavia including the North, Baltic, Barents and white Seas but no further south than the English Channel.

Breeding behaviour

The hooknose breeds between February and May. The female lays clumps of eggs amongst seaweed holdfasts. The eggs can take up to 12 months to hatch. The larvae hatch at 7.5 mm and are initially pelagic but settle on the bottom once they reach 20 mm long.

Diet

The hooknose mainly feeds on small crustaceans, brittlestars, worms and molluscs.

Fisheries

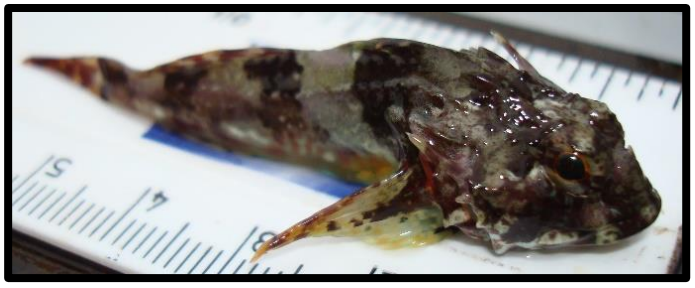
No commercial fishery exists for this species. Unfortunately, some hooknoses are caught as bycatch in small mesh trawls.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
72	72	0	0	0
Mean size = 51 mm			Range = 28-125 mm	
Relative abundance = 0.12%				

Maximum size	20 cm Common: 10-15 cm
Life span	3 years
Age at reproductive maturity	2 years

Long-spined sea scorpion *Taurulus bubalis*

Key identification features
The long-spined sea scorpion has a large head with large eyes situated at the top. The patterning of long-spined sea scorpions is highly mottled. The colouration is variable and dependent on the habitat, with colours ranging from yellow-brown to dark green, but also may be red to pink. Long-spined sea scorpions have a long spine on their gill cover, which is larger than the diameter of their eye. Long-spined sea scorpions also have a small white barbell at the corners of their mouth. The gill membrane attaches to the underside either side of the throat.



Similar species
The long-spined sea scorpion may be mistaken for both the short-spined sea scorpion and the Norway bullhead. The short-spined sea scorpion can be identified by the lack of a barbel in the corners of their mouth. The Norway bullhead does have small barbels in the corners of their mouth, but they also have a row of spines in the skin just above the lateral line.

Habitat preference
The long-spined sea scorpion is most frequently found over rocky shores with abundant seaweed growth. They can be found in rocky areas from intertidal regions down to depths of 30 m.

Distribution
The distribution of the long-spined sea scorpion stretches as far north as Scandinavia and Iceland, and extends southwards to Portugal and the western Mediterranean. They can be found around all of the coasts of the British Isles.

Breeding behaviour
The long-spined sea scorpion breeds in the early spring and deposit the clusters of spherical eggs amongst algae. Once spawned, the young fish are pelagic.

Diet
The long-spined sea scorpion is an ambush hunter, feeding on crustaceans such as crabs, polychaetes and small fish.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
52	0	49	1	2
Mean size = 86 mm			Range = 28-176 mm	
Relative abundance = 0.086%				

Maximum size	25 cm
Life span	4 years
Size at reproductive maturity	21-25 cm

Pollack *Pollachius pollachius*

Key identification features
Pollack are members of the cod family. They have three dorsal and two anal fins, the first anal fin is long and starts below the first dorsal fin. Pollack are dark in colour generally; brown or green along their back which becomes golden splotches down the flanks to a white underside. The lower jaw of pollack extends past the upper jaw and lacks a barbell. The lateral line curves downward behind the pectoral fin.

Similar species
Pollack are similar to other species in the cod family but have a distinctive curve in the lateral line and a lower jaw that protrudes past the upper jaw.

Habitat preference
Pollack are common over rocky reefs and wrecks. Pollack are usually found at depths between 30-200 m. Young pollack can range into river estuaries and into shallower waters.

Distribution
Pollack can be found throughout the coastal waters of the British Isles and the North Sea. Their range extends from Iceland down to the western Mediterranean.

Breeding behaviour
Pollack spawn January to April in deep water between 100 m to 200 m depth. The eggs and larvae are pelagic and drift towards the coast.

Diet
Adult pollack feed predominantly on fish including sprat, herring and sandeels. Pollack can also search the seabed for food including worms and crustaceans. Young pollack feed primarily on crustaceans.

Fisheries
Pollack are targeted commercially but also occur as bycatch of both the cod and haddock fisheries, as well as being targeted by recreational anglers. Pollack has become more popular in the UK over recent years as an alternative to cod and haddock.

