U.S. Fish & Wildlife Service
National Conservation Training Center

*NEW* ONLINE COURSE

# Decision Analysis for Climate Change

(ALC 3196)

## October 1 – November 30, 2012

Natural resource managers are increasingly tasked with understanding climate change impacts and using this knowledge in making decisions. Yet the uncertainty inherent in evaluating climate impacts often impedes action. This NEW 8-week **online** course provides participants with skills to address climate change impacts in making decisions about natural resource management. It highlights principles from *Informing Decisions in a Changing Climate* (2009) National Research Council report. Videos show techniques in structured decision making and adaptive management, and discuss how climate change affects each step in the processes. Participants work in teams on actual decision problems. As the teams use similar techniques on their different decision problems, participants observe multiple examples of on the ground application. Instructors work with teams to build expertise in climate change impacts and decision analysis. Teams develop a final report and presentation on their decision problem. This course and the entire Structured Decision Making curriculum at NCTC are developed in partnership with staff from USGS.

**Course Audience**

The course is designed for natural resource managers and conservation professionals. As a pilot offering, there is no tuition or registration fee associated with the course. We will request feedback from participants on various aspects of the online training.

**Course Objectives**

- Understand how to frame choices to effectively integrate climate change concerns
- Engage with a team on a real-life decision addressing climate impacts
- Articulate the concept of stationarity and appreciate the significance of its absence in planning to address climate change
- Learn how to classify and incorporate different types of uncertainty about system change
- Compare modes of learning about system change and understand when and how to use different approaches
- Structure a climate change adaptation decision using adaptive management

**Course Structure**

Prior to the training, potential decision problems will be requested from participants (see directions for submissions at the end). Each team will have a structured decision making "coach" and "climate expert" to work with the team during the training. The coach will facilitate the team's progression through each phase of the process for their decision problem. The climate expert will connect the team to recent literature and insights in climate science and climate impacts relevant to their decision problem.

**Accessibility**

- Online access to the course platform available through a web browser or mobile device
- Computer with internet access and telephone for class and team WebEx sessions
- To dedicate approximately **5 hours each week** to individual and team learning

**Course Requirements**

- Download and review the National Research Council 2009 report *Informing Decisions in a Changing Climate* prior to the course
- Watch structured decision making videos
- Watch videos on how climate change affects each phase in the decision framework
- Complete key readings before and during the course, as related to your team's topic
- Contribute to your team project with weekly calls to apply concepts from each stage to your team's decision problem
- Be prepared to share your team's insights and progress during the class sessions

**Breakdown of Weekly Tasks** [approx. time]

- Watch structured decision making videos [1/2 – 1 hr.]
- Watch NEW videos on how climate change affects each step [1/2 hr.]
- Key readings and team assignments [1hr]
- Weekly team call to work on decision problems [1 hr., via WebEx & phone]
- Weekly class meeting for groups to present their progress [1.5 hr., via WebEx & phone]

## REGISTRATION INFORMATION

To Enroll:
Existing DOI Learn account holders: https://gm2.geolearning.com/geonext/doi/login.geo
Search for ALC 3196 or "Decision Analysis for Climate Change"

New to DOI Learn?
Request an account: https://gm2.geolearning.com/geonext/doi/requestaccount.geo
IMPORTANT- in the Add Reason box, type Enroll in ALC 3196 or "Decision Analysis for Climate Change"
Once you receive notification of your account creation within 2-3 days, enroll as above.
For enrollment questions, contact Ashley Fortune at Ashley_Fortune@fws.gov or 304-876-7631

## CONTACT INFORMATION

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# COURSE SCHEDULE

**Pre-course Preparation**, **Sept 17-Sept 30**

Update individual learning on basic climate change processes and impacts, particularly as related to the team project topic areas. Moodle and WebEx tutorials. Develop basic understanding of structured decision making and its application in natural resource management.

**Week 1, Oct 1-5: Framing Management Decisions in the Context of Climate Change**

During the first week we will discuss and learn how climate change may shift the scale and scope of management decisions. Teams consider the decision context for their case study inclusive of climate change and other underlying change processes.

**Week 2, Oct 9-12: Identify and Clarify Objectives**

Do our existing management objectives still make sense in light of climate change? Teams refine key concerns and objectives for their case study in light of climate change.

**Week 3, Oct 15-19: Develop Alternatives**

What are the alternatives for achieving our objectives under a new system regime? Teams create targeted alternatives to address climate change related impacts in their decision context.

**Week 4, Oct 22-26: Assessment of Consequences**

What are the consequences of each alternative? Teams determine which method to use to predict the impacts of their alternatives against their objectives. What assumptions do the models require and does the use of historical data present any challenges?

**Week 5, Oct 29-Nov 2: Addressing Uncertainty**

Is the uncertainty relevant to the decision? Teams diagnose and address key uncertainties related to climate change and other sources in assessing performance of alternatives toward achieving objectives.

**Week 6, Nov 5-9: Confronting Tradeoffs**

Risk attitudes, robust solutions or optimization techniques? Teams select appropriate tools which acknowledge climate change related risk and uncertainty and reflect values of the decision maker(s) to distinguish between options and make a choice.

**Week 7, Nov 13-16: Adaptive Resource Management: Monitoring, Learning, Updating**

How do we track the changing system? Characterize uncertainties and their role and the decision? Teams discuss suitability of iterative learning to reduce key uncertainties.

**Week 8, Nov 26-30: Final Team Presentations**

Teams present their decision problem to the rest of the class. Discuss next steps and resources available to continue learning about climate change and building skills in decision analysis. Course evaluation and recommendations.

# Decision Problem Submission Instructions

One of the primary goals of this course is to provide you with examples of how to use decision analysis to address climate change related concerns and uncertainties in natural resource management problems of small to moderate scale. We are looking for decision problems that are tractable within the timeframe of the training and appropriate to support learning about decision making addressing climate change.

**We need your participation!** Think of a problem in your office. It might be related to resource management, budget allocation, grant or permit application; anything you actually work on. Think of a problem of a small to moderate scale for which you are the decision maker.

Hand your problem over! Please submit at least one problem description for the instructors to use during the course. It should be one for which you are involved. If your problem is selected for use in a team we'd like you to provide additional details to your team. Starting Sept 10, the instructors will review all the problem descriptions.

Problem descriptions should be fairly succinct (no more than one page; one paragraph is fine), and should emphasize the overall framework for the decision, not the details. Your **problem description** should include the following information:

1. **Decision Problem.**
   In *one short paragraph at most*, describe the decision in question. Include the context (who is the decision maker, under what authority do they act, who else has influence on the decision), the nature of the decision, and the timing and frequency of the decision. Is this a routine decision that will incorporate assessment of climate change impacts or a decision to specifically address climate change impacts?

2. **Background.**
   *Very Briefly* describe the legal, regulatory, and political context and constraints. *Briefly* mention the relevant ecological context and climate related issues.

3. **Decision Structure.**
   Answer anything that applies (if you do not know, say that)
   - Have alternative management actions been identified?
   - Have objectives, consequences, or uncertainty been described?
   - Is a team of decision makers involved?

**Submit Problem Description to**

Michelle Haynes (michelle_haynes@fws.gov) as an email attachment in a Microsoft WORD format **no later than Sept 10, 2012**.

Please title your email as **DA4CC Problem "*your last name*"** and name.
(i.e., DA4CC Problem Haynes)