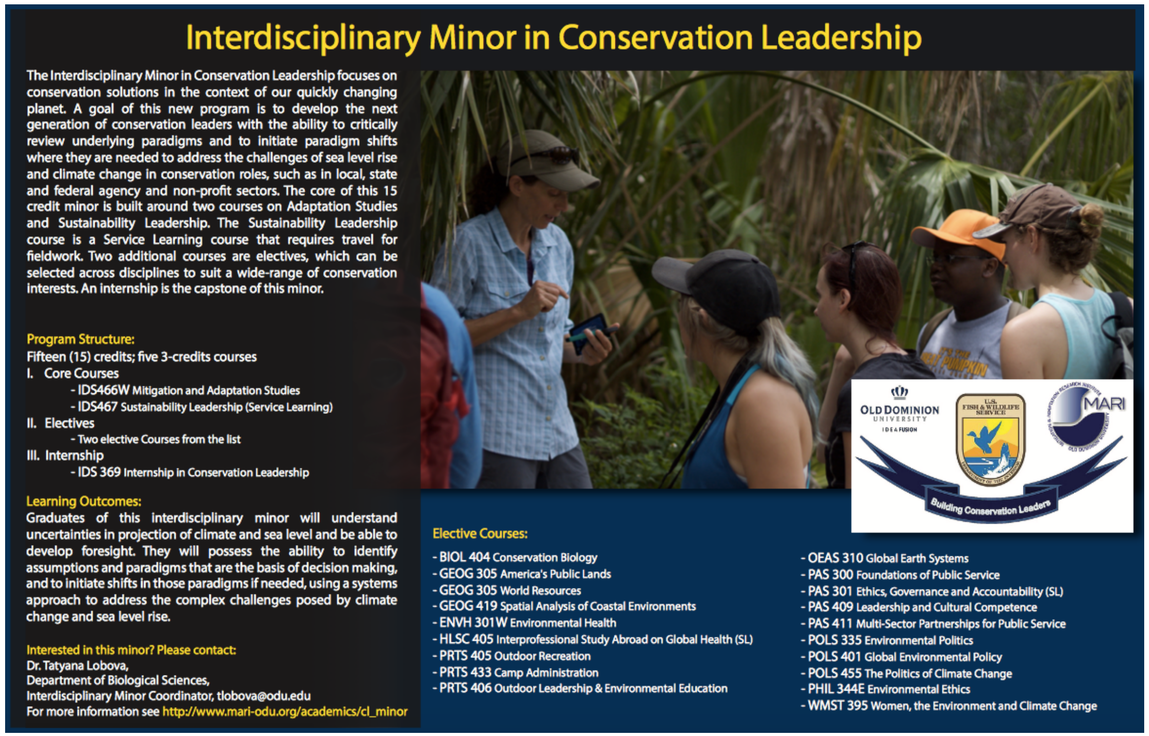
The Conservation Leadership Program at ODU: A Collaboration of the U.S. Fish and Wildlife Service and Old Dominion University

Conservation Leadership



Interdisciplinary Minor in Conservation Leadership

The Interdisciplinary Minor in Conservation Leadership focuses on conservation solutions in the context of our quickly changing planet. A goal of this new program is to develop the next generation of conservation leaders with the ability to critically review underlying paradigms and to initiate paradigm shifts where they are needed to address the challenges of sea level rise and climate change in conservation roles, such as in local, state and federal agency and non-profit sectors. The core of this 15 credit minor is built around two courses on Adaptation Studies and Sustainability Leadership. The Sustainability Leadership course is a Service Learning course that requires travel for fieldwork. Two additional courses are electives, which can be selected across disciplines to suit a wide-range of conservation interests. An internship is the capstone of this minor.

Program Structure:
Fifteen (15) credits; five 3-credits courses
I. Core Courses
- IDS466W Mitigation and Adaptation Studies
- IDS467 Sustainability Leadership (Service Learning)

II. Electives
- Two elective Courses from the list

III. Internship
- IDS 369 Internship in Conservation Leadership

Learning Outcomes:
Graduates of this interdisciplinary minor will understand uncertainties in projection of climate and sea level and be able to develop foresight. They will possess the ability to identify assumptions and paradigms that are the basis of decision making, and to initiate shifts in those paradigms if needed, using a systems approach to address the complex challenges posed by climate change and sea level rise.

