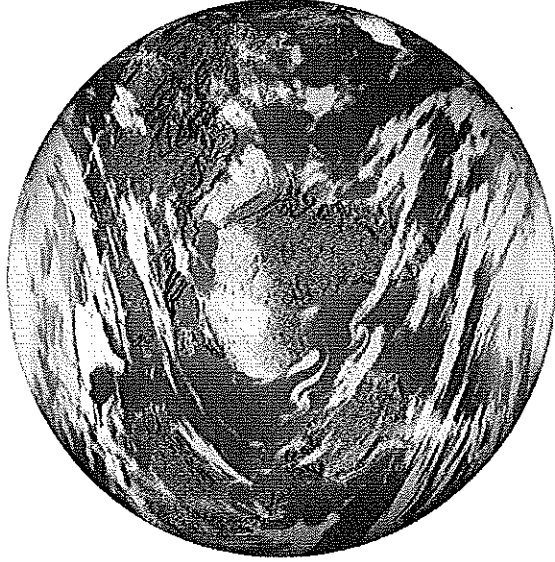


Song for the Blue Ocean, Ecosystem Services, and Perception

- Perceptions affect global change.
- Economics, experiences and language affect our perceptions.
- Carl Safina took us all over the world to better understand why global ocean management is so difficult and complex.
 - Perceptions of the decision-makers play a role in managing ecosystem services.
- Do these services have value?
 - Food supply?
 - Community stability?
 - Environmental justice – why do some people have access to more ecosystem services, such as clean water and soil.
 - Ecological debt – When an organization takes ecosystem value away and does not pay it back, this is a debt to both society and the ecosystem and can lead to environmental injustice. (Redcliff and Woodgate 2010)



CHECK IT OUT! PBS Program with Carl Safina:

<http://video.pbs.org/program/savin-g-the-ocean/>

Ecological Debt?

The picture on the right is an example of an Arkansas stream where there is ecological debt. This stream lost ecosystem services value as a result of gravel mining.

This can lead to environmental injustice in society.

What services were lost?

- Fishing? Clean water? Aesthetic beauty? Temperature stability? Water availability downstream? Habitat?

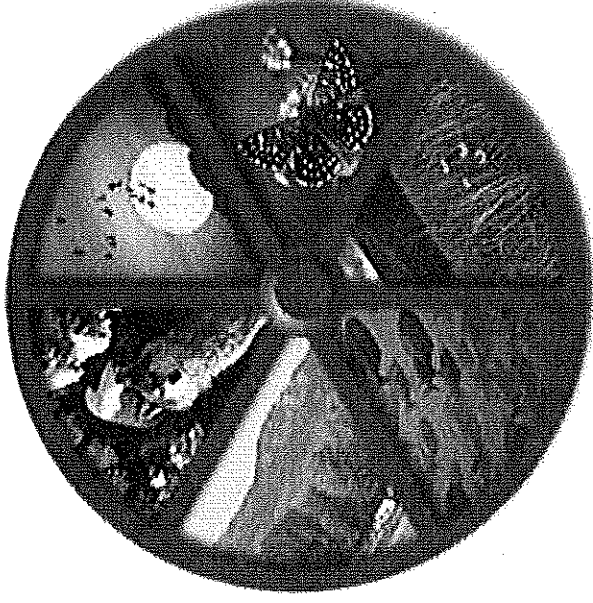


Ecosystem Goods and Services

□ Reminder: What are ecosystem goods and services?

- The cumulative benefits human populations derive, directly or indirectly, from ecosystem functions
- Ecosystem functions refer to the habitat, biological, or system properties or processes of an ecosystem.
- Ecosystem services do not include fossil fuels, as that is a system that is no longer living and functioning as an ecosystem and is therefore non-renewable.

(Costanza et al., 1997).



Healthy ecosystems provide free “services” to human communities, including: water filtration, groundwater recharging, stormwater control, air purification, nutrient recycling, crop pollination, and soil enrichment.

Ecosystem Services include...

Examples of ecosystem services:

(Holdren and Ehrlich 1974; Ehrlich and Ehrlich 1981)

- purification of air and water
- mitigation of droughts and floods
- generation and preservation of soils
- detoxification and decomposition of wastes
- pollination of crops and natural vegetation
- dispersal of seeds
- cycling and movement of nutrients
- control of potential agricultural pests

- maintenance of biodiversity
- protection of coastal shores from erosion by waves
- protection from the sun's harmful ultraviolet rays
- partial stabilization of climate
- moderation of weather extremes and their impacts
- provision of aesthetic beauty and intellectual stimulation that lift the human spirit
- Recreation
- Erosion control
- Wildlife habitat

Ecological Services Have Value

- “Ecosystems satisfy the basic needs for humans to exist.” (Iovanna et al. 2006)
- In economics, capital is considered to be a stock of materials or information that exists at a point in time.
- Capital stock takes different forms, most notably in physical forms including
 - natural capital, such as trees, minerals, ecosystems, the atmosphere and so on
 - manufactured capital, such as machines and buildings
 - human capital, such as talent
 - social capital, such as community
- Natural capital is currently counted as a free good. (Costanza et al., 1997; Herman Daly, 2000)
 - We perceive natural capital as free.
 - This is inaccurate. Nothing is free.

