Institutions & "The Commons"
Tragedy of the Commons Game

Commons Game – Round 1

- **Setting:** The class is a group of fisher-people who manage a fishery. No research has been done, so you do not know how many fish exist in your fishery or what the sustainable catch rate is. However, people have been noticing that fish numbers are decreasing, especially as fish prices have been rising. Each ton of fish you catch is currently worth $50.
- **Rules:** There are no rules about how many tons of fish you can catch. This round is anonymous.
- **What to do?** Write down the number of fish you want to catch on the small piece of paper. Fold it up and put it in the container that is circulating.
- **<Warning>** If you over fish your collective fishery, there will be a collapse and no one will get anything!

Important Definitions

- **Institutions**: "Rules and norms governing collective action, especially referring to rules governing common property environmental resources, like rivers, oceans, grasslands, forests, and the atmosphere." (Robbins et al. 2014, pg. 55)

- **Common Property**: "A good or resource whose characteristics make it difficult to fully enclose and partition, making it possible for non-owners to enjoy resource benefits and owners to sustain costs from the actions of others, typically necessitating some form of creative institutional management" (Robbins et al. 2014, pg. 55)

The Prisoner's Dilemma

A theoretical game in which a particular action would benefit all, but *individuals behaving selfishly* will create a situation that is not optimal for everyone.

	Prisoner B "clams up"	Prisoner B "rats"
Prisoner A "clams up"	Both prisoners do light sentences	Prisoner B walks free, Prisoner A goes to jail
Prisoner A "rats"	Prisoner A walks free, Prisoner B goes to jail	Both prisoners do hard time

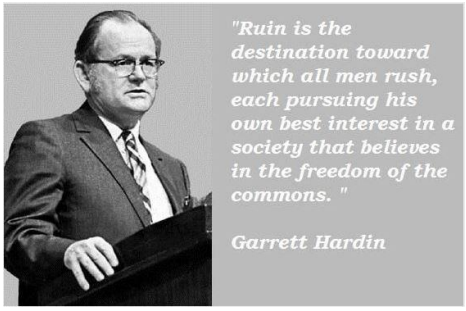
The "Tragedy of the Commons"

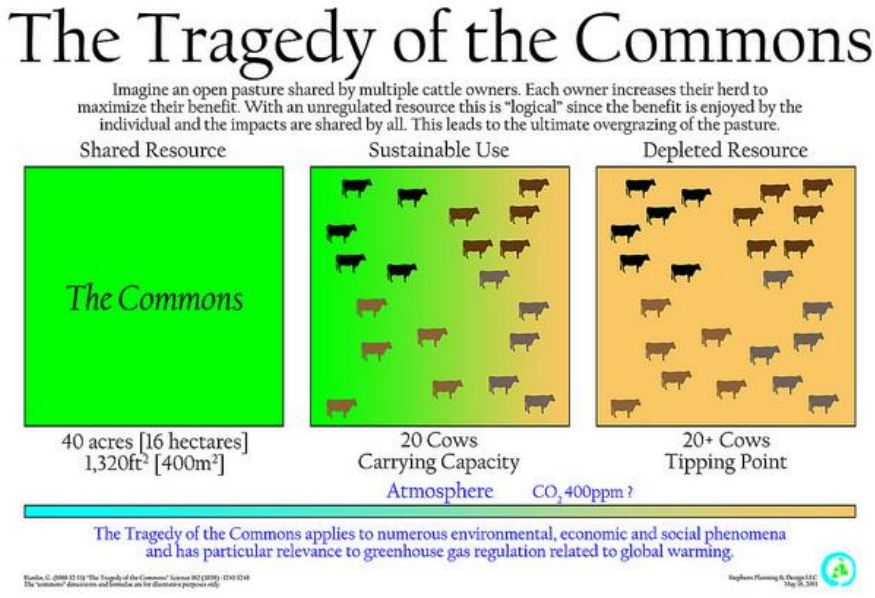
- Garrett Hardin theorized the "tragedy of the commons" as a particular type of prisoner's dilemma

- The pasture example:
  - *Everyone has access* to a commonly held pasture
  - *No rules exist* about sustainable numbers for grazing
  - Each herder benefits more from adding more animals than they lose from overgrazing
  - The result: **the pasture is overgrazed**