Interested in this minor? Please contact:
Dr. Tatyana Lobova,
Department of Biological Sciences,
Interdisciplinary Minor Coordinator, tlobova@odu.edu
For more information see http://www.mari-odu.org/academics/cl_minor

Elective Courses:
- BIOL 404 Conservation Biology
- GEOG 305 America's Public Lands
- GEOG 305 World Resources
- GEOG 419 Spatial Analysis of Coastal Environments
- ENVH 301W Environmental Health
- HLSC 405 Interprofessional Study Abroad on Global Health (SL)
- PRTS 405 Outdoor Recreation
- PRTS 433 Camp Administration
- PRTS 406 Outdoor Leadership & Environmental Education
- OEAS 310 Global Earth Systems
- PAS 300 Foundations of Public Service
- PAS 301 Ethics, Governance and Accountability (SL)
- PAS 409 Leadership and Cultural Competence
- PAS 411 Multi-Sector Partnerships for Public Service
- POLS 335 Environmental Politics
- POLS 401 Global Environmental Policy
- POLS 455 The Politics of Climate Change
- PHIL 344E Environmental Ethics
- WMST 395 Women, the Environment and Climate Change

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

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).
2. To increase society's stocks (human resources, civil institutions) and limit the flow of materials and energy.

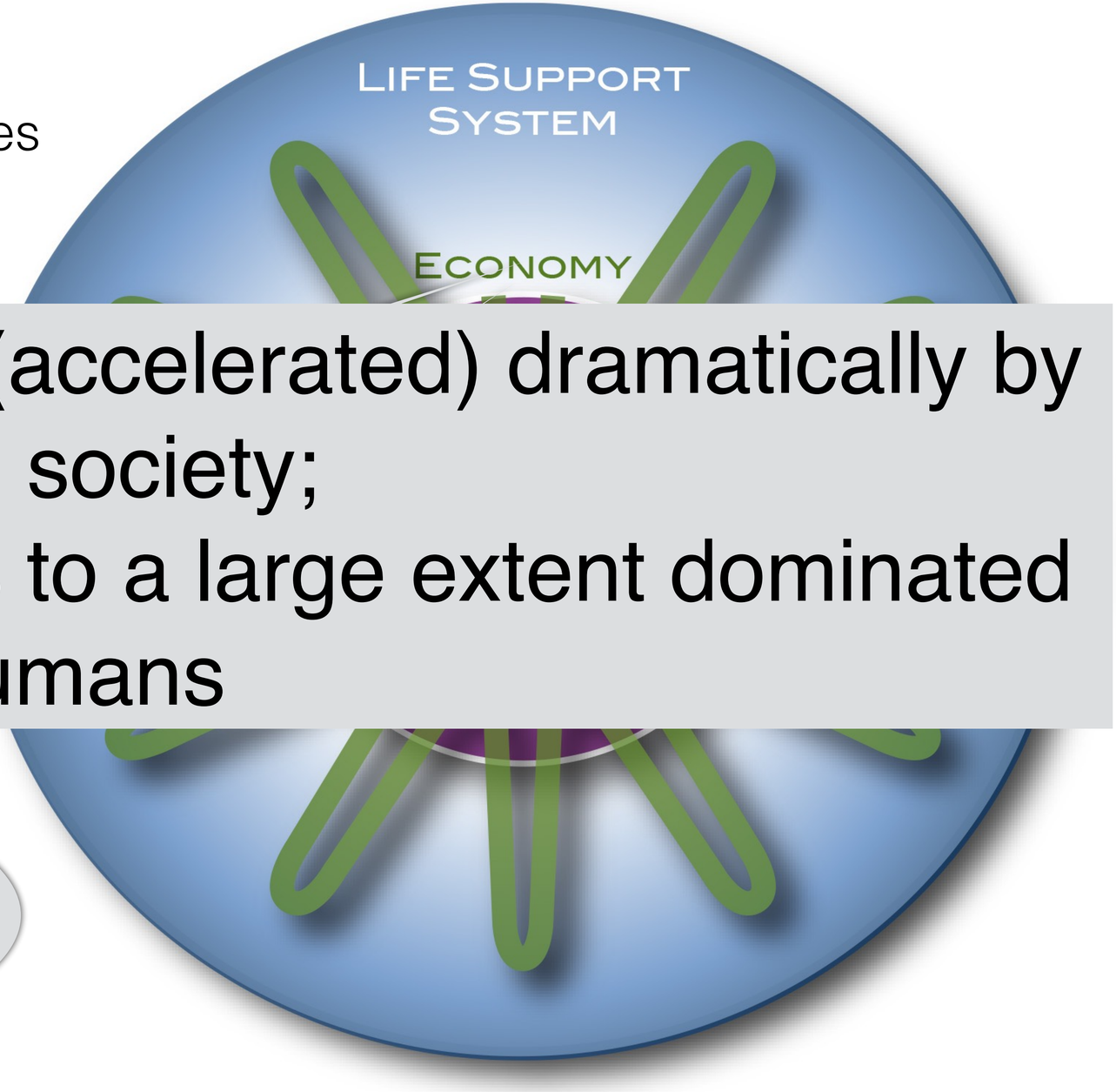
Brown et al. (2004)

