



University of
Massachusetts
Amherst

Session D3: Net Ecosystem Services Analysis as a Floodplain Restoration and Management Tool

Item Type	event;event
Authors	Reub, Greg;Greene, Dr. Gretchen;Mathies, Dr. Steve
Download date	2024-10-04 23:38:45
Link to Item	https://hdl.handle.net/20.500.14394/24968

NET ECOSYSTEM SERVICES ANALYSIS AS A FLOODPLAIN RESTORATION AND MANAGEMENT TOOL

FISH PASSAGE 2015 JUNE 22 – 24

GREG REUB - ECOLOGIST, OLYMPIA, WA. USA

GRETCHEN GREENE - ECONOMIST, VANCOUVER, WA. USA

STEVE MATHIES – ECOLOGIST – NEW ORLEANS, LA. USA



PRESENTATION FOCUS

NET ECOSYSTEM SERVICES ANALYSIS (NESA)

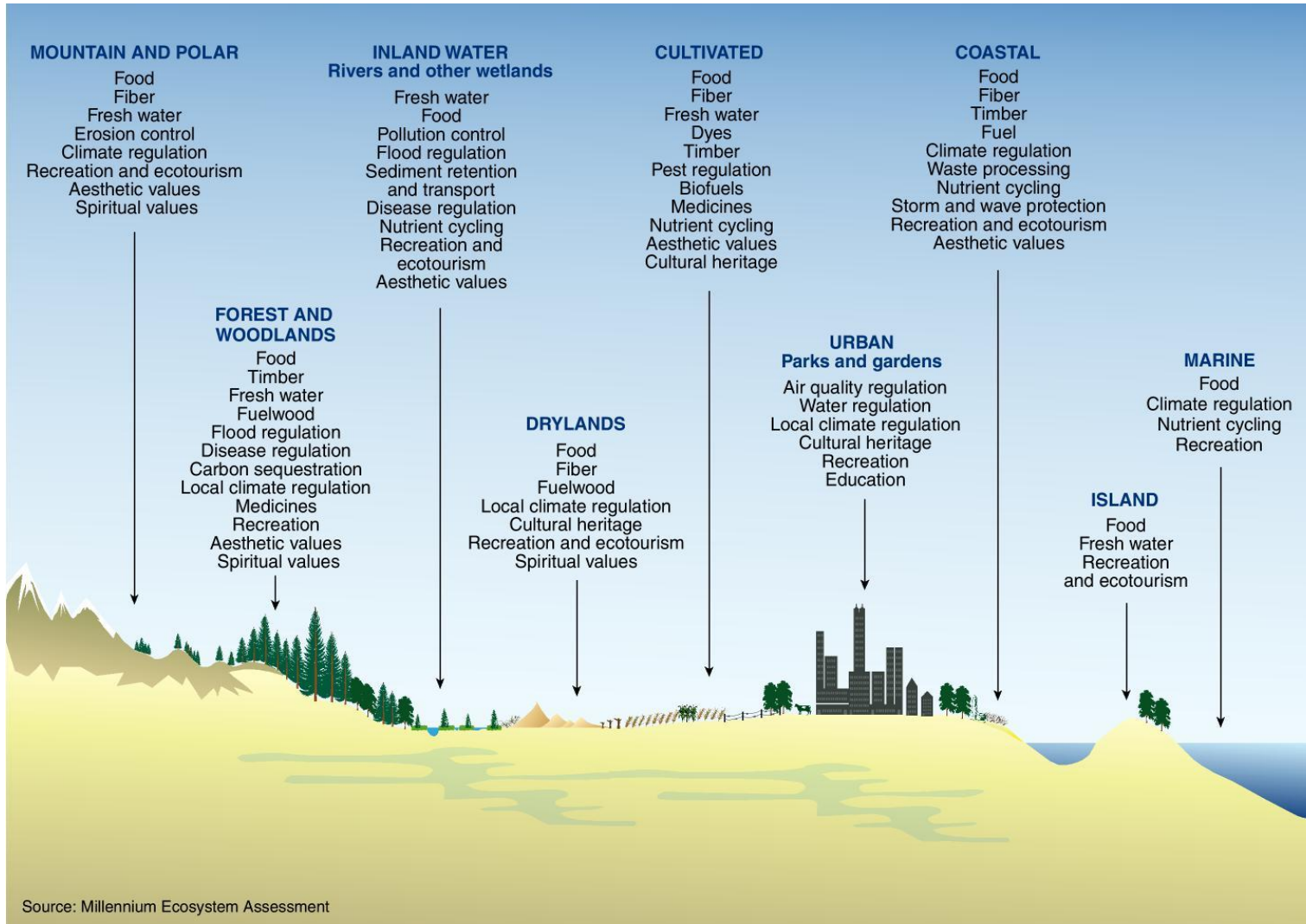
Overview of
Floodplain
Ecosystem
Services and NESA
Framework