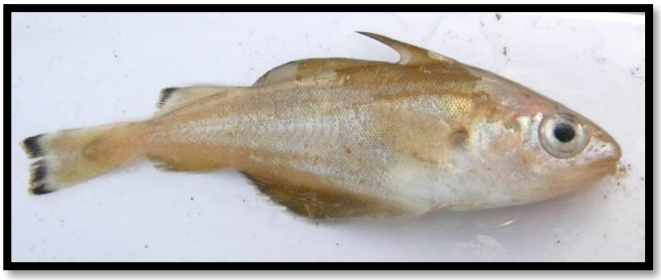
Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
68	2	64	2	0
Mean size = 51 mm			Range = 21-156 mm	
Relative abundance = 0.11%				

Maximum size	130 cm
Life span	8 years
Size at reproductive maturity	35 cm
Age at reproductive maturity	3 years

Pouting *Trisopterus luscus*

Key identification features

Also known as bib, pouting are members of the cod family and have three dorsal and two anal fins. As adults, pouting has distinctive vertical copper and silver bands down their flanks, but as juveniles their colouration is more predominately gold to silver. Pouting have a deeper body than other members of the cod family. Pouting also have long barbel under their lower jaw. The upper jaw protrudes past the lower jaw. The diameter of the eye is equal to the snout length.



Similar species

Small pouting can be confused with poor cod, as both species have the similar heads and colouration. However, the first and second anal fins are connected in pouting whereas poor cod have a gap between these fins.

Habitat preference

Older pouting is found in offshore areas down to depths of 300 m around reefs and wrecks. Young pouting is found in sheltered sandy areas and are also abundant in estuaries during the summer.

Distribution

Pouting can be found throughout the waters of the British Isles and the North Sea. Their range extends from Norway down to the western Mediterranean.

Breeding behaviour

Pouting spawn March to April at depths of between 50-70 m. The eggs are spherical and buoyant.

Diet

Pouting will feed on fish, crustaceans, worms and small squid.

Fisheries

Pouting are not greatly exploited commercially, due to their soft flesh which spoils quickly, but they are caught in Sussex. Some pouting is sold for processing into fish meal. Pouting are used as live bait by anglers.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
74	72	0	2	0
Mean size = 90 mm			Range = 31-457 mm	
Relative abundance = 0.12%				

Maximum size	46 cm
Life span	4 years
Size at reproductive maturity	21-25 cm
Age at reproductive maturity	1-2 years

Whiting *Merlangius merlangus*

Key identification features

Whiting are members of the cod family and have three dorsal and two anal fins. The dorsal fins have only a small gap between each fin. Whiting have a pale yellow-green back with silvery white flanks and underside. Whiting have a dark spot at the base of the pectoral fin. The upper jaw extends past the lower jaw. Whiting have a very small chin barbell which can be very difficult to see in the field. When alive, whiting has a white border on both of their anal fins, although the colour and markings fade very quickly after death.

Similar species

Whiting can be mistaken for other members of the cod family, such as the Norway pout, poor cod and blue whiting. However, only whiting has a black spot at the base of their pectoral fin. Larger whiting may be mistaken for pollack (page 48) or saithe. However, the lower jaw of whiting ends before the upper jaw, while both the pollack and saithe have protruding lower jaws.

Habitat preference

Whiting usually prefer mud and gravel substrates but can be found over sandy and rocky sea beds as well. Although whiting can be found very close inshore at depths of less than 10 m, they are more frequently found at depths of between 25 m to 100 m but can also be caught as deep as 200 m.

Distribution

Whiting are found all around the British Isles and are very common in the North Sea. The range of whiting extends as far north as Scandinavia and Iceland and as far south as the northern coasts of the Mediterranean Sea.

Breeding behaviour

Whiting spawn February to May. The resulting eggs and larvae are pelagic. Young whiting generally migrates into estuarine environments for the first year of their life. Larvae and juveniles are frequently associated with a number of jellyfish species as they use the stinging tentacles to provide cover from predators.

Diet

Whiting are generalist predators and they feed on a wide range of prey from small crustaceans to a variety of fish species including polychaetes and cephalopods.

Fisheries

Whiting represent an important food fish although not as popular as cod or haddock. Historically whiting was used in fishmeal and pet food production, however more recently they are sold for human consumption.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
60	60	0	0	0
Mean size = 122 mm			Range = 39-284 mm	
Relative abundance = 0.099%				

Maximum size	70 cm
Life span	20 years
Size at reproductive maturity	28 cm
Age at reproductive maturity	2 years

Four bearded rockling *Enchelyopus cimbrius*

Key identification features

Four bearded rocklings are long eel-like soft-bodied fish with a dark to mid brown and sometimes reddish colouration with a pale cream underside. They have two dorsal fins, the first of which has a long fin ray followed by a fringe of very short rays. The second dorsal is larger and reaches the tail. The four bearded rockling has dark marks at the end of the second dorsal and anal fins near the tail. Four bearded rocklings have four barbels surrounding the mouth. One on the underside of the lower Jaw, one downward pointing barbel on the upper lip and two in front of the nostrils.