Main Concepts

Planetary Physiology

Earth is a Life-Support System for many species

Everything is about Flows

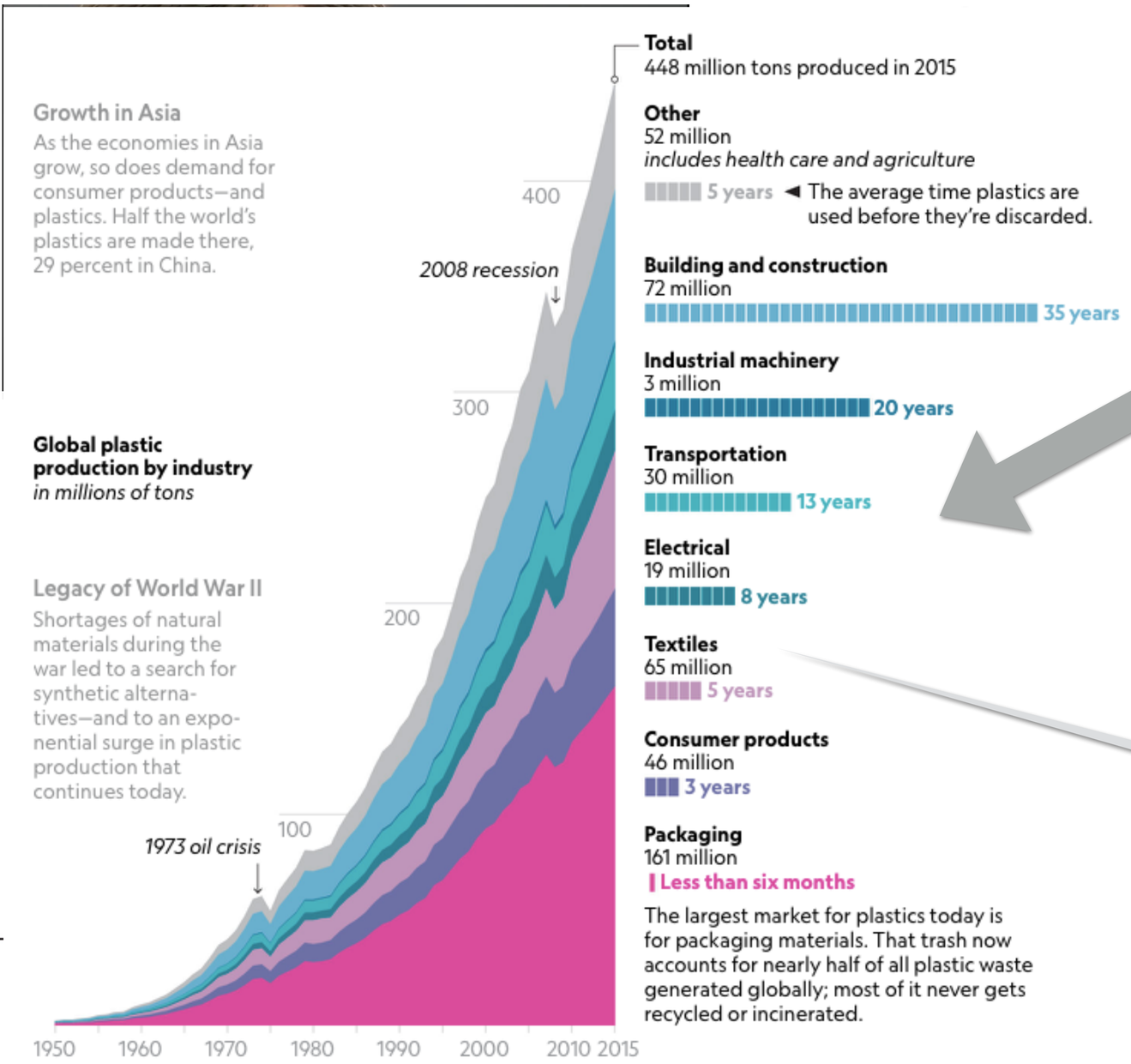


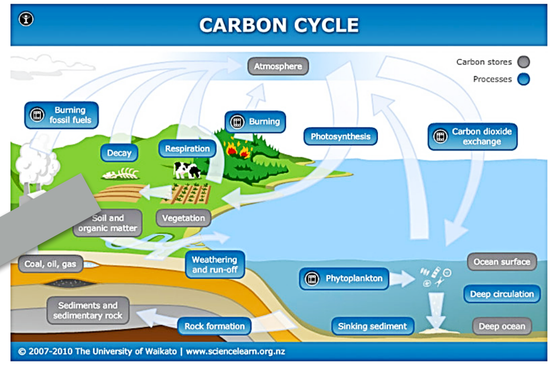
Flows have been changed (accelerated) dramatically by modern society;
The planetary physiology is to a large extent dominated by humans