Example Results

Summary and
Conclusions



WATERSHED/FLOODPLAIN ECOSYSTEM SERVICES



- Common Metrics, or Currencies
 - Money
 - Number of fish
 - Acres of suitable habitat
 - Water quantity
 - Water quality
 - Carbon – tons
 - Recreation – visitor days
 - Health and well-being
 - Jobs Created

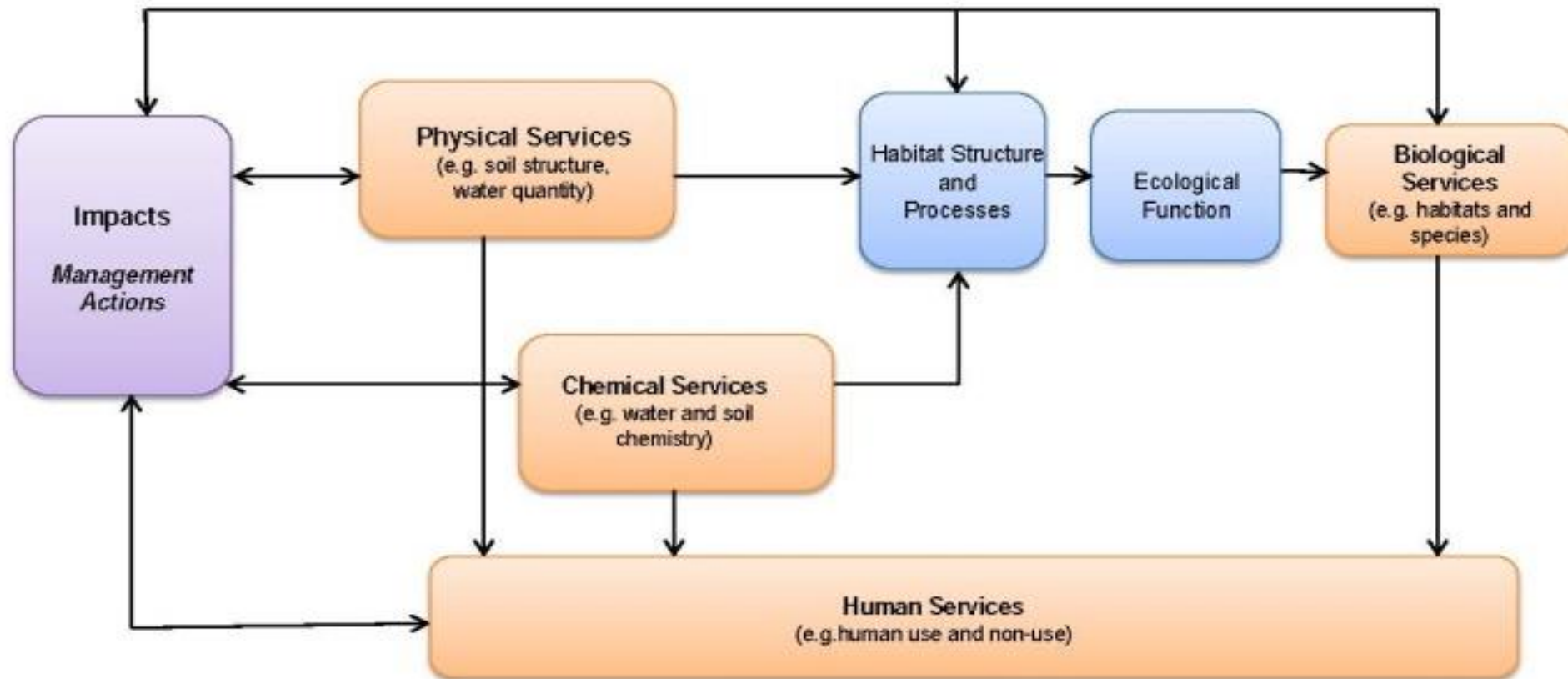
Millennium Ecosystem Assessment *Ecosystems and Human Well Being* (2005)