Similar species

Could be confused with a ling or other rockling (three-bearded, five-bearded (page 52), Northern or shore) but the four bearded rockling has four distinct barbels around the mouth.

Habitat preference

Four bearded rocklings are sedentary bottom dwelling fish and are predominately found over mud or sand. These cold-water fish occur at depths down to 250 m, but have also been recorded at depths of over 500 m.

Distribution

Four bearded rocklings are widely distributed and can be found on both sides of the North Atlantic Ocean, from the Gulf of Mexico to Newfoundland on the west side and throughout the North, Norwegian and Barents Seas on the east. The English Channel is the southern extent of its range on the eastern side of the Atlantic Ocean.

Breeding behaviour

Four bearded rockling spawn in deep water during the summer June to September. The female releases between 5,000 and 45,000 eggs which are externally fertilised. The eggs and larvae are pelagic.

Diet

Four bearded rockling feed primarily on small benthic invertebrates such as crustaceans, polychaete worms and molluscs.

Fisheries

No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
1	1	0	0	0
Mean size = 201 mm			Range = 201 mm	
Relative abundance = 0.0016 %				

Maximum size	41 cm
Life span	9 years
Size at reproductive maturity	25 cm
Age at reproductive maturity	3 years

Five bearded rockling *Ciliata mustela*

Key identification features

Five bearded rocklings are long eel-like soft-bodied fish, a golden to dark brown on the back with a pale underside. Five bearded rocklings have two dorsal fins, the first is a short fringe situated in a groove. The second dorsal fin is much larger and extends down to the tail. Five bearded rocklings have five barbels around the mouth. One is located on the underside of the lower jaw, two are on the upper lip and another two further up on the head close to the nostrils.

Similar species

Five bearded rockling may be confused with ling or other rockling species (three-bearded, four-bearded (page 51), Northern or shore). The key identifying feature is the five distinct barbels near the mouth. The Northern rockling also has five barbels, but the pair on the upper lip are small. The Northern rockling also has lobes of skin called papillae along the upper lip.

Habitat preference

The five bearded rockling is abundant in the intertidal region and are commonly found in rock pools. Five bearded rocklings prefer softer substrates including sand, mud and shell gravel. Five bearded rockling is common through the intertidal region and down a depth of 20 m.

Distribution

Five bearded rockling is found throughout the coastal waters of the British Isles. They are also common in the coastal regions of the North Sea and Iceland down to Portugal.

Breeding behaviour

During the winter, five bearded rocklings move into subtidal waters and spawning occurs between December and March. The female releases between 9,000 and 30,000 eggs, which are externally fertilised. The eggs are buoyant and both the eggs and larvae are pelagic.

Diet

Five bearded rocklings predominately feed on small crustaceans, polychaetes, gastropods and occasionally small fish.

Fisheries

No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
5	4	1	0	0
Mean size = 170 mm			Range = 65-215 mm	
Relative abundance = 0.0082%				

Maximum size	25 cm
Life span	3 years
Age at reproductive maturity	1 year

Greater sandeel *Hyperoplus lanceolatus*

Key identification features

The greater sandeel is a long slender bodied fish with a distinctive black spot on its snout. The upper jaw swings forward from a fixed hinge point. They have a bifid tooth (with two points) situated on the roof of their mouths. The length of their snout is nearly three times the diameter of the eye.

Similar species

Greater sandeels may be mistaken for other species of sandeel. One key factor for the identification of sandeels is the location they are observed; if inshore, then the sandeel is unlikely to be a smooth sandeel, a Raitt's sandeel or a Corbin's sandeel, as these species predominately occur in offshore waters.

The key distinguishing feature between the two remaining species of sandeel (greater and lesser (page 54)) is the presence a black spot on the snout of the greater sandeel in front of the eyes.

Also, the greater sandeel has a longer snout than the lesser. The greater's snout is three times the diameter of the eye. If unsure, record as sandeel – unknown species.

Habitat preference

The greater sandeel is predominately found in inshore waters from the shoreline down to depths of approximately 50 m depth. They are predominately found over sandy substrates into which they can burrow during the winter months and in response to danger.

Distribution

Greater sandeels are common in the coastal regions around the British Isles, as well as the coastal waters of many European seas.

Breeding behaviour

The breeding season for greater sandeels extends from April to September and occurs at depths of between 20 m and 100 m. The female may lay as many as 35,000 eggs onto the sandy seabed.

Diet

Greater sandeels feed on a wide range of planktonic organisms including crustaceans, copepods and fish larvae. Adult greater sandeels will also feed on smaller sandeel species and other fish species.

