

Octopus and Cuttle Fish

by Mark Webster

What has two hearts, blue blood, a huge brain, no bones, eight arms, amazing eyesight and a water jet propulsion system ? It's *Octopus vulgaris* (the common octopus), who inhabits all the oceans of the globe and also appears to be making some what of a come back in British waters this year along with it's close ten armed cousin the cuttlefish. Octopus and its relatives are from the Phylum Mollusca - molluscs are invertebrates whose soft bodies are usually covered with hard shells - however, the octopus is in the separate class of Cephalopoda which also includes the squid, cuttlefish, and chambered nautilus, the latter being the only one to retain its shell completely. Unlike molluscs which have one muscular foot the cephalopods have at least eight arms projecting from the head region which is the scientific derivation of the name "cephalopods" meaning "head-footed".

Both octopus and cuttlefish are past masters at disguise and hide and seek. Whilst cuttlefish are often found in open water or buried just below the sand, the octopus is much more shy and will spend much of the day time hiding in small caves and crevices or perhaps in wrecks. Aside from the lack of protective shell cephalopods are able to change the colour and texture of their skin so that it blends in with the surroundings. They are also able to squirt a potential predator with a cloud of "ink" and escape



Sometimes you will encounter an octopus that simply wants attention and will follow you along the reef. Perhaps they are interested in us or hoping that we will disturb soething worth eating, who knows? Nikon F90X, Subal housing, 16mm fish eye, YS120 & YS30 flash, Elitechrome 100, f8 @ 1/60



Courting cuttle fish - cuttle fish are often seen in small groups particularly during the mating season. One paired off the male will indulge in some serious foreplay before fertilising the eggs. Nikon F801, Subal housing, 20mm, YS120 flash, Elitechrome 100, f8 @ 1/60



Flamboyant cuttle fish - one of the smallest cuttle fish is also the most colourful. The flamboyant cuttle fish is a popular muck diving subject which poses well for the camera. They spend their time strolling on the sea bed and use the colourful pattern to advertise their venomous qualities. Nikon F90X, Subal housing, 105mm, Inon Quad flash, Elitechrome EBX 100, f11 @ 1/125



Octopus hunting - Octopus generally come out at night to hunt and you will often see them using this method of blanketing an area of reef whilst they tease out potential prey. Nikon F801, Subal housing, 20mm, YS120 flash, Elitechrome 100, f8 @ 1/60

behind it by forcing water from a siphon near the head rather like jet propulsion. Cephalopod eyes are much more developed than other invertebrates and in fact are more similar to vertebrate eyes as their construction includes a cornea, lens, and retina. So Cephalopods can see very clearly, an ability that is not found in other molluscs.

Octopus

There are around 200 known species of octopus and they range in size from a few centimetres to an amazing 3.5 m (12 ft) in the cold waters of the

Pacific on the west coast of the USA and Canada. Octopus are normally solitary creatures only coming together to mate, a strange affair using a specially adapted arm. After mating the female is left on her own once again to brood her eggs for up to several weeks. These are normally laid in strings at the entrance to her cave, up to 50,000 at a time, and she will spend most of her time oxygenating them by circulating water around them using her siphon. During this period the female does not hunt and it is therefore normally her last act as she will literally die from exhaustion and starvation when

the eggs hatch.

Whichever sex you have discovered, once outside the den the octopus can normally be relied upon to demonstrate its aquatic camouflage techniques by dramatic changes of colour and texture. Some of these displays may be defensive or a warning - I am told that when they turn white it is with rage! - however if the octopus feels threatened it is quite capable of a quick escape jetting away with its water siphon and normally leaving behind a cloud of dark ink, which is intended to distract a predator. If you are both lucky and patient the octopus may stay to investigate you more closely

Octopus are quite common in the Mediterranean and during the day this may be all that you see of them, peering at you from their lairs. Nikon F801, Subal housing, 60mm, YS50 flash, Elitechrome 100, f11 @ 1/60