FRAMEWORK: NESAS APPROACH

- “Goal” is to incorporate future values related to ecosystem service for management decisions
- Key is to convert ecosystem attributes into a currency (common metric) so they can be quantified, valued, compared, traded or sold
- Estimates (debit) and ecological lift (credit)
- Comprehensive, interdisciplinary approach
- Allows for easy revision of analysis for scenario development and decision support
- Transparent for stakeholder input and scientifically defensible



FRAMEWORK: NET ECOSYSTEM SERVICES FRAMEWORK A PROCESS-DRIVEN APPROACH



PRESENTATION FOCUS

NET ECOSYSTEM SERVICES ANALYSIS (NESA)

Overview of
Floodplain
Ecosystem
Services and NESA
Framework

Example Results

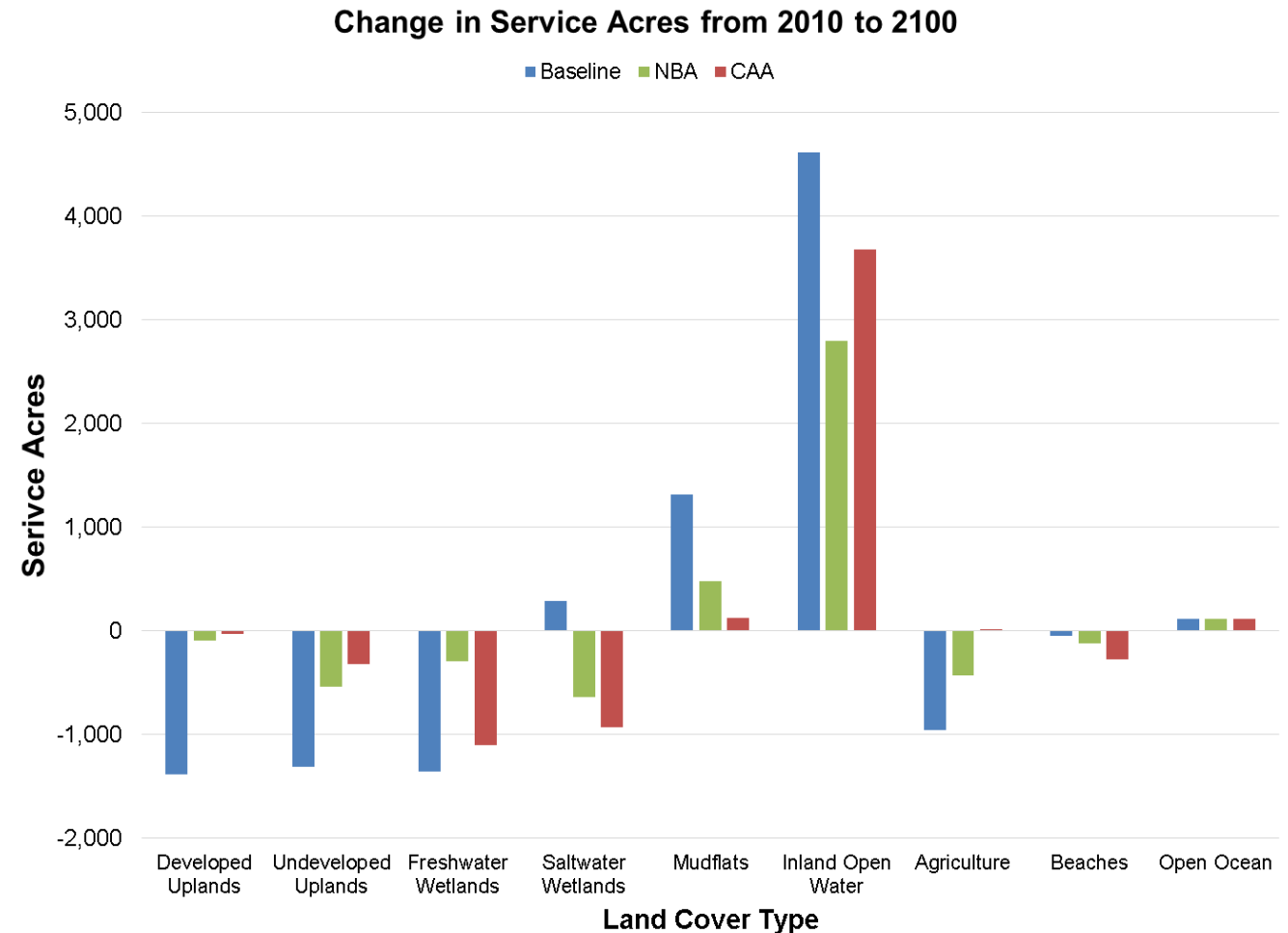
Summary and
Conclusions



NONMONETARY - ECOSYSTEM SERVICES

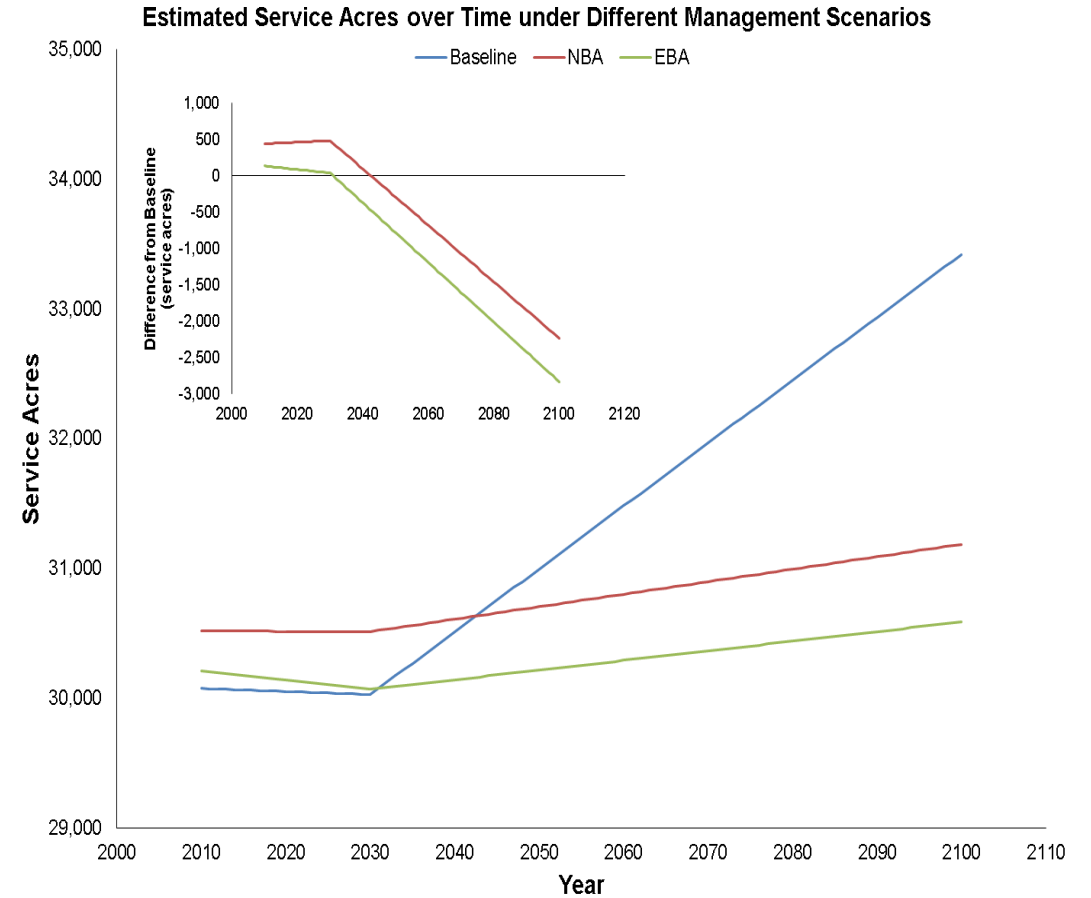
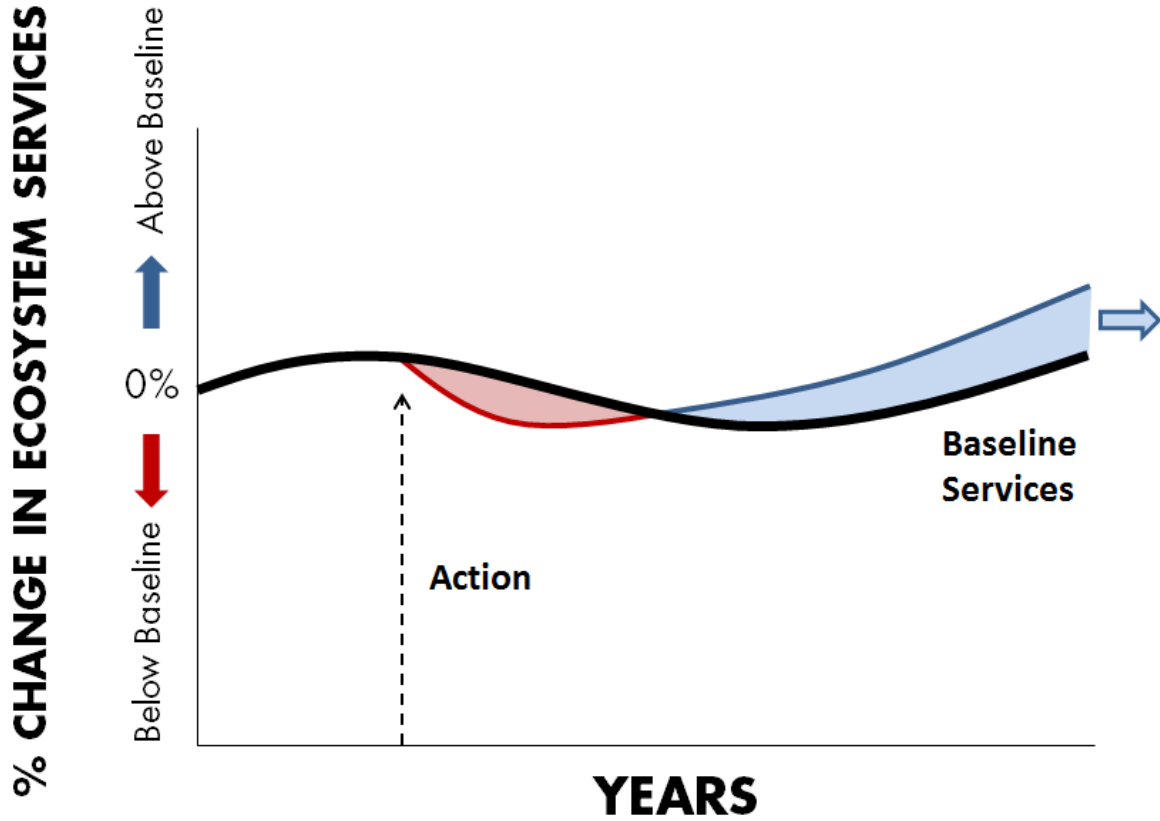
COASTAL FLOODPLAIN – CLIMATE CHANGE

