SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES

Department of Wildlife, Fish, & Environmental Studies

Syllabus

Conservation Genetics

Bevarandegenetik

15.0 Credits

Code: BI1449

Finalized by: Ordföranden för programnämnden för utbildning inom skog (PN-S), 2023-12-22

Valid from: Autumn semester 2024 (2024-09-02)

Level within study regulation: Second cycle

Grading scale: TH Four-grade scale, digits

Main field of study with advanced study: BIA Biology - A1F Second cycle, has second-cycle course/s as entry requirements

Programme board

PN-S The programme board for education in forestry

Language

ENG English

Subject

NATU Science

Biology area

EKOL Ecology

Entry requirements

Knowledge equivalent to 120 credits including:

- 60 credits Biology
- 60 credits Forestry Science
- 60 credits Natural Resource Management
- 60 credits Environmental Sciences

15 credits Ecology

30 credits Biology at advanced level including 15 credits Ecology

English 6

Objectives

The aim of the course is to provide students with advanced knowledge and practical skills in the field of conservation genetics and its applications for biodiversity conservation, fish and wildlife management and ecological restoration.

At the end of the course, students should be able to:

- Explain why conservation genetics is important for the management of wildlife populations and biodiversity
- Describe concepts of genetics at species, population, and individual levels and how it can apply to conservation
- Apply genetics concepts to managing wildlife populations and biodiversity specific to issues we face today (i.e. climate change, habitat loss, small population sizes etc.)
- Provide examples of case studies where genetics were used for conservation and critically assess reasons for conservation genetics cases that were successful and those that were not successful
- Describe current methods for sampling and analysis of genetic data in biodiversity research and practical conservation
- Link conservation genetics with ecological processes and other conservation methods and tools (e.g. restoration and rewilding)
- Be able to demonstrate skills for conservation genetics studies of wildlife populations in the field, laboratory and computational

Content

Subject-related content:

The course will link conservation to the genetics of individuals and populations and the practical implications and methods. The course will cover individual genomes where students will gain an understanding of concepts such as types of genomes, ploidy, heterozygosity, and gene activity. The course cover genomes in populations including concepts such as genetic drift, natural selection, Hardy-Weinberg principle, and effective population size and population structure. All of these concepts will then come together in the final theoretical section on conservation of wild populations and biodiversity where we will consider inbreeding, hybridization, anthropomorphic effects, and climate change. The theoretical framework will be connected to current examples on how genetic techniques are use in practical conservation work. Students will get experience in addressing conservation genetic issues using online databases and conduct analyses using relevant statistical software.

Teaching formats:

To further student learning and promote discussion, a variety of methods are used:

lectures, seminars, readings, lab work, computation analysis, data analysis, and project work

The course focuses on the following generic competencies:

-oral presentation

- data management

The following course components are compulsory:

Assignments and computer labs are compulsary

Examination formats

Approved written examination, approved compulsory assignments and participation in compulsory parts.