Day 4: Ecosystem Interdependence

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Road map

- What is an ecosystem?
- Four Laws of Ecology
- How do humans impact their ecosystem?
  - Steady States and Collapse
  - Common Pool Resources

Today We are Ecologists

Definition

"...the subfield of biology that strives to explain the interrelationships among people, other living things, and their environments" (Smith, 3)

What is an ecosystem?

Definition

"...any group of plants, animals, or nonliving things interacting with their external environment" (Smith, 3)

Systems Theory

Two ways to view a system:

Open

Ecosystems "interact with everything else in the environment"

Closed

Ecosystems are independent from the external environment

Our Ecosystem/Ecosphere

Spaceship Earth

Figure: Earthrise by NASA, Public Domain

Four Laws of Ecology

1. Everything is connected to everything else
2. Everything must go somewhere
3. Nature knows best
4. There is no such thing as a free lunch

Groups: What does the law mean? What does it tell us about how we interact with our environment? How might it apply to the need for government policy?

Four Laws of Ecology

1. Everything is connected to everything else

Figure: Lake Erie Algae Bloom by NASA, Public Domain

Four Laws of Ecology

2. Everything must go somewhere

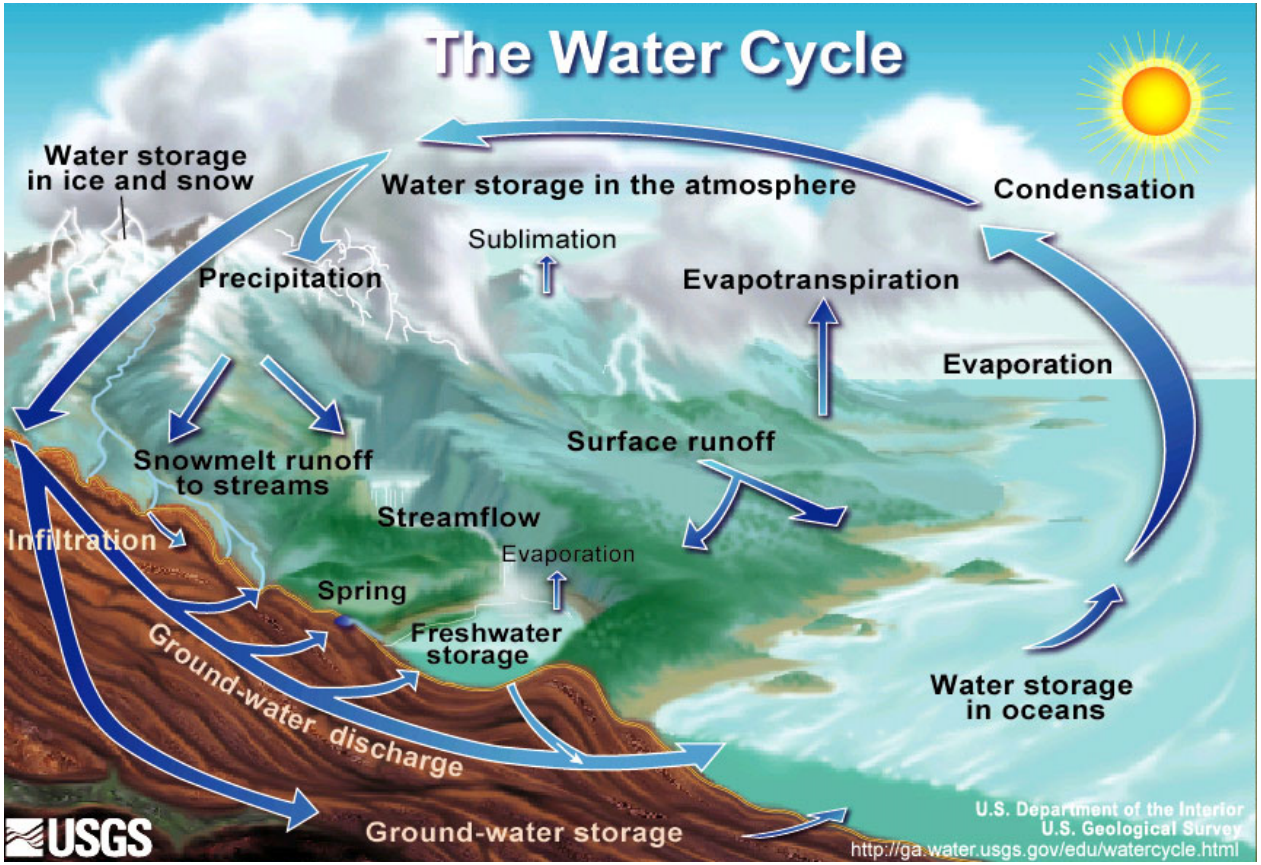

Figure: Water Cycle by USGS, Public Domain

Four Laws of Ecology

3. Nature knows best

Figure: Camp Pendleton Fire by DVIDSHUB, CC BY 2.0

Four Laws of Ecology

4. There is no such thing as a free lunch

Figure: Earthrise by NASA, Public Domain

Our Impact on Ecosystems

Steady States and Collapse

"...that level of activity within an ecosystem that can be maintained over a long period of time" (Smith, 7)