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”





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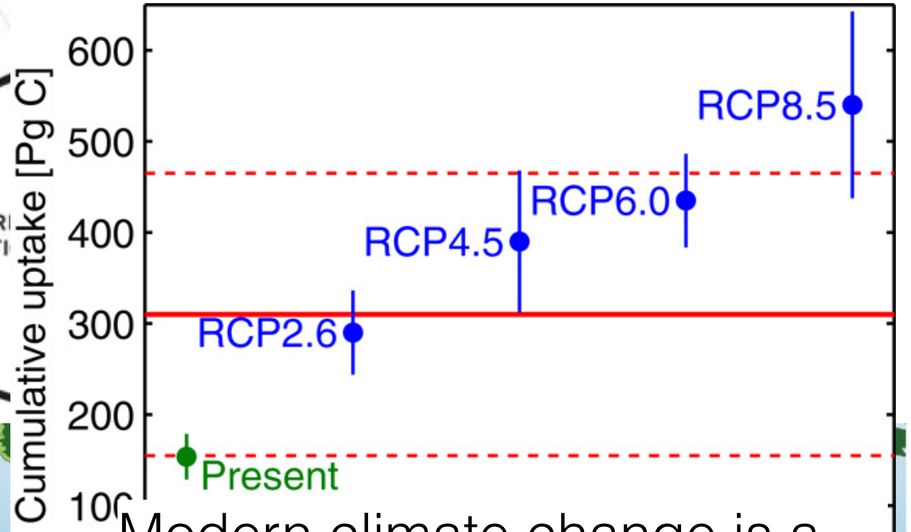
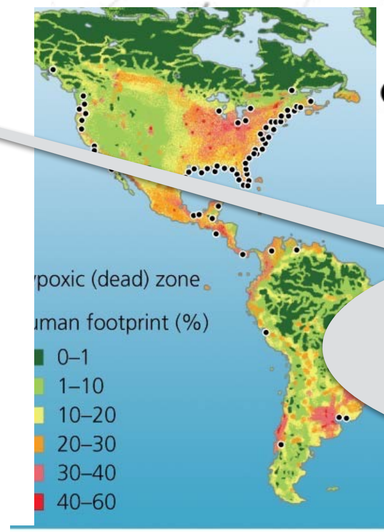




Modern climate change is a symptom, not the cause, not the “sickness.”

It is a symptom of a single-species, high-energy pulse.

