



# SLUkurs

## Syllabus

**PNG0061 Ecological stability vs resilience: straightening up concepts and making them useful for management, 3.0 credits**

## Syllabus approved

2015-06-05

## Subjects

Biology/Environmental Assessment

## Education cycle

Third cycle

## Grading scale

Pass / Failed

The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

## Language

English

## Prior knowledge

Students should have an undergraduate degree in environmental science, ideally at an advanced level. Some sections of the course will address deeper aspects of ecological theory, and thus previous courses in basic ecology would be very beneficial, though parts of the course will also be suitable for students with a more limited ecological background who are nevertheless interested in the topic of ecological stability and resilience.

## **Objective, including learning outcomes**

After the course, students should be able to:

- Discuss and evaluate different definitions of ecological stability and resilience
- Relate these concepts to ecosystem management and conservation
- Apply the key theoretical underpinnings of stability/resilience research in developing their own research topics
- Identify methods for quantifying stability/resilience that are appropriate for their own research topic
- Assess the value of stability/resilience in bioassessment, particularly in relation to their own research topic, and discuss advantages and possible pitfalls of these approaches

## **Content**

The concepts of ecological stability and resilience have over the last two decades stimulated research focused on the ability of communities and ecosystems to cope with disturbances, and are increasingly important in policy and management because of their strong linkages with ecosystem services. The current ubiquity of these concepts has led to an expansion of definitions and uses, creating barriers in understanding and quantification of these concepts both in research and education. Comprised by eminent scientists in the fields of ecological stability and resilience, the teaching staff of this course will cover broadly freshwater, marine and terrestrial environments, dealing with basic definitions, the relationship between stability/resilience and ecosystem services, and several currently topical themes in these research fields. These include the roles of scaling ecology, functional traits and calculation of functional diversity, an overview of biodiversity-ecosystem functioning research, alternative states and regime shift theory. Throughout, a range of practical methods for quantifying stability and resilience will be covered, as will the application of these methods in biomonitoring and environmental assessment.

Format:

One week of five, full day sessions, each including lectures and discussion and other exercises.

## **Requirements for examination**

The course is graded as pass/fail

To receive full credits for the course, participants should:

- Read the literature provided before the course. The literature consists of publications connected to the lectures.
- Actively participate in the workshop discussions.
- Attend all sessions. While it is permissible to miss sessions, the points awarded will be down weighted according to the number of sessions missed. Note that if there are more than 15 students interested in taking the course, priority will be given to students able to attend all sessions.
- Give an oral presentation that explains how their own research might be extended by incorporating some of the concepts or methodologies covered in the course. Thus, for students whose projects already focus on some aspects of ecosystem stability/resilience, their presentation should explain how new concepts and/or methodological approaches could extend the scope of their research.

### **Additional information**

#### Enrollment

Students interested in enrolling in the course should email their applications to:

Dr. David Angeler

Please attach to the email a word document or pdf file including the following:

- 1) A one paragraph description of your PhD research project
- 2) The names and email addresses of your supervisors
- 3) A short motivation (3-5 sentences) as to why you want to take the course.

This information will be used to (1) evaluate the suitability of different applicants for the course, in the event that we receive more than 15 applications and (2) gain insight into the backgrounds of the students taking the course, to assist planning.

The application period is open until October 1, or until all 15 places are filled. Priority is given to members of the Focus on Soils and Water research school, applications from non-members will be considered after the application deadline.

### **Responsible department**

Department of Aquatic Sciences and Assessment