Project for MSc, BSc or special courses:

Marine biology projects at the Technical University of Denmark (DTU Aqua) in 2021-2023

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.

The work location is the Technical University of Denmark campus, north of Copenhagen in Denmark. Field work is carried out in a diversity of locations, including the estuary Roskilde Fjord, the marine bay Sønderborg Bugt (see picture below) as well as 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.
Biohuts: Artificial marine “kindergartens” can increase juvenile fish abundance in harbors

Aim:
The objective of this study is to examine the effect of biohuts on the presence of small and juvenile marine fishes. Specifically, it is hypothesized that biohuts have a positive effect on the species diversity and abundance of juvenile and small fishes in Danish harbors and marinas in the Little Belt.

Background:
In many cases, there are few nursery areas and sheltering habitats for small and juvenile fishes in Danish harbors. Poor access to shelter and nursery areas may increase mortality due to exposure to predators and limited access to feeding grounds.

Biohuts are artificially constructed habitats that can provide appropriate nursery areas for small and juvenile fishes. Biohuts are therefore also referred to as “fish kindergartens”. They are constructed of a steel wire cage with oyster shells inside. The cage limits the access of larger and predatory fishes, and the shells provide a foraging area for small fish. Studies in the Mediterranean have already demonstrated a positive correlation between biohuts and juvenile fish abundance. Much less is known about the effects of biohuts in Scandinavian waters.

A video about biohuts is available here.

Content:
This study will gather data on the species diversity and abundance that is present in and near the biohuts. Biohuts will be located in different harbors and marinas in the Little Belt, where field work will be carried out between 2021-2023. Data will be gathered via underwater video-recordings and possibly via observations from snorkeling. Subsequently, videos will be analyzed to quantify fish abundance and species diversity in relation to the examined biohuts.

Picture of biohuts ready to be deployed.
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 video analyses. Statistical analysis is expected to take 1-2 months and write-up is expected to take 1-3 months, depending on the scope of the specific student project. Students will receive support by a statistician for the statistical analyses (if needed). The project scope and duration may be adjusted to match different study programs.

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Students at DTU doing recent field work with underwater cameras near a harbor located in Roskilde Fjord.