

**Background:**

The growing demand for a sustainable use of aquatic resources has stimulated research interest in untangling the functional relationships between aquatic organisms, including interactions at the basis of food webs. Knowledge of these (trophic) interactions is a prerequisite to understand and to protect the carrying capacity of aquatic ecosystems. This course will train students in the theoretical concepts and practical application of biomarkers (fatty acids, stable isotopes) to trace the flow of energy in aquatic food webs.

Ecological applications of biomarkers in aquatic food web studies

Objectives:

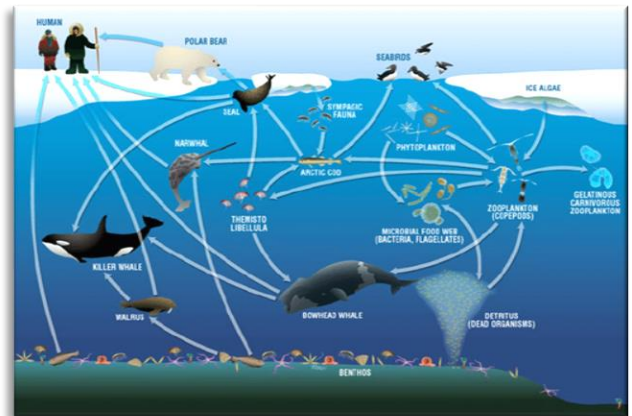
This 3 ECTS course aims to provide advanced knowledge on the use of stable isotopes and fatty acids as tracers in ecological research. More specifically, next to theory on the up-to-date techniques, analysing and implementing biomarker and tracer data in food web modelling will be included in the training.

Specialization Course (3 ECTS)

UGent, Belgium, 22 – 26 January 2024

Learning outcomes:

- Understand the chemical background of stable isotopes and fatty acids and their relevance in biological functioning
- Have a critical insight in the use of biomarkers to answer specific ecological research questions
- Have an overview of the methodology applied to use stable isotopes and fatty acids
- be able to analyse biomarker data (data analysis) and interpret it in a critical way
- be able to translate biomarker data into (foodweb)ecological results

**AUDIENCE**

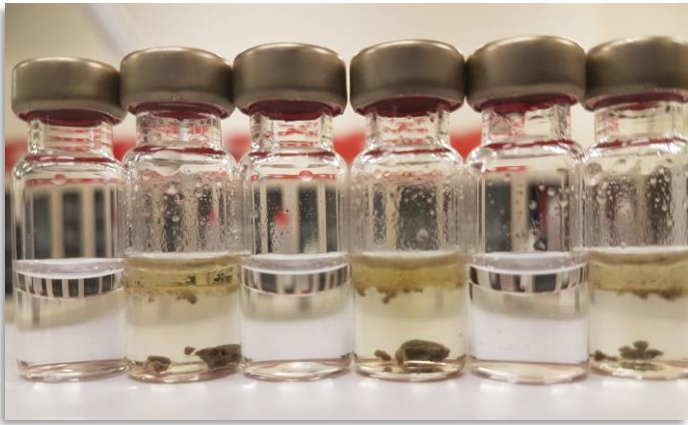
PhD students with research interest in ecology, physiology, biochemistry, aquaculture, microbiology, bio-energy. The course is open for beginners as well, cfr theory in the first days of the programme.

Registration and Tuition fees:

For more details and link to registration form please check <https://www.marinettraining.org/node/5748>

UGent Doctoral students: free; Others: 350 Euros

This course is organized with the support of:



Instructors:

- Marleen De Troch, UGent
- Tom Moens, UGent
- Anna-Maria Vafeiadou, UGent
- Pascal Boeckx, UGent
- Samuel Bodé, UGent
- G. Lepoint & Loïc Michel, ULiège
- Dick van Oevelen, NIOZ

Tentative programme

Monday 22/1

- Introduction to programme and brief presentation of the participants
- General introduction (Marleen De Troch, UGent): Energy flow in aquatic systems: the ecological framework
- Disentangling food webs by means of biomarkers: stable isotopes (Tom Moens, UGent)
- Disentangling food webs by means of biomarkers: fatty acids (Marleen De Troch, UGent)

Tuesday 23/1

- Fatty acids in marine ecology: case-studies (Marleen De Troch, UGent)
- Stable isotope analysis in marine ecology: case-studies (Anna-Maria Vafeiadou, UGent)
- Compound Specific Isotope Ratio Mass Spectrometry (CS-IRMS): theoretical framework (Pascal Boeckx, UGent)
- Compound Specific Isotope Ratio Mass Spectrometry (CS-IRMS): applications (Samuel Bodé, UGent)

Wednesday 24/1 (train to Liège)

- visit to the Freshwater and Oceanic science Unit of reSearch (ULiège) (G. Lepoint & Loïc Michel, ULiège): 'a journey through stable isotopes applications in trophic ecology' including guided tour to the lab facilities and demonstrations of EA-IRMS and ICP-MS

Thursday 25/1

- Inferring diet information from stable isotope data using isotope mixing models: theory (Dick van Oevelen, NIOZ)
- Inferring diet information from stable isotope data using isotope mixing models: exercises (Dick van Oevelen, NIOZ and Anna-Maria Vafeiadou, UGent)

Friday 26/1

- General group discussion and questions, based on individual PhD research (M. De Troch, UGent)
- Individual test (3 ECTS, certificate)

Each day includes 2 coffee breaks and sandwich lunch break.

Evaluation

3 ECTS can be obtained after successful participation, including 100% attendance, active participation and successfully completing the exercises

Disclaimer:

Min. 12 - max. 25 participants; the course will be organized only if the minimum number of participants (12) is reached.