Research shows that cod love the artificial reef at a wind farm

April 18 2023

Credit: Unsplash/CC0 Public Domain

Artificial reefs have been constructed at Borssele 1 & 2 wind farm off the Netherlands coast of Zeeland to boost underwater wildlife. Research by Wageningen Marine Research (WMR) shows that cod can often be

found near the artificial reefs and use them as a base. The behavior of lobsters, however, shows a more ambiguous picture.

The researchers call the initial results "promising." Wind farm developer Ørsted and partner De Rijke Noordzee are also pleased with the new nature development. Ørsted has installed four artificial reefs in the wind farm based on its ambition to design wind farm Borssele 1 & 2 in a nature-inclusive way.

Ruben Dijkstra, Managing Director of Ørsted Benelux, said, "It is important that offshore wind energy and ecology go hand in hand. Ørsted sets up innovative biodiversity projects worldwide to test, gain experience and learn. This contributes to realizing our ambition to build offshore wind farms that have a net positive impact on biodiversity. It is great to see that the results of our biodiversity project in the Borssele 1 & 2 wind farm are promising. These results are public and we are sharing them with the scientific community."

Through transmitter surveys, WMR researchers study the behavior of cod and lobster underwater. Both species prefer hard substrate such as artificial reefs in their immediate habitat. "We want to know what role these artificial reefs play for our target species of cod and European lobster. That way, we can eventually advise on how to optimize these boosts for local biodiversity," said Benoît Bergès and Marcel Rozemeijer of Wageningen Marine Research.

Cod as key species

Researchers chose to study the behavior of Atlantic cod (Gadus morhua) because cod is a key species in the functioning of the local ecosystem. If cod are doing well, it is an indication that the reefs are also suitable habitat for other species of fish, marine and benthic life.

In July 2021, 45 Atlantic cod were fitted with acoustic transmitters ("tags") to track their movements. In May 2022, the acoustic transmitters were retrieved and the data collected, after which the transmitters were redeployed. The data collected provides GPS coordinates through time. This revealed the effect of the four artificial reefs: Atlantic cod are attracted to the reef and like to stay in its vicinity.

Lobster makes high demands

On behalf of De Rijke Noordzee, 12 European lobsters (Homarus gammarus) were also fitted with a transmitter and then released. Most lobsters had left within a day. A few used a reef and its immediate surroundings for a few days, but then migrated further. Researcher Marcel Rozemeijer explained why: "Lobsters make high demands on their environment. They have a strong preference for good burrows to hide in. In addition, they need a lot of food, which also puts a number of demands on the environment."

It was noteworthy, however, that the lobsters were clearly walking slower on and around the reefs. "They were possibly foraging. When they move on over the open sand again, they walk much faster," said Rozemeijer.

The batteries of the transmitters lasted about a year. Moreover, lobsters molt regularly. Therefore, in May 2022, another 19 locally caught cod were tagged, and 12 new lobsters were tagged and released. These new data were extracted in early 2023 and are currently being analyzed. The study will run until the end of 2023.

Provided by Wageningen University