Fisheries

Sandeels are extensively exploited through the North Sea and North East Atlantic Ocean, and are often targeted by trawlers using small-meshed demersal gear.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
33	1	28	2	2
Average length = 119 mm			Range = 67-158 mm	
Relative abundance = 0.054%				

Maximum size	40 cm
Life span	5 years
Size at reproductive maturity	11 cm
Age at reproductive maturity	2 years

Lesser sandeel *Ammodytes tobianus*

Key identification features
Lesser sandeels are long slender bodied fish. Their backs are yellow to blue green with a silvery white underside. The jaws of a lesser sandeel move forward to form a tube-like mouth. Lesser sandeels have no teeth in the roof of their mouths. The length of a lesser sandeel's snout is nearly twice the diameter of the eye.

Similar species
Lesser sandeels may be mistaken for other species of sandeel. One key factor for the identification of sandeels is the location they are observed; if the location is inshore then the sandeel is unlikely to be a smooth sandeel, a Raitt's sandeel or a Corbin's sandeel as these are offshore species.
The key distinguishing feature between the two remaining species of sandeel (lesser and greater (page53)) is the presence a black spot on the snout of the greater sandeel in front of the eyes.
Also, the lesser sandeel has a shorter snout than the greater. The lesser's snout is twice the diameter of the eye.
If unsure, record as sandeel – unknown species.

Habitat preference
The lesser sandeel is found almost exclusively in inshore waters from the shoreline down to approximately 30 m depth. They are predominately found over sandy substrates into which they can burrow in response to danger or in inclement environmental conditions.

Distribution
Lesser sandeels are common in the coastal regions around the British Isles, as well as the coastal waters of many European seas.

Breeding behaviour
Lesser sandeels have two distinct breeding groups. Although these groups have not been separated into distinct subspecies, they do exhibit behavioural and morphological differences. One group of lesser sandeels breeds in the late autumn from September to November, while the other group breeds from February to April.

Diet
Lesser sandeels feed on a wide range of planktonic organisms including decapod larvae and other crustaceans, copepods and fish larvae.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
19	2	14	2	1
Average length = 124 mm		Range = 52-160 mm		
Relative abundance = 0.031%				

Maximum size	20 cm
Life span	7 years
Size at reproductive maturity	11 cm
Age at reproductive maturity	1 years

Fisheries
Sandeels are extensively exploited through the North Sea and North East Atlantic Ocean, and are often targeted by trawlers using small-meshed demersal gear.

European eel *Anguilla Anguilla*

Key identification features

The European eel has a long eel shaped body, with a small head. The lower jaw is slightly longer than the upper jaw. The European eel has a single long fin, which starts well down the back and runs around the tail and onto belly (dorsal, tail and anal fins are merged). European eels are a dark greenish brown colour, sometimes with a yellowish or a silvery grey tinge.

Similar species

The European eel could be confused with a juvenile conger eel. However, the conger eel has jaws which are equal in length and its dorsal fin starts near the head.

Habitat preference

In the marine environment, the European eel is commonly found in the inshore region in shallow water often amongst seaweed and under boulders. The European eel is also common in muddy habitats. European eels are found in freshwater systems, estuaries and in the sea down to 700 m.

Distribution

The European eel is found throughout the Atlantic Ocean. The European eel is also found many European seas including, the English Channel and the Baltic, North, Mediterranean and Black Seas.

Diet

European eels are opportunistic predators and prey on a wide range of food types including, fish, crustaceans, worms and molluscs.

Breeding behaviour

The European eel lives and matures in freshwater. When they are ready to breed, they migrate to the deep Atlantic waters of the Sargasso Sea to spawn. Although it has never been witnessed, spawning is thought to occur between the months of March and June. After spawning, the adults die and the larvae drift back to Europe on the Gulf Stream and grow into elvers returning to fresh water systems to mature.

Fisheries

European eels are protected by an EU management plan which restricts wild capture commercial fisheries that target the European eel in both marine and fresh water environments. Aquaculture of the European eel occurs inland in many European nations.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
21	3	1	17	0
Average length = 353 mm			Range = 150-800 mm	
Relative abundance = 0.035%				

Maximum size	60 cm
Life span	13-14 years
Size at reproductive maturity	Female: 45-65 cm Male: 30-45 cm
Age at reproductive maturity	Female: 10-20 years Male: 6-12 years

Shanny *Lipophrys pholis*

Key identification features
Shanny have a mottled colouration which is highly variable and can change depending on the local environment. They are often green with sandy to dark brown markings. During the breeding season males become very dark, almost black with light lips. They have two dorsal fins but these are joined giving the appearance of a single dorsal fin with a slight dip half way down the length. Shanny are the only European blenny that does not have any fronds or tentacles on the top of their heads.

Similar species
Shanny may be confused with other species of blenny. The easiest way of distinguishing shanny from other blennies is the lack of fronds or tentacles on top of their heads. During the breeding season the male shanny is easy to identify due to their very dark colour with light coloured lips.

