DEVELOPING AND USING SOCIAL SCIENCE INFORMATION IN MARINE MANAGEMENT PROCESSES IN THE UNITED STATES

DAVID FLUHARTY, SMA/UW

DALIAN, PRC 10/29/08

THIS PRESENTATION IS DEDICATED TO

WARREN S. WOOSTER

1921-2008

Purpose

To reflect on the use of social sciences in decision support for ecosystem-based management in the marine environment.

To encourage the appropriate development and use of social sciences within the work of PICES.

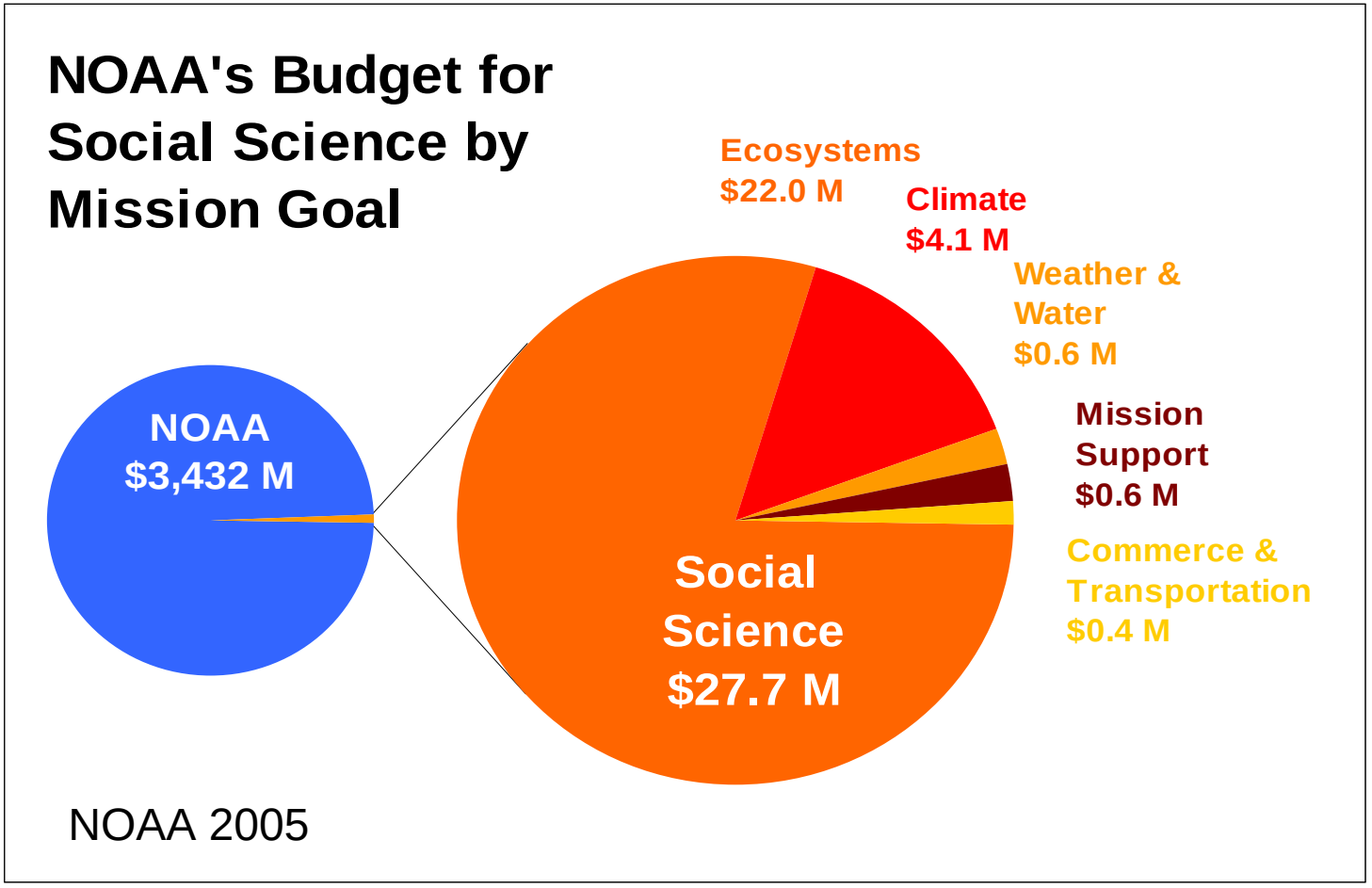
To alert natural scientists to the primitive state of use of social science information in marine environmental decision making.

The social scientist's view of 'Heaven"

Equal amounts of research dollars would be spent on investigations by natural and "unnatural" scientists, i.e., social scientists

[Many of you know Warren Wooster always called us social scientists "unnatural" scientists].

Social scientist's view of "Hell"



What if?

What if we spent the same amount of money on an annual survey of the human population as we spend annually on fisheries surveys?

Well, we never will.

But what is the appropriate amount of investment and what do we want to know?

The Theoretical Basis?

The theoretical construct most advanced in the social sciences is probably economic efficiency. Neo-classical economics.

