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Let's Solve Water

Hanoe Cod Reef

Artificial reef project aims to get the cod back

NEWSFLASH

Hanoe (Hanö) is a small Swedish island in the Baltic Sea. Today the permanent population is under ten people, but in the summer, the island is a popular tourist destination with around 30 000 visitors yearly.

From 1810-1812, during the Napoleonic Wars, the island was used as an English naval base with 10 000-15 000 sailors and soldiers stationed here.

Even today, English warships visit the island to honor the sailors buried at the "English cemetery."

The island has a long history as a hub for Baltic Sea fishing of cod and herring. Today, because of overfishing and environmental pressure, cod is a threatened species, and since 2019 it has been prohibited to fish cod in the Baltic Sea.

Cod is a threathened species in the Baltic Sea. Artificial reef project aims to get the cod back.

Artificial reefs are installed outside Hanoe Island (figure 1). in a locally driven citizen science project. The reefs consist of cement beams, residual material given by a local cement factory. The plan is to carefully place the reefs in clusters on the bottom (figure 2) during 2022/2023. This type of artificial reefs have been successfully implemented in other areas.

A SeaGuardII mooring (weights, acoustic release, mooring frame, and floats) is transported to the deployment site, where it is dropped from the surface and sinks to the bottom. Recovery is made by sending an acoustic signal from the surface to release the instrument from the weights. After the instrument is on-board, the weights are pulled up with a thin but strong hpme/dyneema line (figure 3).

Figure 1: The vessel Frida anchored off Hanoe installing the artificial reefs on the bottom.

Figure 2: The artificial reefs are carefully installed, without resuspension of any sediments, in clusters on the bottom.

Figure 3: SeaGuardII mooring on its way to the deployment site. Deployment and recovery is done manually and takes less than 10 min each.

Aanderaa, a Xylem brand, participate in this project by deploying the SeaGuardII instrument at 20 m depth for several months. The goal is to get continuous measurements of the marine environment before, during, and after installing the first reefs. The instrument measures currents from the bottom to the surface, directional waves, particles/turbidity, water level, oxygen, salinity, and temperature. These measurements are done as one of many benevolent efforts in the Xylem Watermark program.

Measurements from the first period, in the autumn of 2022, shows a steady decrease in temperature related to the colder autumn conditions.Oxygen saturation drops by about 45 % from 85 to 40 % when denser water moves in, salinity increases from 7.5 to 8.2 PSU, and temperature drops from 14 to 9 degC. Hanoe is known as a windy place which is reflected in wave heights up to 4.5 m, waves are mainly wind drive in the Baltic Sea (figure 4).

Over time, the reefs' development will be photo documented by local divers and analyzed by sampling and measurements by marine scientists from the Marine Centre of the Simrishamn Municipality and Lund University.

Dr. Anders Tengberg during the deployment of the SeaGuardII Doppler Current Profiler.

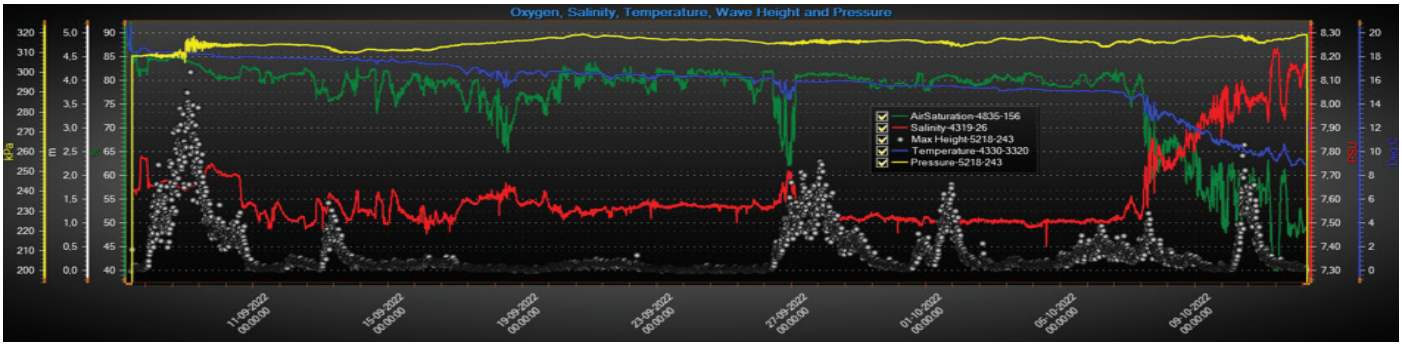

Figure 4: Measurements of waves, oxygen saturation, temperature, water level and salinity in the autumn of 2022.

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