Habitat preference
Shanny are common in rock pools and rocky reefs. Shannies are found from the high tide line down to 30 m. They prefer rocky habitats with high levels of algal growth.

Distribution
Shanny are an abundant species in the coastal waters around the British Isles. They also occur in the southern North Sea, through the English Channel. The southern extent of their range is the coastal waters of Senegal. Shanny also occur in the western end of the Mediterranean Sea.

Diet
Shanny are an omnivorous species that feeds on a wide range of food types from macro algae to crustaceans, worms and molluscs.

Breeding behaviour
The breeding season of shannies is from April to August. During this time, the male will change colour, becoming very dark with light lips. The female will deposit her eggs into a small crevice on a rocky reef, after which the male will then fertilise the eggs. The male then stays with the eggs, tending them and protecting them from predation. A single male may fertilise and guard the eggs of a number of females.

Fisheries
No commercial fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
24	17	7	0	0
Mean size = 52 mm			Range = 36-75 mm	
Relative abundance = 0.04%				

Maximum size	16 cm
Life span	6 years
Size at reproductive maturity	8 cm

Fifteen spined stickleback *Spinachia Spinachia*

Key identification features
The fifteen spined stickleback has a very distinctive body shape with a long, thin tail ending in a small, fan-shaped tail fin. Despite being called the fifteen-spined stickleback, these fish can have a range of 14-17 spines along the back. It is usually a dark green-brown colour on its back which becomes a yellow-silver on the underside. The fifteen spined stickleback also features a brown stripe that runs from the snout through the eye.

Similar species
The distinctive body shape and colouration of the fifteen spined stickleback greatly reduces the probability that this fish could be mistaken for another species.

Habitat preference
The fifteen spined stickleback is predominantly found in sheltered coastal waters with an abundance of algae or sea grass, down to depths of about 10 m.

Distribution
The fifteen spined stickleback can be found in inshore waters all around the British Isles and through both the North and Baltic Seas. The range of fifteen spined sticklebacks extends from Norway in the north down to the Bay of Biscay in the south.

Breeding behaviour
Breeding of the fifteen spined stickleback takes place between May and June. The male builds a nest on the seabed. The female then deposits 150-200 eggs before dying. The male defends, maintains and aerates the eggs until they hatch.

Diet
The diet of the fifteen spined stickleback consists primarily of benthic and pelagic zooplankton, such as small amphipods and copepods.

Fisheries
No commercial or recreational fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
69	0	69	0	0
Mean size = 91 mm			Range = 37-121 mm	
Relative abundance = 0.11%				

Maximum size	20cm
Life span	1 year
Age at reproductive maturity	1 year

Three spined stickleback *Gasterosteus aculeatus*

Key identification features

The three spined stickleback has a golden brown-green colour across its back, which becomes silvery white down the sides and onto the underneath of the fish. During the breeding season, the males develop a strong orange-red colouration across the lower jaw and the throat. Three spined sticklebacks have three spines on their back, before the start of the dorsal fin, although these can be difficult to see. Their bodies are flattened side to side and narrow to a small tail and fan-like tail fin.

Similar species

The spines on the back of the three spined stickleback, along with the colouration and shape, reduces the probability that this fish could be mistaken for another species.

Habitat preference

Three-spined sticklebacks are a common fish found in coastal waters down to approximately 10 m depth. Three spined sticklebacks are frequently found in both marine and fresh water environments as they can tolerate a range of salinities from fresh water to fully marine. They are commonly found in brackish lagoons as well as rivers, lakes and coastal habitats.

Distribution

The three-spined stickleback is a very common and widely distributed species. It can be found in the fresh water systems and coastal waters of all major continental landmasses of the northern hemisphere, including Europe, America and Asia, between latitudes 30°N (eg Morocco) and 73°N (eg northern Norway).

Breeding behaviour

The breeding season of three spined sticklebacks is from March to June. During this time, the males become very territorial and develop a bright red colouration across the lower jaw and throat, and the eyes and sides become blue-green. This colouring serves both to attract females and to deter other males from their nesting site. The male will build a nest and perform a courting dance to attract a female. After the female lays her eggs, the male will chase her out of the nest and he will then maintain, defend and aerate the eggs for between 7 and 20 days until they hatch.

Diet

Three spined sticklebacks are generalist predators and they feed on insects, crustaceans and other invertebrates.

Fisheries

No commercial or recreational fishery exists for this species.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Newhaven**
47	0	0	46	1
Mean size = 30 mm			Range = 18-42 mm	
Relative abundance = 0.077%				

Maximum size	11 cm
Life span	3 years
Size at reproductive maturity	3.6 cm
Age at reproductive maturity	1 year

Garfish *Belone belone*

Key identification features

The garfish is a long, slender fish with long, thin jaws filled with widely spaced sharp teeth. The lower jaw of a garfish is slightly longer than the upper jaw. Garfish have a small, single dorsal fin set near the tail. The garfish is green-blue across the back and silvery white down the flanks and underside of the fish.