The importance of flows

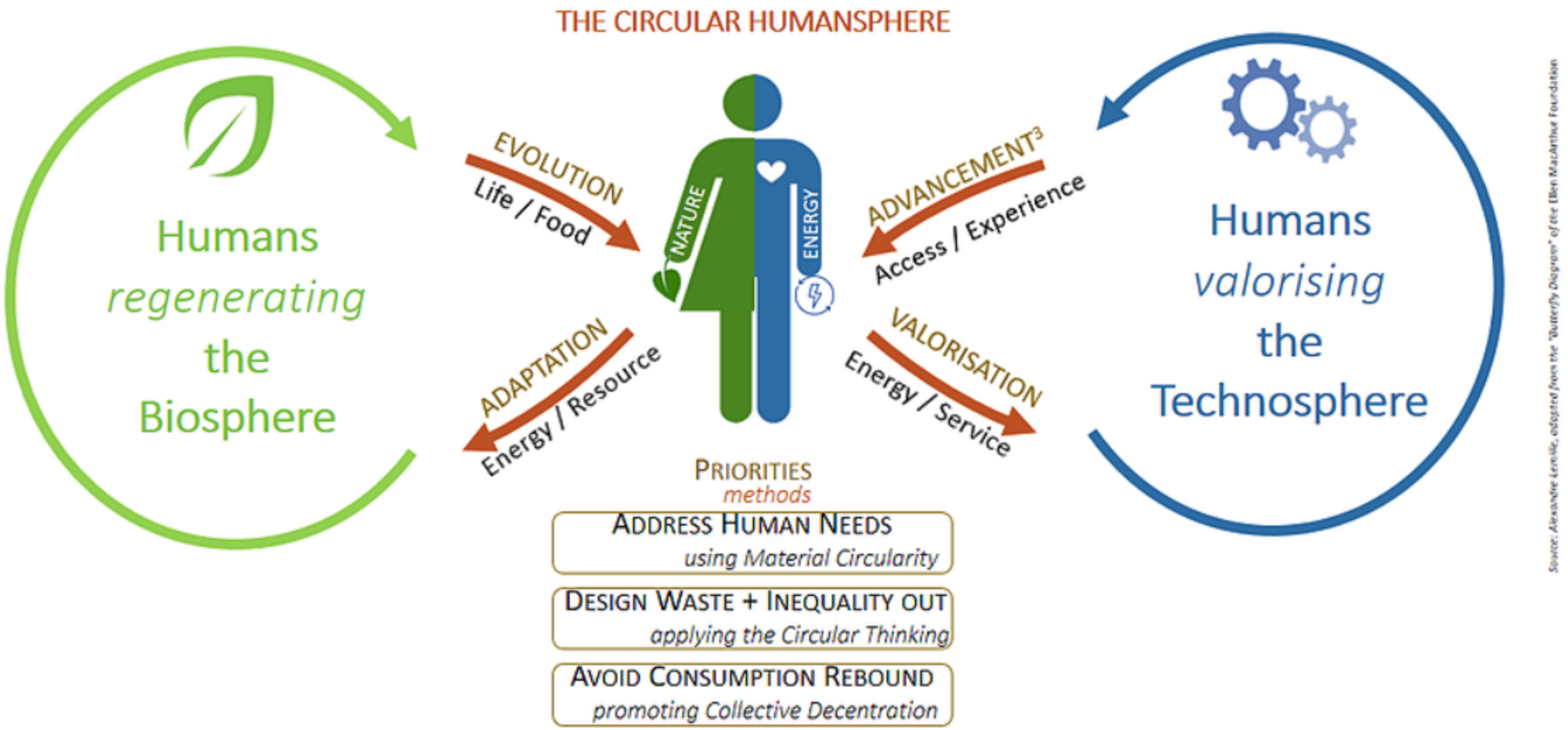
Strategies for Sustainability:

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

Brown et al. (2004)

Importance of Mainstream Economic Model

Main Concepts



https://www.alexandrelemille.com/optimising-circular-value

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).

The importance of flows

Strategies for Sustainability:

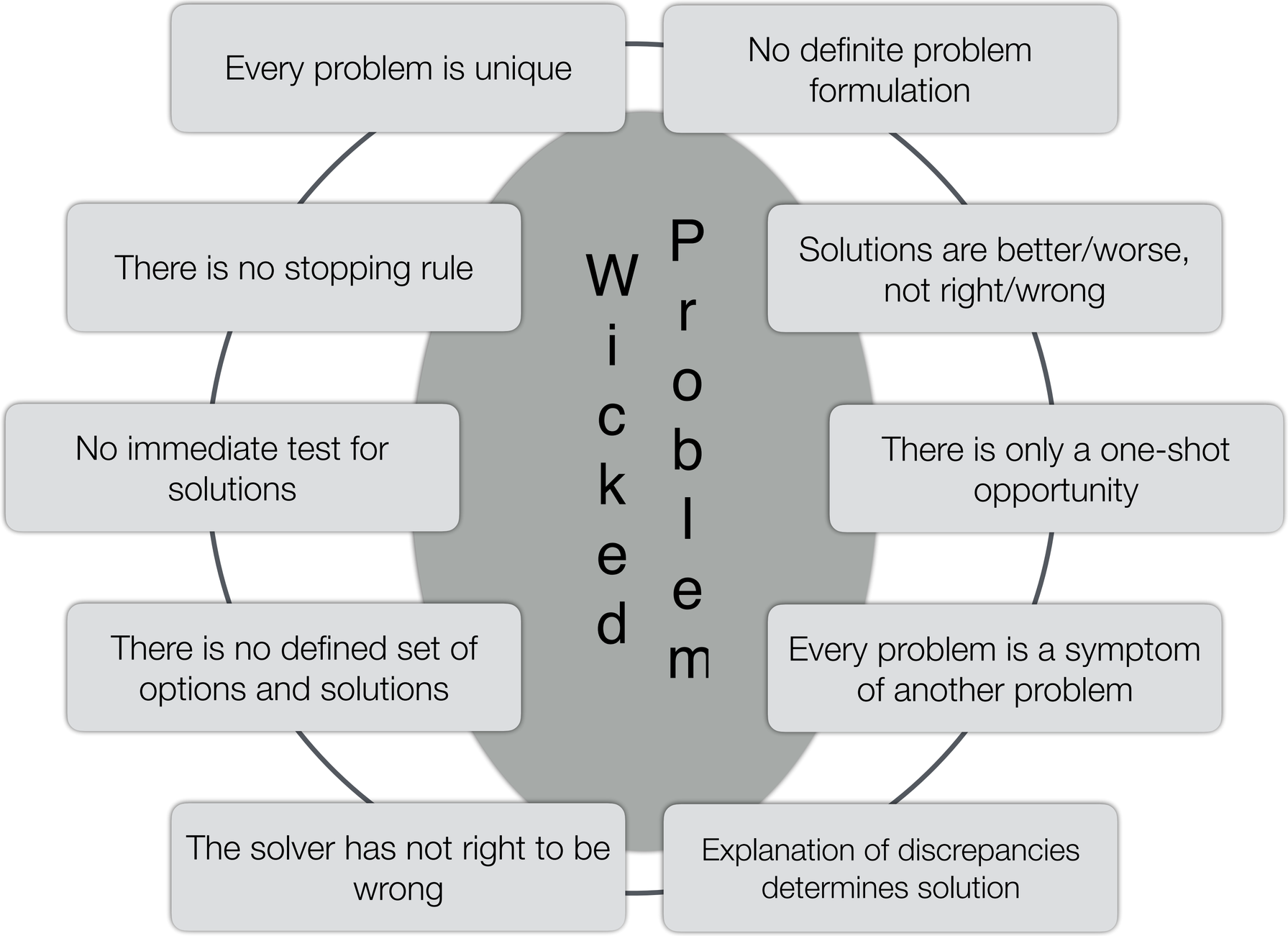
1. To consume nature's flows while conserving the stocks (that is, live off the 'interest' while conserving natural capital).
2. To increase society's stocks (human resources, civil institutions) and limit the flow of materials and energy.