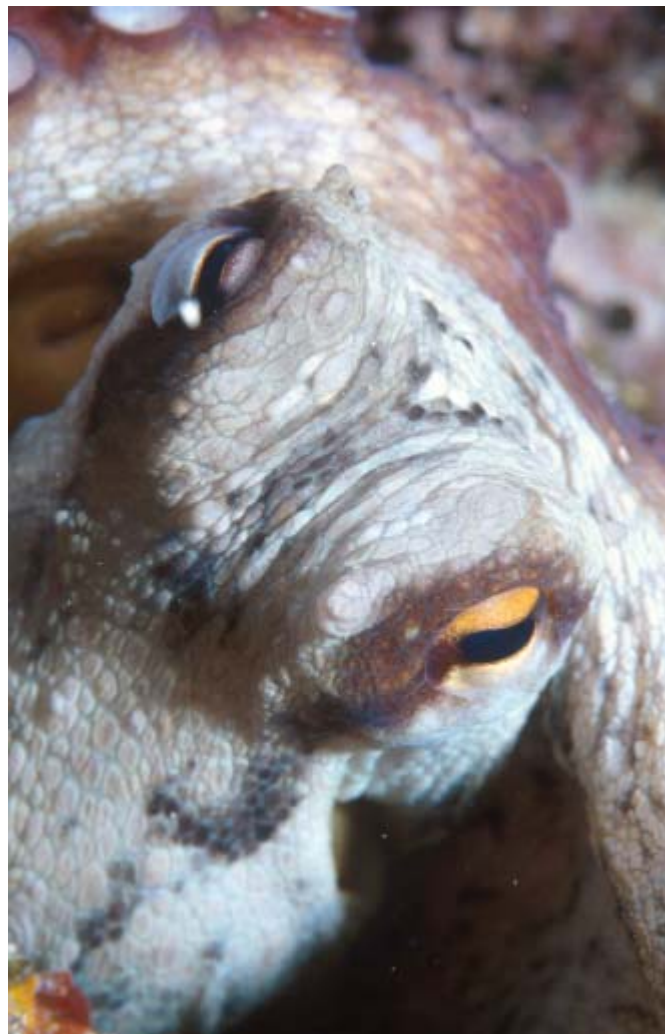
using some of its five hundred or more suckers which is a both a strange sensation and fascinating to be the attention of such an admittedly odd but obviously extremely intelligent creature and you may begin to wonder just who is investigating who! I have had several experiences of being followed by an octopus along the reef after an initial encounter for almost the entire dive.

Octopus are also ingenious home makers. If there are no suitable openings in the reef they will utilise whatever happens to be handy. There are a number of 'muck diving' locations in the Far East which have healthy octopus populations and here you will find them using man's debris for shelter. Paint cans, bottles and plastic containers are all put to good use and if these are not available then coconut or discarded mollusc shells will do just as well.

So in order to spot either species it helps to have some idea of their habits and the evidence to watch out for. If you are hunting for octopus the first indications are likely to be the remains of past meals outside their current residence. Look for piles of crab carapaces and empty shells which will literally have been sucked clean. Although the octopus will use its arms to catch prey it will use its 'beak' to crush the shells of crabs and lobsters, which are the octopus' favourite food. The beak looks very much like a parrot's beak and once it has pierced the prey, a poison is injected into its body which paralyses the victim and liquefies the meat so that the octopus can suck all of the flesh into its small mouth. In this way, it devours everything but the shell. Octopus are also immensely intelligent and have been the subject of many scientific studies which have proved that they can solve many simple problems, so prepare to be outwitted!

Cuttle Fish

Although cuttlefish (*Sepia officinalis*) are very closely related to the octopus, the most obvious difference between them is that the cuttlefish has maintained more of its mollusc ancestry with its



substantial internal 'shell'. This is the cuttlebone which are often found washed up on the beach and used as a source of calcium carbonate for caged birds. The 'bone' is in fact a mass of porous cells which enables the cuttlefish to control its buoyancy without having to swim actively - rather like the buoyancy tanks of a submarine!

This makes the cuttlefish a more efficient swimmer than the octopus using a combination of its siphon, skirt like fins and adjustable buoyancy. They prey on small crabs, prawns and fish and have two additional long tentacles with sucker pads on their ends which are shot out to snatch their prey. They also have remarkable eyesight and in fact can see both backwards and forwards, useful for hunting and avoiding predators. There are some 80 species of cuttle fish to be found around the world and they are much more readily encountered than the more elusive octopus although they will depart rapidly unless you make a cautious approach.