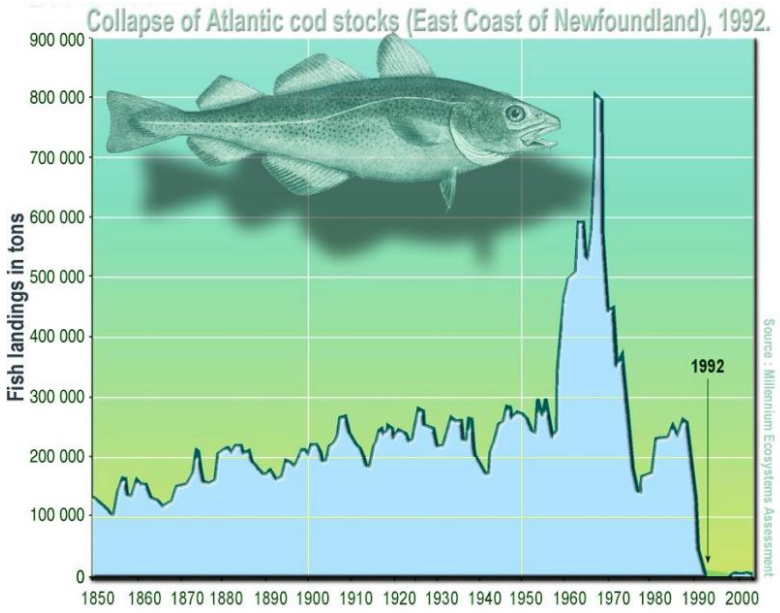
But, are all commons "free" with no rules??

- Research shows the answer is often: NO





Example: Fishery Collapse



ENVIRONMENT

Global Fisheries Are Collapsing —What Happens When There Are No Fish Left?

According to the U.N Food and Agriculture Organization, 85 percent of global fish stocks are "overexploited, depleted or recovering from depletion."

By *Dahr Jamail* / Truthout | *April 17, 2016*

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"Commercial overexploitation of the world's fish stocks is severe," UN Secretary General Ban Ki-moon said back in 2012. "Many species have been hunted to fractions of their original populations. More than half of global fisheries are exhausted, and a further third are depleted."

Photo Credit: zaferkizilkaya/Shutterstock

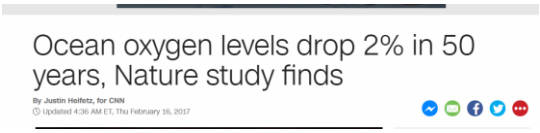
http://www.alternet.org/environment/global-fisheries-are-collapsing-what-happens-when-there-are-no-fish-left

Example: Ocean Pollution

Scientists discover pollution 10,000 meters below the ocean's surface in the Mariana Trench

https://www.washingtonpost.com/news/energy-environment/wp/2017/02/13/not-even-the-worlds-deepest-ocean-trenches-are-free-of-pollution-scientists-discover/?utm_term=.7fbc0e9db313

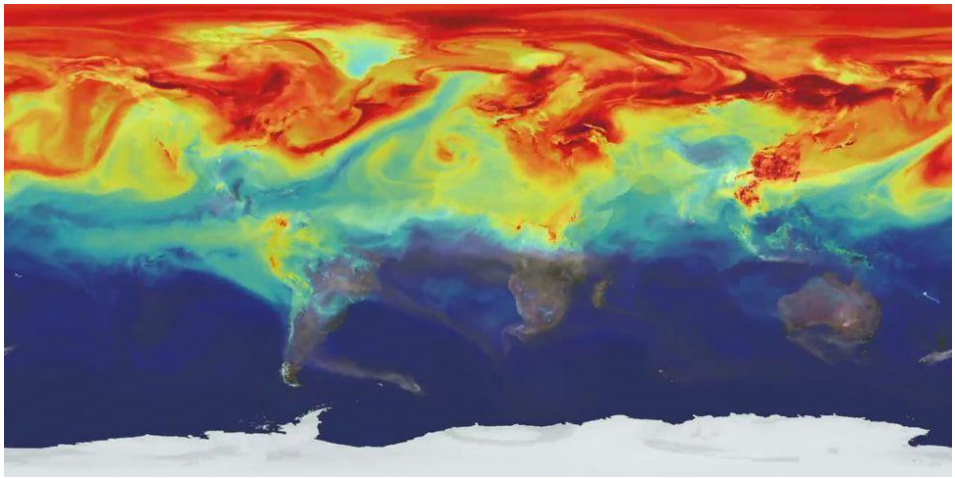
http://www.latimes.com/science/sciencenow/la-sci-sn-deep-sea-pollution-20170215-story.html



