



Skate/ray and dogfish eggcase Underwater Recording project



Notes for recorders

Why record skate and ray eggcases underwater?

In recent decades several species of skate and ray around the British coast have dramatically declined in numbers. Skates and rays have life history characteristics (slow growth, high age at maturity and low reproduction rates) that make them vulnerable to over-fishing. The now erroneously named 'Common Skate' is a widely distributed species in European waters, but is considered to have been fished to extinction in the Irish Sea and is extremely rare through many large areas of its range.

Identifying where skates and rays lay their eggs and the type of seabed habitat they require is essential if we are to be able to protect their nursery areas and help the recovery of these species.



For several years, the Shark Trust has been running 'The Great Eggcase Hunt' (www.eggcase.org), encouraging recording of skate and ray eggcases (often called 'mermaid's purses') that are washed up on our beaches. These empty eggcases help to provide an indication of the possible whereabouts of skate and ray nursery grounds, but we know very little indeed about the real areas and type of seabed that skates and rays use to lay their eggs. It could be that those eggcases washed up dead on beaches have been carried a long way by the sea from where they were originally laid. The aim of the underwater eggcase project is to try and get more detailed information about the specific areas that skates and rays use as nursery areas, and the types of seabed habitats that they actually lay their eggs on.

What do we know about where skate and ray eggcases are laid?

Observations in aquaria frequently report skate/ray eggcases being laid in sediment, but photographic images of thornback ray and common skate eggcases taken in Ireland and Scotland in 2005-06 question some of the commonly held views about where and how the eggcases are laid. Rather than being laid in sediment, the images below show the thornback ray eggcases attached to the seabed (in these a pebble/gravel seabed) by a kind of 'web' of material extending out from the eggcases.

Live thornback ray eggcases on the seabed



In contrast, the common skate eggcases (see image on right) were 'posted' between boulders on a small reef with no web of attaching material. The common skate eggcases are much larger than the thornback ray eggcases (15-25cm long by 8-15cm wide for the common skate compared with 6-9cm long for the thornback ray).

Underwater observations of skate/ray eggcases are rare, and one of the aims of this recording project is to get as many people as possible looking out for them and submitting their sightings.



Skates and rays

Skates and rays are relatively large-bodied elasmobranch fishes (i.e. with a cartilaginous skeleton as opposed to a bony one), with 7 or 8 species commonly encountered in the coastal waters of the UK. Skates produce eggs that develop and hatch outside the body of the female. These eggcases are laid on the seabed and the embryo matures inside the egg case over a period of 6-9 months until a fully developed miniature skate/ray, wrapped in its own wings, is ready to leave through the top of the eggcase. While still inside, the developing skate/ray can draw in water in through small openings in the horns of the egg case by beating its tail, so as to maintain an flow of oxygenated water through the eggcase.

Once the juveniles hatch, some of the tough and resilient eggcases that once housed the developing babies eventually get washed up on shore and can be found along the shoreline and the back of the beach. Different species of skate lay distinctively sized and shaped egg cases so it is possible to tell which skate or ray produced a specific eggcase, and usually with a good degree of certainty.

Skate vs rays

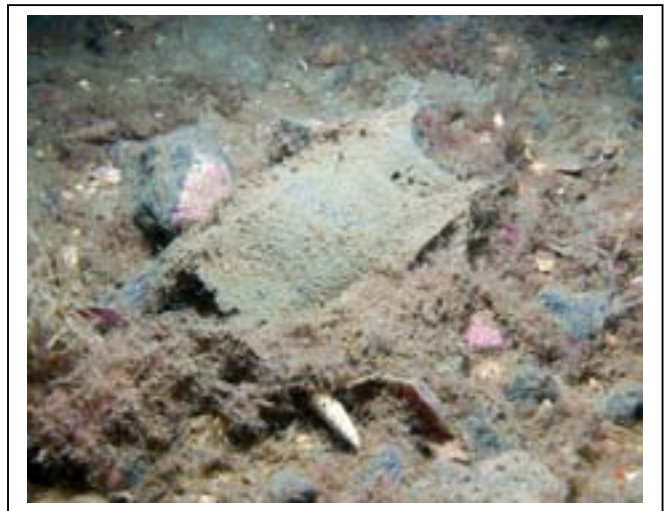
Although many of the species encountered in our coastal waters are called 'rays', they are, technically speaking, skates! So what's the difference between skates and rays? In relation to eggcases and birth of young, skates differ markedly from rays: Rays give birth to live young whereas skates produce eggcases from which their young hatch later. Historically however, skates and rays have been named, seemingly arbitrarily, with no specific regard to their taxonomy. This has resulted in Blonde, Small-eyed, Thornback, Undulate, Spotted and Cuckoo skates being known as rays. Consequently, the terms skates and rays are used interchangeably throughout this note and the recording form or shown as skate/ray. There are other differences between skates and rays - more information on this is available via the Great Eggcase Hunt website (www.eggcase.org).

Skate/ray eggcases vs dogfish eggcases

The eggcases that are most commonly seen underwater actually belong to dogfishes - the lesser spotted dogfish (also known as the lesser spotted catshark) and the greater spotted dogfish (also known as the bull huss or nursehound). These are easily distinguishable from skate/ray eggcases in that they have tendrils coming out of the end of the eggcase which actually attach the eggcase to plants or animals which are themselves fixed to the seabed. Skate/ray eggcases have no such tendrils, only the horns projecting from each corner of the eggcase. The greater spotted dogfish eggcase is a much larger and robust eggcase than that of the lesser spotted dogfish. Whilst sightings of dogfish eggcases may be considered relatively common and these species are not specifically considered to be under threat at present records of the eggcases are nonetheless useful to establish the specific habitats that these species use as their nursery areas.