Similar species

The garfish could be confused with the short-beaked garfish or the skipper. The key distinctive feature that separates the garfish from these species is its large, widely spaced teeth in a long jaw. The location of the sighting is also significant as the short-beaked garfish and the skipper are rarely sighted in the English Channel as they are more predominate in the open waters of the Atlantic Ocean.

Habitat preference

The garfish is an open water pelagic species that is commonly found near the surface. The garfish spends most of its time offshore but moves into inshore regions during the summer.

Distribution

The garfish can be found in the waters surrounding the British Isles and throughout the coastal waters of the eastern Atlantic Ocean, as well as the North and Mediterranean Seas.

Breeding behaviour

In British waters, the garfish spawns between May and June. Adult garfish migrate into inshore waters to breed. The eggs have sticky threads which are used to entangle the eggs with algae and flotsam.

Diet

Adult garfish are pelagic predators and they primarily feed on small fish such as sprats, herring and sandeels, as well as small squid. Young garfish will feed predominately on small planktonic crustaceans.

Fisheries

Although garfish are not commonly eaten in the UK, they are a popular food fish in southern Europe and as such some commercial fisheries do exist for this species. Garfish are also targeted by recreational anglers.

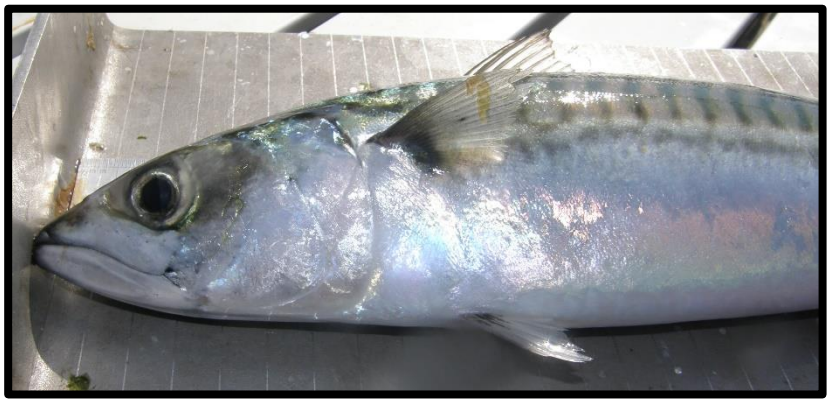
Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
7	0	7	0	0
Mean size = 256 mm			Range = 40-357 mm	
Relative abundance = 0.012%				

Maximum size	104 cm
Life span	7 years
Size at reproductive maturity	45 cm
Age at reproductive maturity	2 years

Mackerel *Scomber scombrus*

Key identification features

Mackerel are distinctive fish with black and dark blue-green, zebra-like patterning across its back extending down to the lateral line. The underside of the fish is an iridescent silvery white colour. Mackerel have a pointed snout, two dorsal fins and a forked tail.



Similar species

Mackerel are a distinctive fish and are unlikely to be confused with other species.

Habitat preference

Mackerel are an open water, pelagic species of fish, living in the water column away from the seabed. Mackerel will move into shallow inshore waters during summer to feed on zooplankton blooms and aggregates of smaller shoaling fish such as sprats and herring. During the winter months, mackerel will move into deeper waters.

Distribution

Mackerel are a widely distributed species of fish and their range extends from the coastal waters of the British Isles, and the North, Barents, Baltic, White and Mediterranean Seas across the Atlantic Ocean to the coastlines of North America.

Diet

Mackerel feed primarily on planktonic crustaceans and small shoaling fish such as herring and sprats.

Breeding behaviour

Mackerel spawning takes place in open water from spring to early summer. Two key breeding aggregates of mackerel occur with one in the central North Sea and the other to the West of the British Isles in the Atlantic Ocean. Eggs are yellow in colour, spherical and float to the surface.

Fisheries

Mackerel is an important commercially targeted species and is landed in large quantities. The main fishery techniques used to target mackerel include the use of purse seines, drift nets and trolled lines. Some stocks of mackerel have been greatly reduced due to the impacts of commercial fisheries.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
4	0	4	0	0
Mean size = 321 mm			Range = 278-350 mm	
Relative abundance = 0.0066%				

Maximum size	60 cm
Life span	17 years
Size at reproductive maturity	29 cm
Age at reproductive maturity	2 years

Thornback ray *Raja clavata*

Key identification features

The thornback ray has alternating dark and light bars along the length of its tail. They also have large thorns which run down the midline of the body and tail to the first dorsal fin. Thornback rays are a mottled greyish sandy brown colour with a number of dark and light spots across the back of the fish with a pale underside.

