

# Sea Snails With Overcoats

In this edition of **SCOTTISH DIVER**, Gordon MacSkimming tells us more about our native cowrie species ...

IN ALL gastropod molluscs the mantle is a skirt-like process which extends out beyond the shell opening to cover the body and foot below. In some species, the cowries and the olives for instance, the mantle is modified to also fold over the entire shell clinging to its surface and radically altering the appearance of the animal. When the mantle is withdrawn a glossy shell is revealed. Usually there is no marine growth on the shell possibly because it is subject to a regular polish each time the mantle is extended or withdrawn.

Some years ago two friends of mine, one a marine biologist the other at that time a marine biology student, were carrying out some underwater field work off the Northumberland coast. The sharp-eyed student pointed out one of our diminutive native cowries, her marine biologist colleague promptly wrote something on his slate and passed it over. Seeing the word 'Trivia' the bemused student took this to mean 'of little consequence' and moved on in search of greater things.

Trivia is of course the generic name of our two native cowrie species. Although fairly common I suspect that their small size ensures that these native gastropods are only regularly seen by divers engaged in species recording or macro photography. The third species covered in this issue, the poached egg shell, is also fairly small. Again it is probably not often seen by divers but this time because it may be genuinely uncommon.

#### Appearance

Like most gastropods the species described in this issue have a shell, a muscular foot, a mantle, tentacles, eyes, a proboscis (a tube like appendage used for feeding) and a siphon (used for respiration). They differ from many gastropods by having a shell that tends to twist sideways rather than spiralling to the rear and they have no operculum (the hard plate which seals off the shell opening).

Despite their common names and general appearance the European cowrie and the Arctic cowrie are not true cowries. They belong to the scientific family *Trivi-*

*idae* which are characterised by shells that have an exterior surface of closely spaced transverse ribs. True cowries belong to the family *Cypraeidae* and have an exterior shell surface which is smooth.

The European cowrie is also called the spotted cowrie or bean cowrie. If the mantle is even partially withdrawn identification of this species is fairly straightforward, three prominent dark spots are always present on top of a white shell. On the Arctic cowrie there is a white shell but no spots. On either species the portion of the mantle extending over the shell is of minimal use as an identification tool. If however you look at the upper surface of the mantle where it extends back to cover the foot you will find a variation in markings between each species. The European cowrie has a series of longitudinal stripes which may vary in colour from light yellow to orange. The Arctic cowrie has a sparse often minimal arrangement of light yellow spots. Tentacles are located on the head of both species, eyes are positioned at the base of each tentacle.

The European cowrie has a maximum shell length of around 12mm and the Arctic cowrie has a maximum shell length of around 10mm. In both species a fully withdrawn animal reveals a long narrow opening on the underside of the shell.

The poached egg shell is fairly unique and unlikely to be misidentified, the hard thing in my experience is actually finding them. This species belongs to the scientific family *Ovulidae* more commonly termed the egg shells or allied cowries. The shell is elongated with an opening that extends along its length. The shell colour may vary between individuals and has been recorded in variations of white, yellow, pink or red (I have only ever seen white or pale yellow shells).

The body of the poached egg shell has a pale yellow often near white base colour. The folds of mantle which cover the shell are superimposed by a transverse pattern of irregular brown stripes. On the head, eyes are located at the base of two tentacles. A maximum shell length of around 25mm can be attained.

#### Distribution

The Arctic cowrie has a range which takes it from the Mediterranean to Norway and the European cowrie from the Mediterranean to Scotland. The poached egg shell has a range that reaches from the Atlantic coast of France to Norway.

#### Habitat

As with many other gastropod carnivores their immediate habitat is their food source. Both the European and Arctic cowries are found living on or moving in close proximity to compound ascidians (a form of colonial sea squirt). The host species include *Botryllus schlosseri* (the star sea squirt), *Botrylloides leachi* (Leach's ascidian) and *Diplosoma listerianum*. Both cowrie species can be found throughout air diving depths but in my experience are more frequently encountered in shallower waters.

The poached egg shell can be found feeding and living on the soft coral *Alcyonium digitatum* (dead men's fingers). It has also been recorded on the hydroid *Tubularia indivisa* (oaten pipes hydroids). Records suggest that it will be found in depths of 15 metres or greater. In the western English Channel a related species *Simnia hiscocki* has recently been identified living on the sea fan *Eunicella verrucosa*. Obviously it is extremely unlikely that anyone will encounter *Simnia hiscocki* in Scottish waters but it is none the less interesting to find that a new species has been discovered relatively close to home.