Once again the cuttlefish is predominantly a night hunter and will mostly spend daylight hours partially buried in the sand. However, during



Cuttle fish will often adopt this pose when they first see you. You can often encourage them to do this by holding out your hand and wiggling your fingers, however I am not sure what you might be saying! Nikon F801, Subal housing, 60mm, YS120 flash, Elitechrome 100, f8 @ 1/60

spring breeding cuttlefish are found together in groups 'courting' before mating. When they are engrossed in this, a very close, but cautious, approach can often be made to watch the males changing colour and pattern to attract a potential mate. Once a mate has been chosen the male is very attentive and can be seen indulging in a bit of foreplay, stroking the female before fertilising the eggs, however he is also very aware of competition and is prepared to chase off any other potential suitor. Like the octopus a specially designed tentacle is used during mating, the eggs are then laid in clusters attached to seaweed or in crevices in the reef - these are sometimes referred to as 'sea raisins' due to their shape and dark colour. Cuttlefish are most often found in spring and early summer in British waters on shallow reef areas



Octopus are sometimes encountered out on the reef during the day and will often put on a fine display once they realise they have been seen. Nikon F801, Subal housing, 16mm fish eye, YS120 flash, Elitechrome 100, f8 @ 1/60

where there are fine sand patches, or close to river estuaries where there may be sea grass beds. Once found their behaviour is difficult to predict. Some are very inquisitive and will emerge from a sandy burrow to touch and explore an extended hand whilst others will jet off immediately in a cloud of ink.

The common cuttle fish found around our own coast normally reaches about 30cm (12in) in length, so I was surprised to hear reports of 'giant' cuttle fish in the shallow waters of Mounts Bay in Cornwall in early spring a couple of years ago. A hundred metres or so offshore in 6-8m depth are banks of eel grass, which is ideal breeding ground for cuttle fish and you will often find their eggs attached to the blades of grass. Our initial searches were not productive, but within a few days the



Giant cuttle fish caught in net - Very large cuttle fish are not common in UK waters. These were breeding in eel grass beds in Mounts Bay until the local fishermen got to hear. They continued mating despite being caught and sadly it was almost impossible to disentangle them from the nets. Nikon F801, Subal housing, 20mm, YS120 flash, Elitechrome 100, f8 @ 1/60

local fishermen had also heard and more than one monofilament net was deployed across the area. Diving along the nets we encountered many of the 'giants', some of which were more than 60cm (2ft) long, but sadly many were caught in the nets. This was mating season, and perhaps most distressing was the strong desire of males to mate with trapped females at all costs. We observed ensnared females frantically signalling to several males who would come in to mate and sadly get entangled themselves. Despite our efforts to free as many as possible it was a losing battle as for each one freed there were two or three more getting caught - there were hundreds of cuttle fish here and along the length of the nets it was like a London smog with gallons of cuttle ink in suspension with the fine sand stirred up by their frantic efforts

to escape. Within a few days it was over, the nets had been pulled and the cuttle fish were gone to some fish market in Spain or Portugal. Sadly we have not seen such numbers since this locally unique incident.

Even larger giant cuttle fish can be commonly encountered in the temperate waters of Australia, but one of the most distinctive and diminutive species of cuttle fish also has the most elaborate defensive display. This is the flamboyant cuttle fish found throughout the Far East and is no more than 50mm or so in length. This little character is in fact a very inefficient swimmer and spends most of its time 'walking' on the bottom using modified fins on its mantle. When first encountered they are very dark in colour but coming closer prompts a vivid display of colour and pattern which is a warning to predators



Trapped giant cuttle fish signalling - even when fatally caught in the nets the females would continue to signal frantically for a mate. This of course attracted even more to the same sad fate. Nikon F801,

that this little cuttle fish carries a potent venom.

To capture these cephalopods on film almost any lens is suitable if you can get close enough, but perhaps the best choice is a 60mm macro or a short range zoom, perhaps an 18-35mm or 28-80mm which will allow you to fill the frame and take detail shots. If you are patient with your quarry these almost alien looking creatures will respond with increasing confidence and allow you to capture some stunning images.

Mark Webster

**Mark hosts underwater photography workshops aboard the MY Coral Queen and in Indonesia. He is also the author of 'The Art and Technique of Underwater Photography' .
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