Similar species

Thornbacks rays could be confused with other rays, but they have thorns, like rose thorns, along back and tail, with other smaller thorns all over the body, more so in the adults. The thorns are larger and more distinct than the thorns found on other ray species.

Habitat preference

They are most common at depths between 10 m and 60 m. But can be found anywhere between the shoreline to 300 m. Rays are commonly found in sandy areas but the thornback ray can be found on all different types of sediments including sandy, muddy and gravelly bottoms.

Distribution

Thornback rays are widely distributed throughout the eastern Atlantic Ocean from as far north as Iceland and Norway, including the North Sea. The southern extent of their range passes the southern tip of the African continent into the southwest Indian Ocean to Madagascar. Thornback rays are also frequently found in the Mediterranean.

Breeding behaviour

The breeding season for thornback rays extends from February to September with a peak in activity during June. Thornback rays form same-sex aggregations during the breeding season, with females moving to shallower inshore waters, approximately a month before the males. The females lay their egg cases onto the seabed and after 4-5 months the juvenile ray hatches from the egg case.

Diet

During the early stages of a thornback ray's life, they eat predominately crustaceans. As the ray matures, its diet shifts toward a more fish-based diet, feeding on flatfish such as plaice and dab, and round fish such as whiting and pouting.

Fisheries

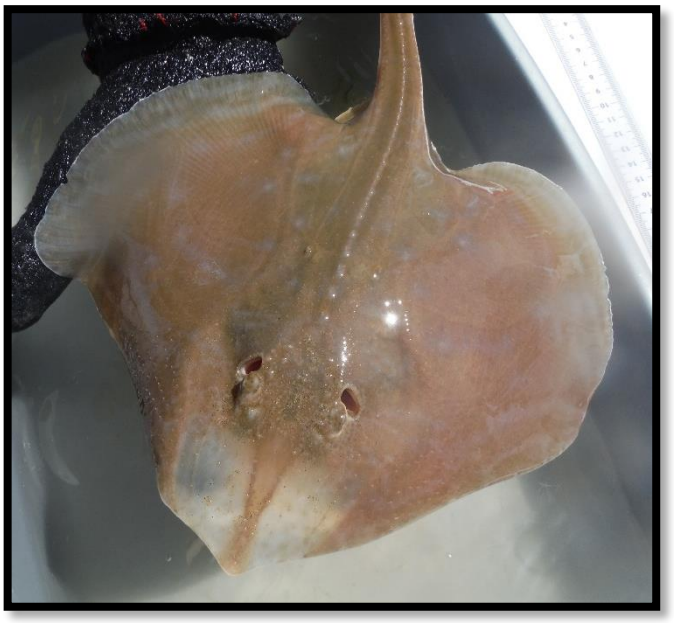
Thornback rays are an important commercial fishery and are heavily targeted throughout northern Europe.

Sussex survey specific information 2010-2017				
Total	Rye	Chichester	Medmerry	Cuckmere
38	38	0	0	0
Mean size = 225 mm			Range = 115-308 mm	
Relative abundance = 0.063%				

Maximum size	105 cm Common: 80 cm
Life span	15 years
Size at reproductive maturity	76 cm
Age at reproductive maturity	7-8 years

Small-eyed ray *Raja microocellata*

Key identification features
The small-eyed ray is also known as the painted ray or the sandy ray. The small eyed ray has a pale underside and a sandy coloured back with pale splotches. Small-eyed rays have cream coloured streaks across their backs, which run parallel to the edge of the rays' fins (although these may not be obvious in juveniles). They have a row of small thorns down their backs on to their tails.



Similar species
The small-eyed ray could be confused with other ray species, particularly the undulate ray. However, the small-eyed ray has much smaller eyes; the length of the eye and spiracle (the breathing holes next to the eyes) is less than half the distance between the eyes. Also look at the overall body shape, compared to other rays.

Habitat preference
The small-eyed ray is a benthic species which means in lives on or near the seabed. They are most frequently found over soft substrates, preferably sand, down to approximately 100 m. Most frequently found in inshore areas from depths of 10 m.

Distribution
The small-eyed ray is most commonly found in the south west of England and the coasts of Wales and Ireland. Small-eyed rays are also found in the coastal areas of the Bay of Biscay and the Atlantic coasts of Portugal.

Breeding behaviour
Small-eyed rays usually breed between March and June. Copulation of rays can seem very aggressive and fertilisation of the eggs occurs internally. The female will then lay eggs onto the seabed where they will remain for a number of months before the young ray emerges. A single female may lay between 54 and 61 eggs in a year.

Diet
The small-eyed ray feeds on flat fish such as plaice and dab, as well as round fish like whiting and pouting. Small-eyed rays will also consume crustaceans, cephalopods and other molluscs.

