

# PhD-course (3.5 ECTS)

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Aarhus University, Denmark, 5-9 October 2026

## Decision-Making and Adaptive Management for Conservation

This course describes structured decision-making for addressing complex problems in conservation and natural resource management. Students will learn how to clearly frame decision problems, define objectives, and select analytical tools that are appropriate to the structure of the problem. Through a combination of lectures and team projects, the course will show how to assemble the essential components of all conservation decisions, including those involving single vs. multiple objectives, those that are static or dynamic, and those characterized by epistemic uncertainties, i.e., adaptive management. By the end of the course, participants will be able to develop transparent, defensible decision analyses, and design strategies that explicitly link the broad decision context, the specific problem framing, and the methods needed to identify preferred conservation and management actions.

The ability to think critically is essential for contributing to team projects. However, no advanced mathematical skills are required. No expertise in ecological modeling or monitoring is necessary (although knowledge of fundamentals is important). No programming expertise is required (although a basic familiarity with R would be helpful).



### Required textbook:

Johnson, F.A. 2026 (in press). Adaptive Management of Animal Populations: An Introduction. University Press of Florida, Gainesville, FL.

The book will be published in July 2026; a student discount can be acquired if purchased via Aarhus University; details will be announced later.

Participants are expected to have read selected chapters (to be decided) prior to the course.

### Suggested readings:

Johnson, F.A., M.J. Eaton, J.H. Williams, G.H. Jensen & J. Madsen. 2015. Training conservation practitioners to be better decision makers. *Sustainability* 7:8354–8373.

Hemming, V., A.E. Camacalang, M.S. Adams, M. Burgman, K. Carbeck, J. Carwardine, I. Chadès et al. 2022. An introduction to decision science for conservation. *Conservation Biology* 36:e13868.

Williams, B.K. & E.D. Brown. 2014. Adaptive management: from more talk to real action. *Environmental Management* 53:465–479.



### Adaptive Management of Animal Populations An Introduction

FRED A. JOHNSON

# PROGRAMME:

## DAY 1 – Decision Framing and Objectives

- Introduction to conservation decision-making (why is it so hard?) 1 hr
- Governance & participatory decision-making 1 hr
- Systematic framing of a decision problem 1 hr

Hands-on Practicum

- Team projects: first-pass problem framing

## DAY 2 – Analytical decision-support

- Decision structure taxonomy & tool selection framework 0.5 hr
- Structuring objectives and candidate actions 1 hr
- Predicting responses – ecological modeling 1 hr
- Observing responses – ecological monitoring 1 hr

Hands-on Practicum

- Team projects: specifying objectives, tool selection, semi-quantitative consequence-table development

## DAY 3 – Policy decision-support

- Uncertainty, risk, and the Value of Information 1.5 hrs
- Multi-objective decisions & tradeoffs 1.5 hrs

Hands-on Practicum

- Team projects: assessing tradeoffs & impacts of uncertainty

## DAY 4 – Sequential Decisions and Adaptive Management

- Sequential decision problems as Markov decision processes (MDPs) 1.5 hrs
- Adaptive management– sequential decision-making under uncertainty 1.5 hrs

Hands-on Practicum

- Team projects: refining modeling & monitoring needs and approaches

## DAY 5 – Real-world challenges in applying decision analysis in conservation

- Stress-testing structured decision-making 1 hr
- Overcoming governance and implementation challenges 1.5 hrs
- What we want you to remember from this course 0.5 hr

Hands-on Practicum

- Problem finalization and presentation by project teams

Written team project reports shall be submitted for evaluation no later than 31 October 2026.

## Prices and practicalities:

According to a national agreement, the course will be free for PhD-students affiliated to Danish universities. We welcome students from abroad, for whom the price for the course is 565 EURO.

Participants will have to finance their own travel, accommodation and food.

Aarhus University will provide advice on accommodation opportunities.

Please note that we have an upper ceiling of 25 participants (first come, first served).

If you have any questions, feel free to contact Jesper Madsen at [jm@ecos.au.dk](mailto:jm@ecos.au.dk)

## Sign up here:



**Deadline for signing up:**  
**15 June 2026**

## WHO WE ARE:

Dr. Fred A. Johnson

Prof. Dr. Jesper Madsen (course responsible)

Prof. Dr. Christian Damgaard

Dr. Kevin K. Clausen

## Venue:

Aarhus University Campus,  
DK-8000 Aarhus C, Denmark