



## Species Concepts and Species Delimitation

**Dates:** 24-29 October 2016

**Location:** NTNU, Trondheim, Norway

### Learning outcomes

- Understanding the implications of the different species concepts
- Pros and cons of different types of data for species assessments
- Gain an overview of different methods for species delimitation using DNA sequence data, and their advantages and limitations.
- Hands-on experience with distance and tree based approaches.

### Course content

What is a species? Are they real entities we can define and diagnose? In this course you will learn about philosophical, conceptual, theoretical and practical issues around species concepts and the implication of their different definitions in ecological and conservation studies. Species boundaries in many organism groups are still in a state of flux, and for empirical species delimitation, finding appropriate character sets and analytical tools are among the greatest challenges. We will review the advantages and disadvantages of different types of data for species assessment and you will be introduced to the different methods for species delimitation based on DNA sequence data and interpretation of results. Students will gain hands-on-experience about distance and tree based methods for species delimitation, including the use of software such as CROP, ABGD, UCLUST, PTP, GMYC and BPP. We will generate stimulating discussion about the interpretation of results and the advantages and limitations of these methods.

### Teachers

Kevin de Queiroz, Smithsonian Institution, Washington

Joan Pons, Mediterranean Institute for Advanced Studies (IMEDEA), Balearic Islands

Paschalia Kapli, Heidelberg Institute for Theoretical Studies

**Coordinator:** Maria Capa – ForBio.

**Target group:** PhD students, postdocs and researchers - with experience with experience in phylogenetic analyses

**Working language:** English

**Recommended course credits:** 3 ECTS

**Number of participants:** Maximum 18.

**Assessment:** A report should be submitted two weeks after course.

**Fee:** No course fee. Lunch is provided by the course organizers

**Registration:** Register, and include a motivation statement indicating the relevance of this course to your research project – at the latest, October 10. Priority will be given to ForBio members and ForBio Associates, and their motivation, should the maximum number of participants be exceeded.

**Requirements:** A list of papers to read will be provided prior the course. Students should bring a laptop- Mac or with Linux or Linux on virtual machine (Cygwin, Virtual box, VMWare).

**Travels and accommodation:** Norwegian ForBio members will get their travels reimbursed by ForBio after the course. Shared accommodation is available at Trondheim Vandrerhjem, and will be covered for all Norwegian ForBio members.