Above are images of eggcases of greater spotted dogfish (left) and lesser spotted dogfish (right) attached to marine life on the seabed by tendrils that extend out from the end of the eggcase. These eggcases lack the horns that the skate/ray eggcases have at the corners of the eggcase. The eggcase of the lesser spotted dogfish is smaller and more delicate-looking than that of the greater spotted dogfish. Compare these to the images below which show empty eggcases of the spotted ray (left) and thornback ray (right) on the seabed. Note the ray eggcases have no tendrils.



Empty spotted ray eggcase (left) and thornback ray eggcase (right) on the seabed.

How to take part

This project has been designed as a pilot project, trialled in north west Wales, but can be used by anybody diving in the UK and Ireland. As there have been so few records in the past, any underwater records of skate/ray eggcases are of interest. The main benefit of the pilot is to raise awareness amongst divers of the rarity of *'in situ'* sightings of eggcases and let them know how valuable their eyes, photos and general records are - both of areas where eggcases are seen as well as those where they are not seen. Records of skate/ray eggcases that have been washed up on the shore are also of interest and these can be submitted online through the Great Eggcase Hunt website (www.eggcase.org which can also be reached via the Shark Trust website www.sharktrust.org).

Underwater records of skate/ray eggcases should be posted or e-mailed to Lucy Kay (details on the recording form) who will collate the records and submit them to the Shark Trust. A summary report will be produced and made available online on the Seasearch and Shark Trust websites. Copies of this sheet and recording forms are available to anybody who wishes to take part and can also be down loaded from the Seasearch Website: www.seasearch.org.uk and the Great Eggcase Hunt website.

What to record

1. Any skate/ray and dogfish eggcases that you find on the seabed. Sometimes you may come across empty eggcases where the young skate/ray has 'hatched' out. You can tell these by the fact that they look darker/blacker, are flat and empty if touched gently and may be floating loose on the seabed (fresh, live eggcases have more substance to them, are firm if touched gently and sometimes have a brown/green tinge to their colouration). See the images above which show both live and empty eggcases on the seabed. If you have an underwater camera with you, please take several pictures of any eggcases you find showing the whole eggcase - this will help confirm identification of the species. If you are absolutely CERTAIN that an eggcase is empty - that the fish has hatched out of it - then it may be collected and dried for later identification BUT **Do not disturb or remove any live skate/ray eggcases from the seabed.**

2. Live skate/ray adults or juveniles seen on a dive.

Identification guides for both the eggcases and adult skates/rays are available on at www.eggcase.org

How to complete the recording form

Side One

The first side of the form has your contact details so we can keep you informed about progress with the project and of the results. The rest of the information required is about your dive and room for any additional notes about the dive site and your observations.

- **General location:** this helps to locate the dive site, ideally provide information about the nearest town and county (e.g. approx 2 miles south of Abersoch, Gwynedd, North Wales).
- **Position** - this is essential: can be provided as Latitude and Longitude or OS Grid Reference. If you were on a drift dive and noted both start and finish positions include both.
- **Additional notes:** any comments / observations you want to record about eggcases you saw or the type of seabed, seabed habitats and species.

Side Two

This provides space to record up to 4 records of eggcases or adults/juveniles for a dive. If you have more records than this please DO record these, but on an additional form. If you see more than one eggcase or adult/juvenile on a dive and they are not together, please note these as separate records on the form.

- **Eggcase species:** record which species of skate/ray the eggcase belongs to (if you are recording dogfish eggcases please note if greater or lesser spotted dogfish)
- **Skate/ray species:** Record if you see adult/juvenile skates or rays on your dive - record which species you have seen.
- **Number present, depth, photo:** note the number of eggcases or adults/juvenile skate/ray seen, the depth you recorded them and whether or not any photographs were taken. Photos may be emailed to Lucy Kay but if possible please resize them to 1024 pixels wide and save them as a Jpeg file first).
- **Confidence of ID (of the eggcase / adult species):** Record as 'high' or 'low'.
- **What were the eggcases attached to?:** Record if the eggcases are attached to the seabed or marine life in any

way

- ***Seabed type and seabed cover type where the eggcase / skate/ray was found:*** These are tick boxes using Seasearch categories. Tick any or all that apply to the seabed where the eggcase / adult was seen. More information about these categories and what they mean is on the Seasearch Observer guidance notes and can be downloaded from the Seasearch website (www.seasearch.org.uk (under 'Seasearch Recording')).

Returning the forms

Please return your completed form(s) by post or e-mail to Lucy Kay at the address/e-mail shown on the recording form. If you have taken photographs that you would like identifying, please e-mail these or send them on disc. If sending images by e-mail please remember to resize them to 1024 pixels wide and save as a jpeg file first.

Remember to take care not to disturb any live eggcases that you find. Your records will help to unravel one of the mysteries of the sea and provide information to help the conservation of skates/rays.

This Seasearch Specialist project is being run in conjunction with the Shark Trust.
Text by Lucy Kay. Photographs by Paul Kay and Lucy Kay