In all cases the food source is found on firm substrate such as rock stones and kelp stipes etc.

#### Biology

As already outlined all three species are carnivores and all usually reside on their food source. It follows that this is also where they deposit their eggs. The cowrie species put their egg capsules into cavities eaten out of compound ascidians. The poached egg shells deposit a cluster of egg capsules on the surface of dead men's fingers. Larvae from the European cowrie and the poached egg shell can be found as plankton during the warmer months of the year whereas the larvae from the Arctic cowrie appears during the colder



Top: European cowrie (*Trivia monacha*), Skelly Rock, St Abbs    Middle: Arctic cowrie (*Trivia arctica*), Gortein Point, Loch Fyne  
 Bottom: Poached egg shell (*Simnia patula*), Eigg Wall, Isle of Eigg

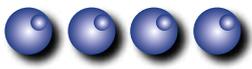
months.

Gastropods use their siphons for respiration and as a means of smelling the water. On the cowries the siphons take the form of a long retractable tube whereas on the poached egg shell the siphon is relatively small and formed by

folding the front of the mantle. Located below the eyes and sensory tentacles the proboscis contains a toothed tongue called a radula that is used to pierce and cut up prey items when feeding.

The primary means of defence appears to be retraction of the soft body parts into

the shell. Given that there is no obvious means of closing it off I assume that the very narrow nature of the cowrie shell opening also contributes to defence. This assumption does not work for the poached egg shell which has a fairly wide shell opening.



# CREATURE FEATURE

## Where to See

I have seen European and Arctic cowries at numerous locations around Scotland including sites in Lochs Creran and Fyne, at St Abbs and in the Firth of Clyde, in essence I would expect to find them on any Scottish dive site given the appropriate habitat. What I would suggest to anyone determined to see them is to make your efforts in the early part of the year when the invertebrate turf is at its minimum spread making location easier and presenting fewer obstructions when it comes to getting photographs.

In Scotland I have only ever seen the poached egg shell at two sites, the Eigg wall and the rocky islet of Godag. The Eigg wall is on the east coast of the Isle of Eigg and lies between the ferry terminal and the north end of the island. Godag lies to the north of the Isle of Muck. At both sites the host was dead men's fingers at depths in the range 15 to 20 metres. Poached egg shells have been recorded at a number of other locations covering all Scottish coasts.

## How to Photograph

The species described are all on or about finger nail size making them excellent macro-photography subjects. Regardless of camera system the following explanation assumes the use of an external

underwater flashgun to provide lighting.

The ideal set up is a cropped frame DSLR camera fitted with a macro-lens of around 100mm focal length and a supplementary close-up lens (external or internal). This arrangement allows the photographer space between subject and lens avoiding obstructions and making it easy to direct artificial light onto the scene. You could substitute a 50 or 60mm macro lens but this will require a very close unobstructed approach and that is rarely possible.

Those using housed cameras lacking interchangeable lenses will probably require stacked external supplementary close-up lenses. Once again a very close unobstructed approach may be required although the compact nature of this type of camera set up does improve your chances.

Capturing images of such tiny creatures presents one particular problem and that is the very small depth of field that is available. Depth of field is the distance ahead of and behind the exact point of focus within which the subject will appear acceptably sharp in the captured image. As we move closer to small subjects depth of field decreases proportionally. In terms of our cowries a side on shot should present few problems. A shot of the animal coming towards the

camera is however more desirable as it will deliver higher visual impact. The problem is that the cowrie (or any other beastie of similar dimensions) is longer than it is wide. Add to this the additional length of the siphon and you have a depth of field issue, it will be impossible to get both front and rear of the cowrie in sharp focus.

The depth of field issue is tackled by ensuring that the important bits remain in sharp focus, they include the eyes, and as far as possible some of the foreground (an out of focus foreground can be a significant visual distraction). This can be achieved by selecting a small aperture and choosing a point of focus slightly ahead of the eyes. The smaller the aperture the greater the depth of field, F22 is ideal (remember that the higher 'F' numbers equate to smaller apertures). By choosing a point of focus ahead of the eyes you are attempting to keep the extended siphon in focus.

Finally avoid shooting from directly in front of the cowrie it will be easier to get an effective shot from a slight angle especially if you can get level with your subject. The rear of the cowrie is likely to be out of focus but it doesn't matter since that is the last thing that a viewer's eye will be drawn to.

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