"In theory a fishery [or other activity] is economically efficient if the resource rent is maximized"

Economic Theory

How do we know we are being economically efficient?

It is when it is impossible to make someone better off without making someone else worse off [Pareto efficiency].

Socio- Rejects Economic!

Sociologists and other social scientists reject efficiency as a goal for socio-economic policy. They prefer, e.g.:

“The attainment of durable and equitable social and economic benefits.”

“The respect for the right of future generations to the sustainable use of renewable resources”

Gibson et al. 2005

Ecological Rejects Economic and Social!

Is goal?

The preservation of ecosystem integrity, including the capability of natural systems to maintain their structure and functions and to support biological diversity.

The “Jake Rice” Conundrum

PICES is being appraised of a pending need for independent scientific advice to resolve disconnects between:

Global Biodiversity Goals/Policy and

Global Resource Use Goals/Policy

The Perfect Storm?!

CBD v. FAO?

OR

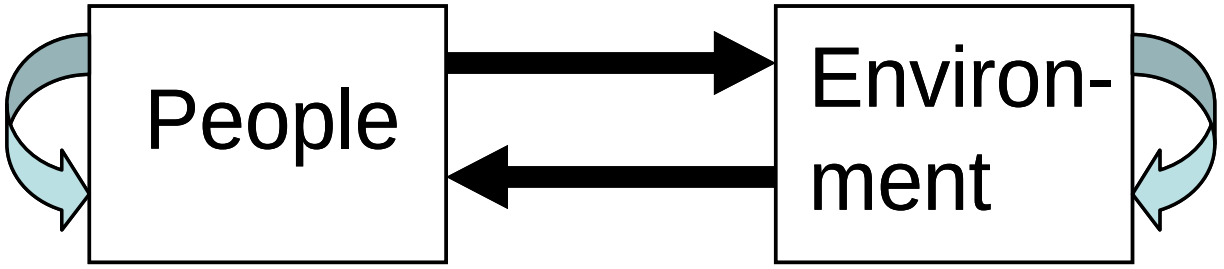
CBD & FAO

Complex Natural – Human Systems Coupling

What does society want and how does it decide?

What are useful scientific inputs from natural and social sciences into marine environmental decision making?