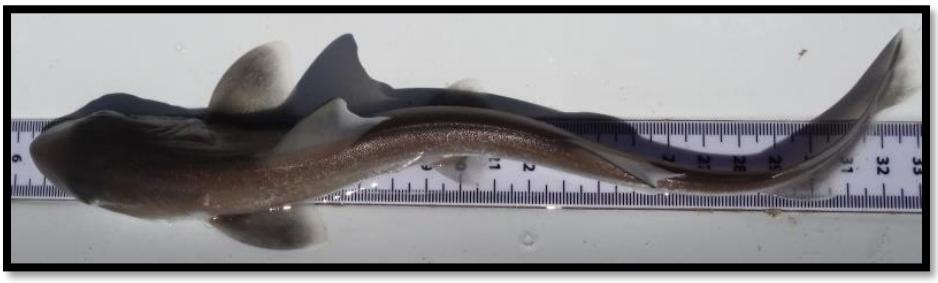
Fisheries
Small-eyed rays are sometimes taken as a bycatch in trawl and set net fisheries, with most landings from the Bristol Channel. Small-eyed rays are commercially important for ports in South Wales, Devon and Cornwall. However, small-eyed rays are listed by the IUCN as near threatened.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
1	1	0	0	0
Mean size = 286 mm			Range = 286 mm	
Relative abundance = 0.0016%				

Maximum size	86 cm
Life span	24 years
Size at reproductive maturity	70 cm
Age at reproductive maturity	7-9 years

Starry smooth hound *Mustelus asterias*

Key identification features



The starry smooth hound is a slender shark species with a pointed snout, five gill slits, two similarly sized dorsal fins and anal fins. They are generally grey in colour across the back with a creamy white underside. Starry smooth hounds are named due to the presence of white spots down both sides of the back above the lateral line. The visibility of these spots is variable and they are not always obvious. The eyes of a starry smooth hound are yellow. The teeth are blunt and flattened.

Similar species

The starry smooth hound may be confused with common smooth hound and spurdogs. The variability in the presence and clarity of white spots across the backs of starry smooth hounds make seperating the two species of smoothhounds very difficult, however, if white spots are absent, record as common smooth hound. Spurdogs, which also have white spots, can be seperated from starry smooth hounds by the presence of a spine in front of each of the spurdog's dorsal fins and their lack of an anal fin.

Habitat preference

These small sharks mostly swim near the seabed in coastal waters and are most common in shallow water down to about 100 m. Starry smooth hounds prefer sandy or shingle sea beds.

Distribution

The starry smooth hound is very common in the inshore waters surrounding the British Isles. They are also abundant throughout the North and Baltic Seas. Their range extends south to the Canary Islands and through the Mediterranean Sea.

Breeding behaviour

The breeding season is during the summer; mainly July to August. The starry smooth hound is ovoviviparous; they carry and hatch their eggs internally. After a gestation period of approximately 12 months, the female will birth between 5 and 20 young, known as pups. The young are born in the summer in sheltered inshore areas and are about 30cm long.

Diet

Starry smooth hounds feed almost entirely on decapod crustaceans including hermit crabs, edible crabs, shore crabs, and small lobsters. Starry smooth hounds will also eat cephalopods and bony fish.

Fisheries

Starry smooth hounds have a low market value and are mainly taken as bycatch by commercial fishers. Starry smooth hounds are occasionally targeted by recreational anglers.

Sussex survey specific information 2010-2017				
Total	**Rye**	**Chichester**	**Medmerry**	**Cuckmere**
1	1	0	0	0
Mean size = 275 mm			Range = 275 mm	
Relative abundance = 0.0016%				

Maximum size	140 cm
Life span	18 years
Size at reproductive maturity	80 cm
Age at reproductive maturity	3 years

Sussex IFCA Fish ID Guide

This was a summary of the main species caught on fish surveys led by Sussex IFCA and conducted in collaboration with a wide range of partner organisations. We wanted to produce a guide that would support further partnership working, encouraging others to take part or set up fish surveys.

There are numerous excellent identification guides available and we would recommend that anyone taking part in fish surveys consults a number of these resources. What we hoped to add to the literature with this guide was particular emphasis on the early life stages which are often caught in inshore surveys. For some species, these can look very different to the adults. We also wanted to highlight the key distinguishing features to make fish ID more accessible and less daunting to volunteers and others who are not looking at fish every day.

Guidance on conducting fish surveys is available in the IFCA Fish Survey Best Practice Guidance document, available online from www.sussex-ifca.gov.uk/research

Please have a look at our website www.sussex-ifca.gov.uk for further information on the fish surveys we conduct and the other work we do. Also, follow us on Twitter and Facebook to keep up to date with the latest news.

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