

Project for MSc, BSc or special courses:

Marine biology projects at the Technical University of Denmark (DTU Aqua) in 2022-2025

General information

DTU Aqua collaborates with many students from Danish and foreign universities. Students are welcome to join ongoing research projects or start their own independent project. Students often produce one of the following options: 1) a [project film](#) (e.g. Youtube format), 2) a [popular science article](#), or 3) a draft for peer reviewed [scientific paper](#). Undergraduate students spearheaded all the highlighted items. Students are encouraged to first-author or co-author the various options. Most projects include data collection, data analyses and data interpretation. All projects are flexible and are designed to match student needs and enable students to pass various study program requirements (e.g. Erasmus requirements). Students from all national and international universities are welcome, and students are encouraged to work in groups, although working alone is also fine. Projects may be expanded, or combined, in case a single project (see below) provides insufficient work for a complete student project.

Students may choose to have their work location based either at DTU Aqua in [Kongens Lyngby](#) (north of Copenhagen) or in [Silkeborg](#) (on Jutland). However, fieldwork is carried out in a diversity of locations, including the estuary [Roskilde Fjord](#), the bay [Sønderborg Bugt](#) (see picture below) and the narrow marine area [Little Belt](#). An example of fieldwork is available [here](#).

Student guidance covers study planning, data collection, statistical analyses, results presentation and writing of the thesis/manuscript. In addition to the student guidance, the university offers a study location (desk, PC, access to library, software etc.), laboratory space, transportation, research equipment (boats, underwater cameras etc.) and a friendly and international work environment. Depending on the project, direct financial support may be available. The university will ensure that students learn how to carry out a research project and report the findings. Students are not expected to learn to speak the Danish language. Speaking English is fine.



Students at DTU doing recent fieldwork on a stone reef in Sønderborg Bugt. Students are from the Netherlands, Faroe Islands, the UK and France.

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Marine Protected Area – Does it help the Atlantic cod?



A team of DTU students and a volunteer local fisherman collaborating on gathering data during recent fieldwork.

Aim:

The objective of this study is to examine the presence of Atlantic cod in a newly established Marine Protected Area (MPA) in [Tybrind Vig](#) in the Little Belt in Denmark. It is hypothesized that cod will be present within the MPA up to 90% of the time.

Background:

The abundance of Atlantic cod has decreased dramatically during the past 30 years. In line with this, the marine environment and the population of Atlantic cod in Little Belt are currently under high pressure. Therefore, an MPA will be established during 2022 in Tybrind Vig in Little Belt. A stone reef will likewise be established within the area. Tybrind Vig is approximately 8.3 km² and the MPA will be based on local fishers voluntarily protecting the area where fishing will be prohibited. This provides a protected reserve (or area) where feeding grounds can evolve and produce a suitable habitat where the cod can remain undisturbed. Fieldwork in this project will be commenced in 2023, approximately one year after the MPA has been established. It is hypothesized that this MPA will increase the presence of cod in Tybrind Vig and in other parts of the Little Belt. It is a fundamental assumption, however, that the cod remain inside the MPA for the majority of time to be protected from fishing. If the fish leave the MPA, they will likely be targeted by various fisheries. The present investigation will therefore map cod movements to examine the assumption that the fish remain inside the MPA for the majority of time.

Content:

Fieldwork in this project will be commenced in 2023, approximately one year after the MPA has been established. In this project, hydrophones will be placed inside the reserve (inside the MPA) and cod will be captured and tagged with signal emitting transmitters. The hydrophones will act as listening post as they register transmitted signals when tagged fish swim by. Data collected by the listening posts will be used to track movements and estimate the proportion of time spent by cod within the MPA. Data will help document the positive effect of the MPA.

Duration:

Review of literature is expected to take about one month. Data collection is expected to take 1-3 months; followed by 1-3 months for data analyses. This will be followed by 1-2 months for statistical analyses, and 1-3 months for write-up, depending on the scope of the specific student project. Students will receive support by a statistician for the statistical analyses (if needed). The project is flexible and project scope and duration may be adjusted to match different study programs and student needs.



Illustration of Tybrind Vig. The bay on the right side of the yellow line is the MPA. Green dots depict examples of hydrophone locations. The red dot is the location of the stone reef.



Previous student at DTU Aqua about to deploy a hydrophone.

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