

# Where do oysters go?

**Oysters released in the North Sea often disappear without a trace. Wageningen and Delft researchers are studying how the shellfish sink slowly to the bottom and whether currents and waves have any impact on their movements.**

TEXT TESSA LOUWERENS PHOTOGRAPHY TESSA LOUWERENS AND OSCAR BOS

Researchers Oscar Bos and Tim Raaijmakers pull on their safety shoes and wading suits and get into the ‘sea’ down a wobbly ladder. In the Atlantic Basin at Deltares in Delft – an enormous 650-square-metre pool – the two researchers have simulated the North Sea in miniature in order to monitor how oysters spread.

Bos, a marine ecologist at Wageningen Marine Research, and Raaijmakers, an offshore engineering researcher at Deltares, set about placing brightly coloured oysters in neat rows on the sandy bed. They are obviously enjoying themselves. ‘We do much of our work at the computer,’ says Raaijmakers, ‘so a day like this is very nice.’

A bit later, they are at the edge of the pool when the alarm goes off: machines start whirring and soon the first waves ripple across the surface of the water. ‘We are simulating the current as it will be in the deepest layers of water in the North Sea,’ says Raaijmakers. The researchers want to find out how oysters react to a current.

## RESTORATION OF OYSTER BANKS

This knowledge should help with the restoration of flat oyster (*Ostrea edulis*) banks in the North Sea. And that is

necessary because they form an important link in the ecosystem. ‘They filter the water and form resting places for fish such as plaice and cod,’ says Bos. ‘In turn, the fish

‘We hope to be able to predict where released oysters will end up’

attract sharks, rays, porpoises and seals.’ Soft corals grow on the shellfish banks, in which fish lay their eggs and birds feed on shrimps and small fish. Oyster banks also function as natural breakwaters that protect the coast. One and a half centuries ago, one third of the bed of the Dutch North Sea was covered in flat oyster banks, explains Bos. ‘Due to a combination of overfishing, disease, pollution and cold

winters, the flat oyster has now almost completely disappeared from the North Sea.’ And it’s extremely difficult for the population to recover: if there aren’t many oysters around, the chances of successful reproduction are small

Within the project ECO-Friend, the researchers are working with the industry to reintroduce oysters at offshore wind farms. Bos: ‘They are suitable locations for oysters, one reason being that they are inaccessible to bottom-trawling fishing boats.’ The first trials of releasing oysters have started at the Borkumse Stenen area to the north of the island of Schiermonnikoog, and at the Gemini Wind Farm north of Groningen.

## WASHED AWAY

One of the problems facing the researchers in the field is that it is often hard to find oysters again after releasing them. In which case, you can’t monitor how they are faring. To get a clearer idea of what goes on under water, the researchers are simulating what happens in miniature in the Delft pool. This interests the Delft researcher Raaijmakers too. ‘We are interested in nature-inclusive engineering,’ he explains. ‘For example, we make scale models of the base of a wind turbine and the seabed



protection around it, and then we can see which type of substrate can best be added to it so the oyster larvae can attach themselves to it. Biological knowledge is indispensable for that.'

In their test pool, the researchers simulate different conditions in order to see what effect they have. They sort the oysters by size and the thickness of their shells. They also add weight to the oysters by filling the shells with little metal balls. Colour coding is used: the red shells are the lightest, the green are of medium weight and the blue ones are the real heavyweights. And a stripe is painted onto the flat side of the shell so the researchers can see whether an oyster is lying on its flat or its rounded side. Oysters that land on their rounded side after release are less streamlined and it is easier for the current to carry them off.

Raaijmakers: 'We hope to be able to predict where oysters end up, depending on things like the weather conditions when they are released, or the weather in the days between their release and the monitoring.'

### DROP TEST

Another important factor besides the current is the height above the seabed at which the oysters are dropped. So the researchers have created a drop test for the oysters next to the wave pool: a large vertical tube of water. They use this to establish how fast oysters of various shapes and weights reach the bottom of the tube. Some oysters sink like stones, while others float down more like autumn leaves. 'You can imagine that oysters that take longer to fall will drift further with the current before reaching the seabed,' says Raaijmakers. 'We don't want them all landing in a heap, says Bos, 'but if they are too spread out, you can't monitor them easily, and they won't be able to breed properly either.' ■

[www.wur.edu/eco-friend](http://www.wur.edu/eco-friend)

Oscar Bos, a marine ecologist at Wageningen Marine Research (top right, on the left), and Tim Raaijmakers, a researcher in offshore engineering at Deltares, built a mini-North Sea in the Atlantic Basin at Deltares in Delft and a drop test (bottom), to study the behaviour of released oysters.