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

Main Concepts



Wicked Problems

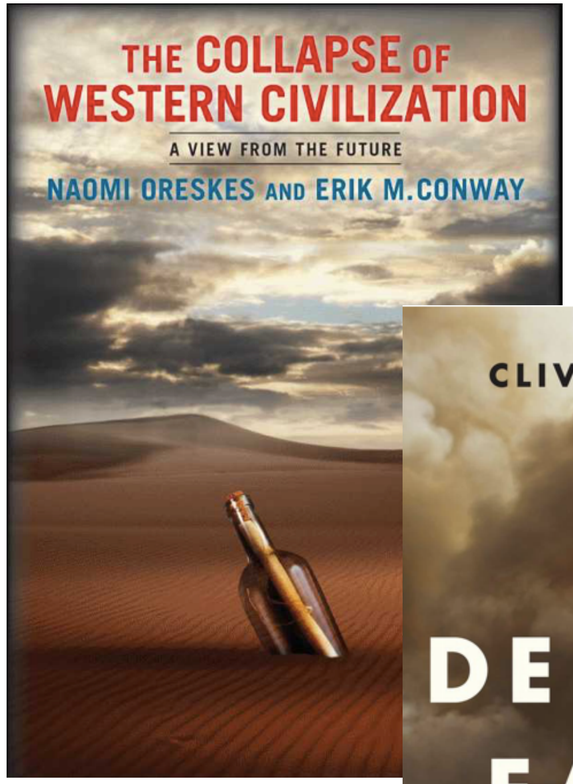
Examples

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

Strategies and approaches to address wicked problems

Main Concepts

How to think and talk about possible futures, including worst cases?



The Uninhabitable Earth

Famine, economic collapse, a sun that cooks us: What climate change could wreak — sooner than you think.

By **David Wallace-Wells**

July 9, 2017
9:00 pm

Share

To read an annotated version of this article, complete with interviews with scientists and links to further reading, click here.

I. 'Doomsday'

Fossils by Heartles

In the jungles of C
tops 90 percent, si
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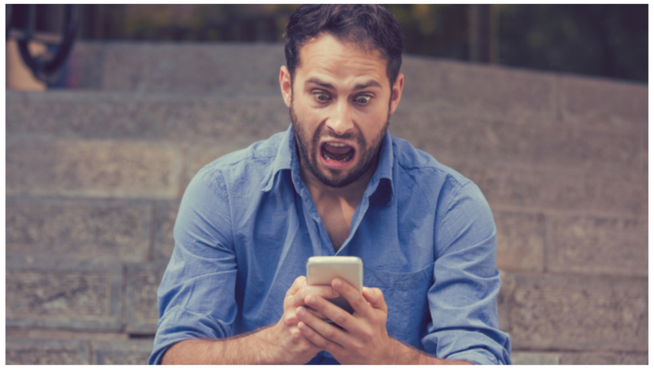


