

Regulating Water Quality for Ecological Integrity

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Our mission: protect and restore chemical, physical and biological integrity of waters

Waters include:

- Streams
- Lakes
- Wetlands
- Bays
- Harbors
- Reservoirs
- Groundwater
- Ocean



Pink lines are
"impaired"
waters"

Stewardship is a matter of perspective



"beneficial use" categories

- Healthy ecosystems
- Safe to eat
- Safe to swim
- Safe to drink
- Safe for commerce (Navigation, agriculture, etc)



"Ecosystem service" categories

- Provisioning (food production);
- Regulating (nutrient cycling);
- Supporting (primary production);
- Cultural (recreation, spiritual, tourism)

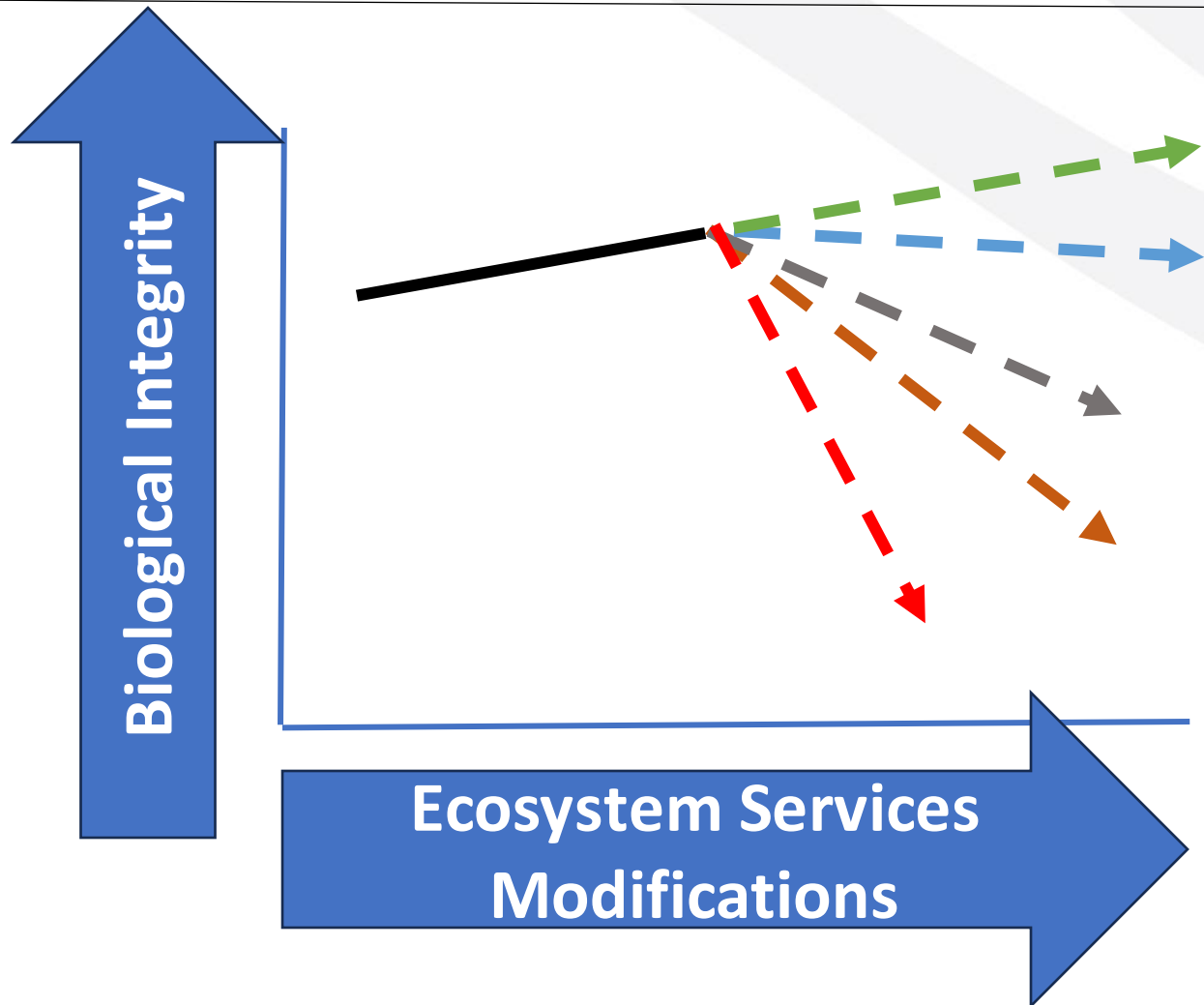


Harbor modifications for ecosystem "services" have varied over time

- Historically: fisheries, ceremonial, waste assimilation, navigation, safe harbor, recreation, etc...
- Recently: mitigate sea level rise, carbon sequestration, aesthetics



Each "service" has a unique relationship with biological integrity in a water body



Measurements of chemistry or laboratory toxicity can miss effects on biological integrity



Increasing biological integrity of engineered ecosystem services is happening



Shoreline protection:
Then and now

