The Conservation Leadership Program at ODU: A Collaboration of the U.S. Fish and Wildlife Service and Old Dominion University
Conservation Leadership

- Minor and Grad. Certificate
  - 466/566 Mitigation and Adaptation Science
  - 467/567 Sustainability Leadership
  - 369/669 Internship Conservation Leadership

- Minor:
  - two electives

- Grad. Certificate:
  - 668: Participatory and Agent-Based Modeling, Simulation and Visualization
  - one elective
Strategies for Sustainability:

1. To consume nature’s flows while conserving the stocks (that is, live off the ‘interest’ while conserving natural capital).
2. To increase society’s stocks (human resources, civil institutions) and limit the flow of materials and energy.

Brown et al. (2004)
Main Concepts

Planetary Physiology
Earth is a Life-Support System for many species

Everything is about Flows

Flows have been changed (accelerated) dramatically by modern society;
The planetary physiology is to a large extent dominated by humans

For Homo sapiens, the flows are regulated by ethical, social, and - recently - economic rules
Main Concepts

The Holocene was a “safe operating space for humanity”

Rothman, 2017

“We are the asteroid …”

The urgent challenge of plastics

Modern climate change is a symptom, not the cause, not the “sickness.” It is a symptom of a single-species, high-energy pulse.
Main Concepts

The importance of flows

Strategies for Sustainability:
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Brown et al. (2004)
Economy is a tool to address Human needs (Priority 1).

In a service-based economy, we - for the first time - stand a chance to create a versatile model designing waste and inequality out of our system (Priority 2).
Importance of Mainstream Economic Model

The importance of flows

Strategies for Sustainability:
1. To consume nature’s flows while conserving the stocks (that is, live off the ‘interest’ while conserving natural capital).
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Brown et al. (2004)

Importance of Mainstream Economic Model

Transition to an economy that meets the need of the present while safeguarding the Earth’s life-support system
Every problem is unique

There is no stopping rule

No immediate test for solutions

There is no defined set of options and solutions

The solver has not right to be wrong

No definite problem formulation

Solutions are better/worse, not right/wrong

There is only a one-shot opportunity

Every problem is a symptom of another problem

Explanation of discrepancies determines solution

Main Concepts
Main Concepts

Wicked Problems

Examples

- Global Climate Change
- Involuntary migration
- Natural Hazards
- Global Change
- Social injustice
- Data security
- Conservation
- Pandemics
- Healthcare
- Inequality
- Nuclear

Strategies and approaches to address wicked problems
How to think and talk about possible futures, including worst cases?
What are the causes and consequences of unsustainability and how does this relate to our ethics?
Main Concepts

Who are we in the Earth’s life-support system?

Birds

Evermore: ravens can plan for the future, scientists say

Swedish experiment shows the notoriously brilliant bird has capacity to think ahead, an ability previously documented only in humans and great apes.

Scientists from Sweden say ravens are able to think about the future, showing a general planning ability previously documented only in people and great apes.
Active learning supported by learning assistants
- problem-based: research case studies of real-world problems
  - 1st course: individual studies based on literature
  - 2nd course: group project in the real world (service learning)
  - 3rd course: internship with an individual case study on a real-world problem

All case studies:
- require systems thinking and transdisciplinary approach;
- involve modeling;
- focus on a wicked problem;
- are participatory;
- have a leadership component with a novel participatory leadership style;
- are in principle dynamic resource allocation problems.
Learning Concept

Wicked Problem

Introduction
- The challenge
- Why is it important?
- What is causing the problem?
- Who is trying to solve it?

The Wicked Problem
- The underlying system
- Conceptual model
- Stocks, flows, & feedbacks
- Collaborative approach

Decision Making
- Who is impacted by the problem?
- What is the decision framework
- Who can implement interventions?

System Science - Hazards
- What are the external threats?
- What are the internal threats?
- What are the probabilities of these hazards?

System Science - Vulnerabilities
- What vulnerabilities does the system have?
- What are the systems’s thresholds and tipping points?

Goal Knowledge - Desirable futures
- Foresight and the system’s spectrum of possible futures?
- What are the desirable futures and why are they desirable?

Transformation Knowledge
- What options are there for effective interventions?
- Which interventions can point the system towards the desired future?

Recommendations
Learning Concept

More than 70 Case Studies since 2016 (2019)

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Research on real-world problems in an out-of-classroom setting