Shutterstock

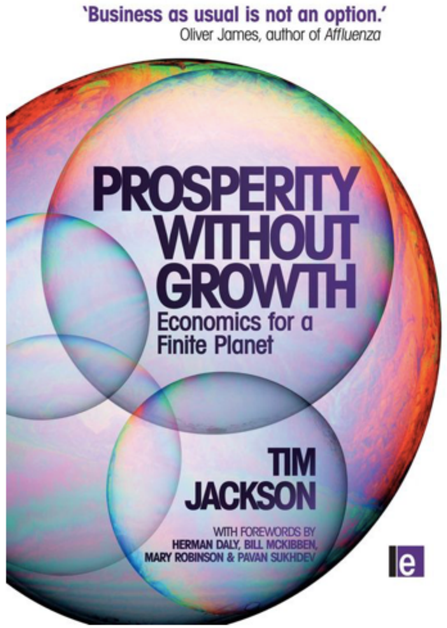
HIGH ANXIETY

Stop scaring people about climate change. It doesn't work.

By Eric Holthaus on Jul 10, 2017

Main Concepts

What are the causes and consequences of unsustainability and how does this relate to our ethics?



What's causing the sixth mass extinction?

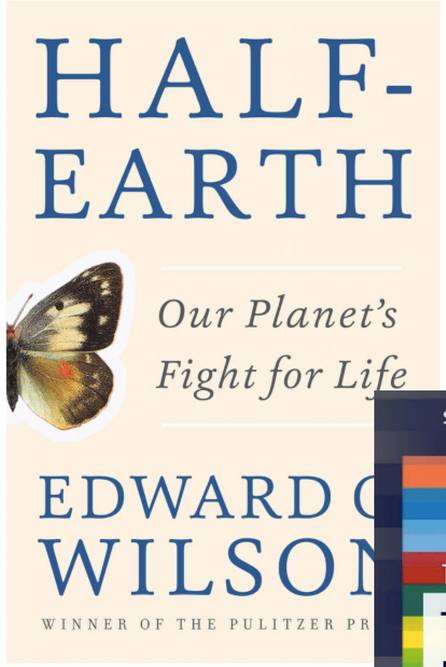
It's simple. It's us. The more people there are, the more habitats we destroy. Human civilisation can only survive if the population begins to shrink

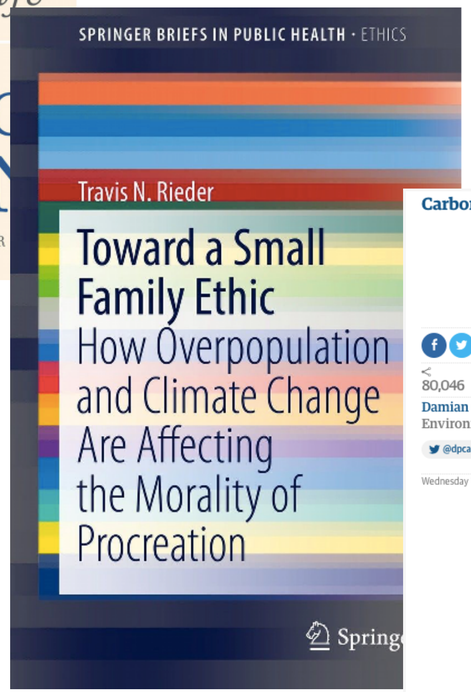
By Paul R. Ehrlich
Published: 16:36 July 13, 2017

GULF NEWS

+MGN

By Paul R Ehrlich





Main Concepts

20 cognitive biases that screw up your decisions

Samantha Lee and Shana Lebowitz
Aug. 26, 2015, 12:28 PM 343,305

FACEBOOK | LINKEDIN | TWITTER | EMAIL | PRINT

You make thousands of rational decisions every day — or so you think.

From what you'll eat throughout the day to whether you should make a big career move, research suggests that there are a number of cognitive stumbling blocks that affect your behavior, and they can prevent you from acting in your own best interests.

Here, we've rounded up the most common biases that screw up our decision-making.

20 COGNITIVE BIASES THAT SCREW UP YOUR DECISIONS

1. Anchoring bias.
People are **over-reliant** on the first piece of information they hear. In a salary negotiation, whoever makes the first offer establishes a range of reasonable possibilities in each person's mind.

2. Availability heuristic.
People **overestimate the importance** of information that is available to them. A person might argue that smoking is not unhealthy because they know someone who lived to 100 and smoked three packs a day.

3. Bandwagon effect.
The probability of one person adopting a belief increases based on the number of people who hold that belief. This is a powerful form of **groupthink** and is reason why meetings are often unproductive.