- NESAs (Net Ecosystem Services Analysis)
 - Calculate net benefits/declines in services from the environment to humans
- HEAs (Habitat Equivalency Analysis) applied to results from hydrology model to evaluate changes in ecosystem services by land cover type
- HEAs convert estimates into Service Acre Years (SAYs) – ecosystem services provided by one acre of land cover/habitat for one year
- These results can be discounted or turned into net gain or loss



NONMONETARY - ECOSYSTEM SERVICES

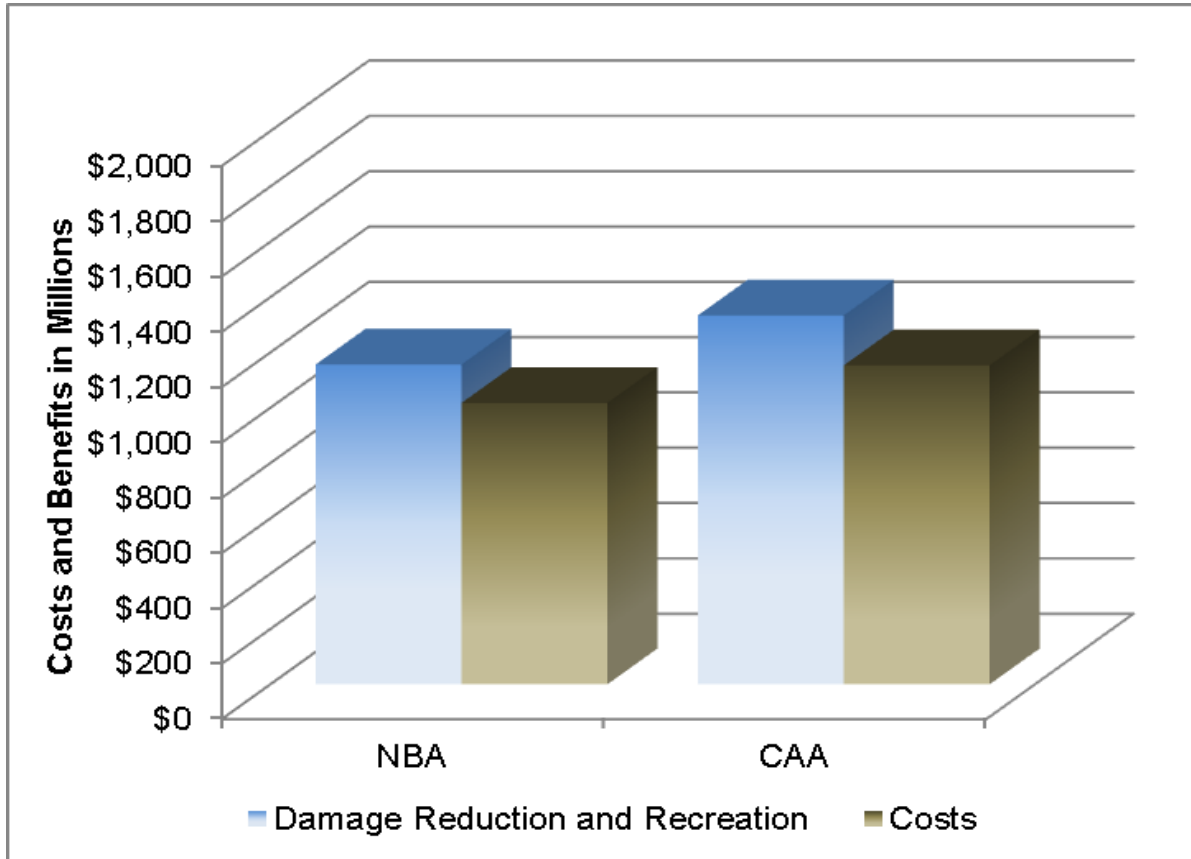
COASTAL FLOODPLAIN - CLIMATE CHANGE



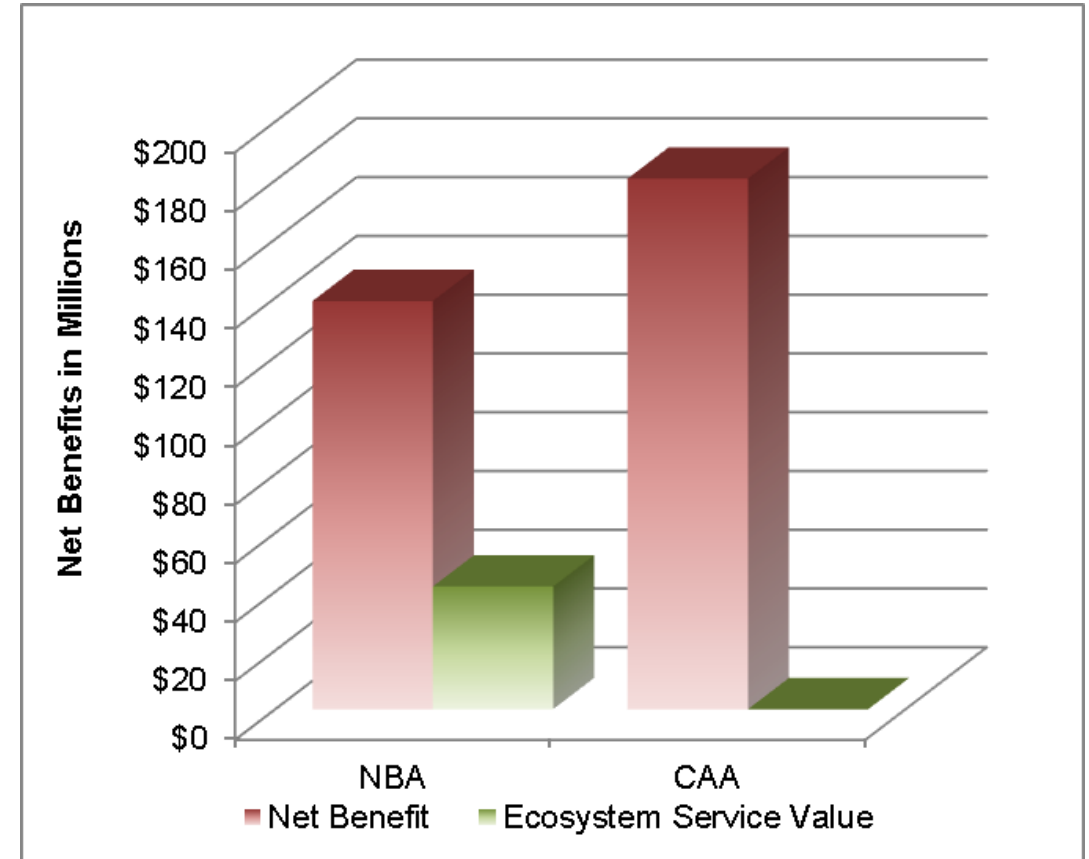
Ecosystem Service Changes through 2100 by Adaptation Strategy

MONETARY ANALYSIS EXAMPLES

COASTAL FLOODPLAIN – CLIMATE CHANGE



Net Present Value of Costs and Benefits of CAA and NBA Scenarios from 2014 to 2100



Net Present Value of Net Benefits of CAA and NBA Scenarios from 2014 to 2100

PRESENTATION FOCUS

NET ECOSYSTEM SERVICES ANALYSIS (NESA)

Overview of
Floodplain
Ecosystem
Services and NESA
Framework

Example Results

Summary and
Conclusions



Conclusions - NESAs Framework

- The NESAs framework is an **ecosystem services management tool**
- Integrates chemical, physical, biological, and social ecosystem services
- Quantifies ecosystem service loss and gains – not just monetary value
- Provides for analysis of alternatives
- Transparent process that satisfies regulatory requirements through sound science
- Forms hypotheses about monitoring and adaptive management outcomes
- Stakeholder interests are included up front.

THANK YOU

CONTACT

**GREG REUB OR GRETCHEN GREENE
OR STEVE MATHIES**

RAMBOLL ENVIRON

GREUB@ENVIRONCORP.COM

GGREENE@ENVIRONCORP.COM

SMATHIES@ENVIRONCORP.COM