Ocean oxygen levels drop 2% in 50 years, Nature study finds

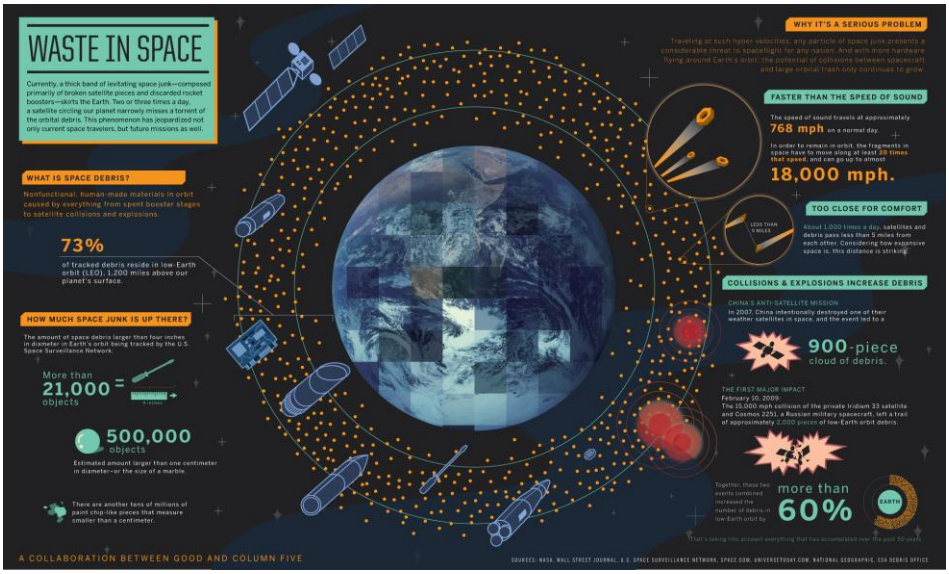
http://www.cnn.com/2017/02/16/world/ocean-oxygen-nature/

Example: Atmospheric Pollution



http://geoawesomeness.com/top-11-maps-ultimately-explain-climate-change-impact/

Example: Space Debris



http://www.jpl.nasa.gov/infographics/infographic.view.php?id=10929

How Can We Manage "Commons" Better?

Collective Action

- Individuals have incentives to participate in collective ownership if they have the ability *to negotiate the rules*
- Successful commons management includes:
  - Clearly defined boundaries
  - Costs of managing should match benefits gained (proportionality)
  - Rules are made collectively by users (collective choice)
  - Monitoring systems are in place
  - Sanctions must be in place to punish violators
  - Conflict resolution mechanisms must exist
  - The system must have autonomy (local, self-governance)

Commons Game – Round 2

- **Setting:** Research has been completed on the fishery. We now know the sustainable catch rate. There is interest in setting some basic rules around fishery management to avoid a collapse in the fish stocks.
- **Rules:** *This round is still anonymous*, but let's make some rules together through a brainstorming session, followed by a majority vote. Draw on the best practices for commons management discussed in the lecture.
  1.
  2.
  3.
  4.
  5.
- **What to do?** Again, write down the number of fish you want to catch on the small piece of paper. Fold it up and put it in the container that is circulating.
- **<Warning>** If you over fish your collective fishery, there will be a collapse and no one will get anything!

Commons Game – Round 3 (Final)

- **Setting:** Research has been completed on the fishery. We now know the sustainable catch rate. There is interest in setting some basic rules around fishery management to avoid a collapse in the fish stocks.
- **Rules:** *This round is NOT anonymous*. Same rules are Round 2, but now you must show your neighbor your catch number!
- **What to do?** Write down the number of fish you want to catch on the small piece of paper. Show the number to your neighbor. Then fold the paper and put it in the container that is circulating.
- **<Warning>** If you over fish your collective fishery, there will be a collapse and no one will get anything!

Discussion: What did you learn from the Game? Anything problematic?

- How can we avoid a Tragedy of the Commons scenario?
- There are some problematic assumptions in the theories discussed so far:
  - Uneven power relationships make it impossible for some to:
    - own property
    - make decisions
    - negotiate rules or sanctions
  - Are all commoners equal?
  - Scale issues may or may not be a problem
    - negotiations may become more difficult with more people and greater distance between them

Personal Consideration:

1. Define “The Commons” in your own words
2. Give an example of one type of commons
3. What might a “Tragedy of the Commons” situation look like in the commons you chose?
4. What is one good collective management strategy to ensure resources are used sustainably?