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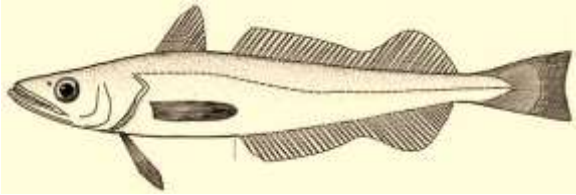
Specialization Area: Management and Use of Resources
Research Area: Research of resources based on ecosystems knowledge



PhD project: **Fishery resources management under uncertainty: The impact of climate change**

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Summary: The fundamental objective of the management of fisheries resources is the sustainable and long-term use of fishery resources. The difficulty of this task is to combine two opposing objectives (to maximize returns while minimizing the risk of over-exploitation) in a context of uncertainty. The management strategy evaluation (MSE) methodology involves a set of simulation-based procedures to compare alternative strategies that are robust to these uncertainty. The MSE approach is to simulate a set of operational models (OM) that define the real system. This is subject to a management procedure (MP) that includes (1) population sampling, which provides the necessary information to (2) evaluate it with different models; the assessment in conjunction with a management rule produces (3) a recommendation; which (4) are implemented in the MO, continuing the cycle in time. This simulation system (MSE) allows to evaluate a management rule by quantifying its impact on alternative OMs, each of which can represent alternative realities.

Biological processes are a key part of OMs and climate change does not always modify them in predictable ways, which creates uncertainty. Therefore, the IPCC shows concern about the ineffectiveness of fisheries management to mitigate these effects, which is why adaptive responses based on knowledge are needed. In this context, the objective of this project is to evaluate the uncertainty caused by climate change and its impact on the biological processes that define the productivity of populations (reproduction, growth and natural mortality).

The results obtained by this thesis will not only be of academic interest, since they can serve as a basis for scientific opinions made by ICES (International Council for the Exploration of the Sea), and other organizations on the management of fishery resources.