4. Blind-spot bias.
Failing to recognize your own cognitive biases is a bias in itself. People notice cognitive and motivational biases much more in others than in themselves.

5. Choice-supportive bias.
When you choose something, you tend to feel positive about it, even if that **choice has flaws.** Like how you think your dog is awesome — even if it bites people every once in a while.

6. Clustering illusion.
This is the tendency to **see patterns in random events.** It is key to various gambling fallacies, like the idea that red is more or less likely to turn up on a roulette table after a string of reds.

7. Confirmation bias.
We tend to listen only to information that confirms our **preconceptions** — one of the many reasons it's so hard to have an intelligent conversation about climate change.

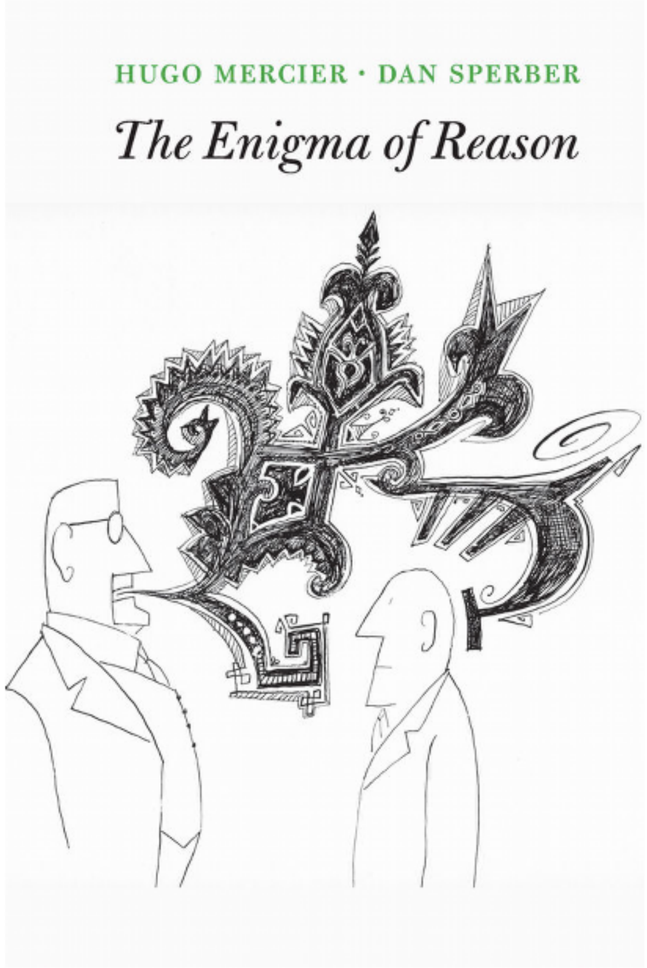
8. Conservatism bias.
Where people favor prior evidence over new evidence or information that has emerged. People were **slow to accept** that the Earth was round because they maintained their earlier understanding that the planet was flat.

9. Information bias.
The tendency to **seek information when it does not affect action.** More information is not always better. With less information, people can often

10. Ostrich effect.
The decision to **ignore dangerous or negative information** by "burying" one's head in the sand, like an ostrich. Research suggests

11. Outcome bias.
Judging a decision based on the **outcome** — rather than how exactly the decision was made in the moment. Just because you won a lot in Vegas doesn't

12. Overconfidence.
Some of us are **too confident about our abilities,** and this causes us to take greater risks in our daily lives. Experts are more prone to this bias than



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

The captive ravens in the study were tested on two tasks: using tools and bartering with humans. Photograph: Jana Mueller/University of Vienn/PA

Associated Press in New York

Thursday 13 July 2017 17.01 EDT

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.

Learning Concept

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

Case Study Template

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

More than 70 Case Study since 2016

Topic (2019)

- Landfills and Sea Level Rise
- Limiting Energy Usage
- Preparing the Economy for Climate Change and Sea Level Rise
- Tourism and Sea Level Rise
- Extinction of Species
- Extinction and Food Security
- Pollution
- Invasive species
- Chesapeake Bay under climate change and sea level rise
- Industrial waste and sea level rise
- Food-Water-Energy Nexus
- Degradation of Mangroves
- Loss of Ecosystem Services of Wetlands
- Ocean Acidification/Warming and Coral Reefs
- Sustainable Cities
- Soil Degradation and Sustainable Farming
- Urban Agriculture
- Wildfires
- Climate Change and Agriculture
- Population growth and sustainability
- Impacts of sea level rise and climate change on the Back Bay National Wildlife Refuge
- Sargassum
- Plastic Pollution in the Ocean
- Lionfish

Research on real-world problems in an out-of class room setting