Let's Make It Personal

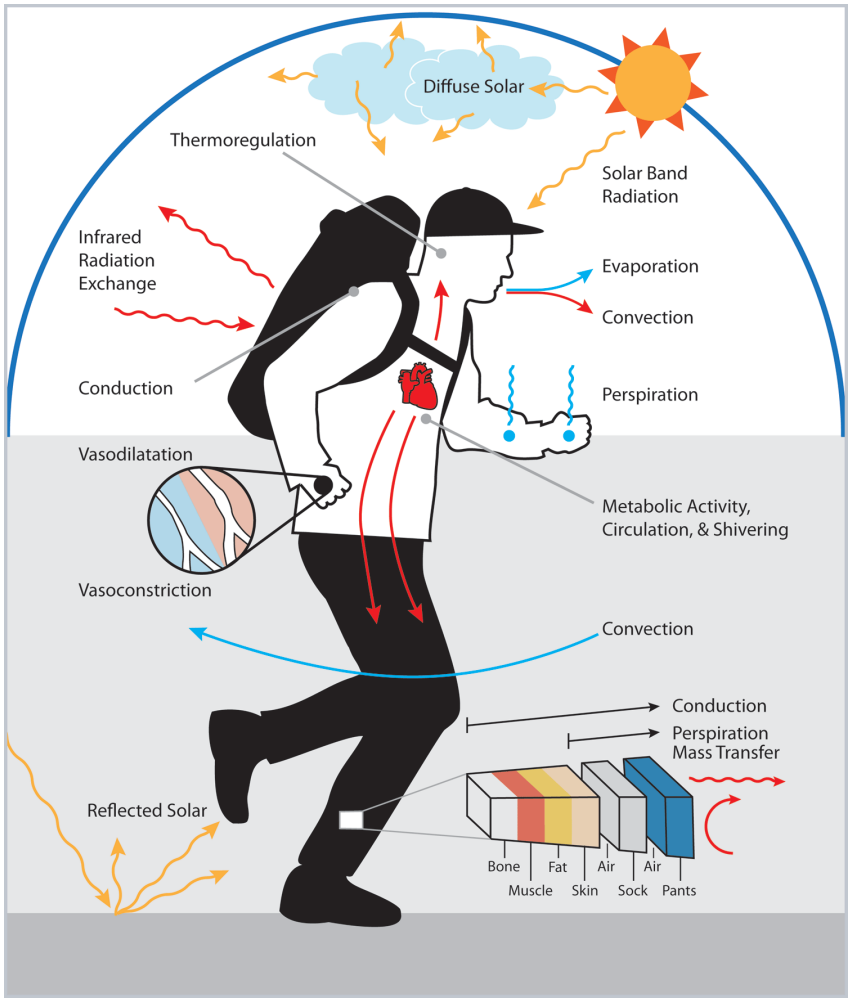

Figure: ThermoAnalytics

Our Impact on Ecosystems

Discussion: What are ways that humans positively or negatively impact the environment around them? How can these interactions lead to ecosystem collapse?

Our Impact on Ecosystems

Common Pool Resources

"The Tragedy of the Commons" $\rightarrow$ Result of homo economicus and a market failure

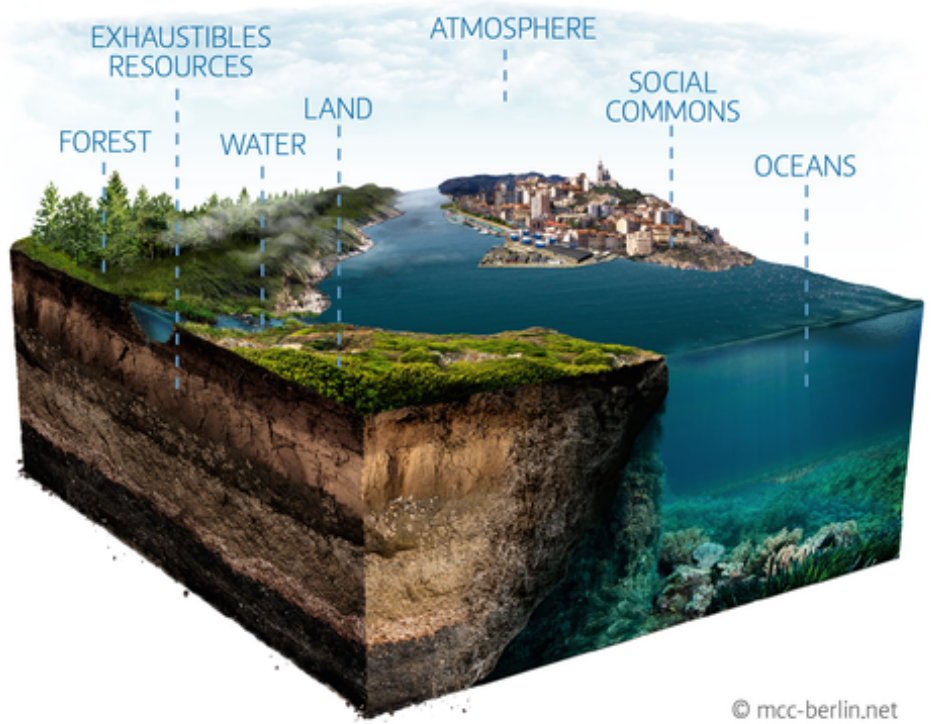

Figure: Global Commons by MCC, CC BY-SA 3.0

Final Thoughts from Smith

An Enemy of Ourselves

> *"Nature will reach homeostasis even if this means indefinitely shutting down crucial life-sustaining ecosystem services and even if it means a global ecosystem without humans" (Smith, 10)*

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Environmental Policy Paradox

We must protect our environment, but, in politics, we also protect interests who exploit and threaten the environment.

Questions?

Figure: Q&A by Libby Levi, CC BY-SA 2.0