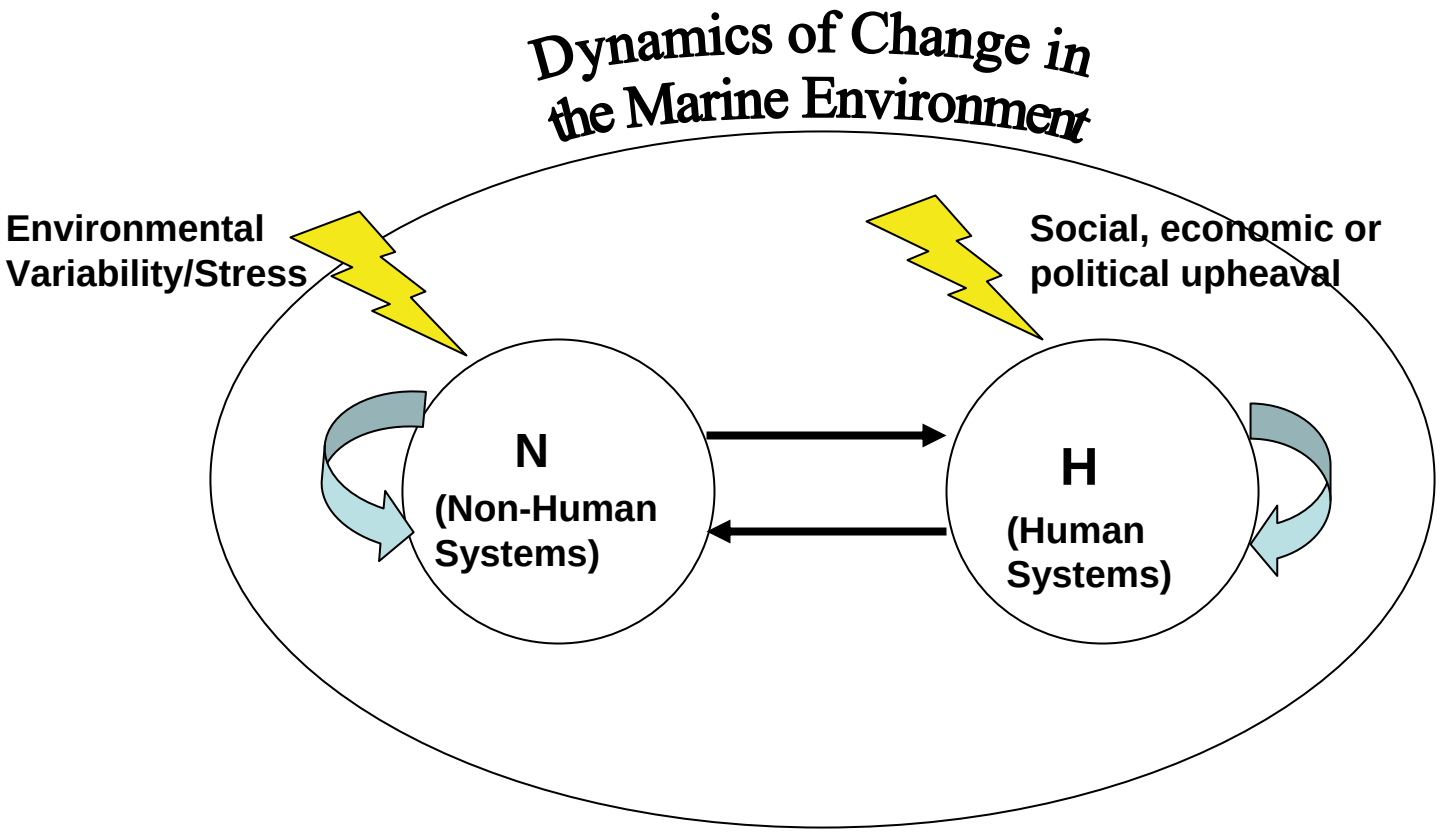
Coupled Social-Ecological Systems



- **“Some of the most challenging decisions in coastal management stem from the relationship between people and the environment. Coastal managers have become increasingly aware of the importance of using social science information and tools to address these relationships.”**

Source: NOAA Coastal Services Center
http://www.csc.noaa.gov/cms/human_dimensions

Resilience in Coupled Social-Ecological Systems (SESs)



➔Examining effects of "shocks" to either N or H systems on the dynamics of the whole system brings in consideration of *resilience* and *vulnerability*.

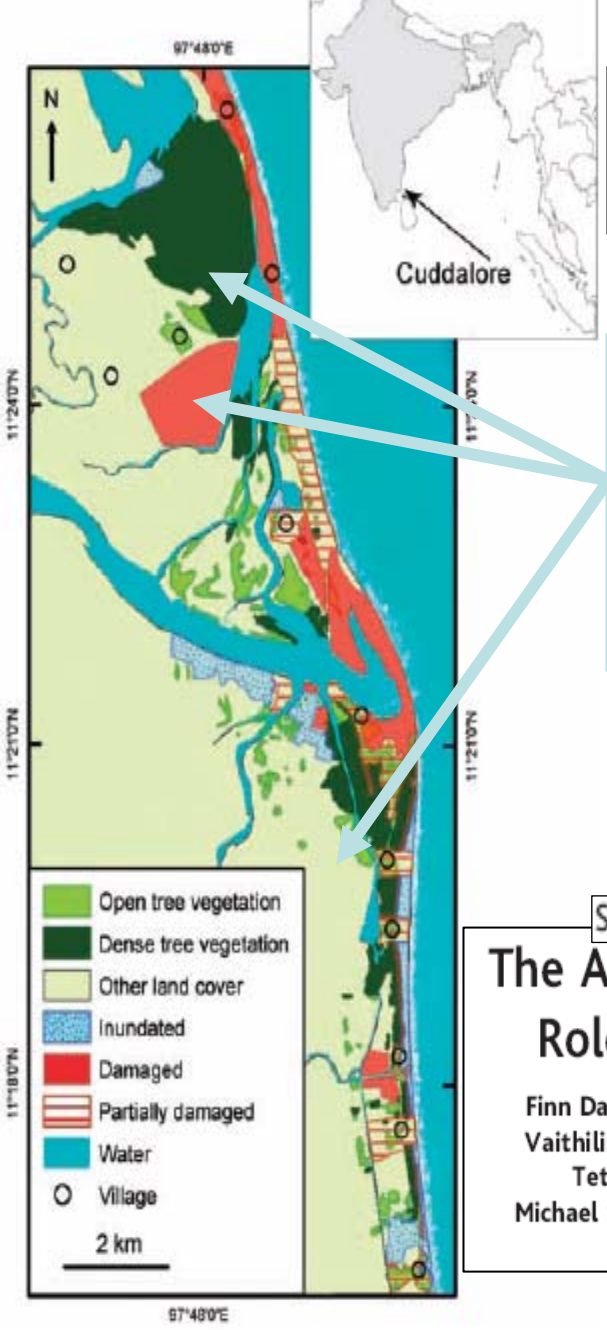


Fig. 1. Pre-tsunami tree vegetation cover and post-tsunami damages in Cuddalore District, Tamil Nadu, India.

12 AUGUST 2005 VOL 309 SCIENCE

VIEWPOINT

Social-Ecological Resilience to Coastal Disasters

W. Neil Adger,[1*] Terry P. Hughes,[2] Carl Folke,[3] Stephen R. Carpenter,[4] Johan Rockström[5]

Illustrating possible *institutional* roles in social resilience and vulnerability

Fig. 1. Mosque and crop field in Banda Aceh, Indonesia, before (top) and after (bottom) the 2004 Southeast Asia tsunami, illustrating the impact of natural disasters on the delivery of ecological goods (agriculture) and the social cohesion of resilient societies.

SCIENCE VOL 310 28 OCTOBER 2005

The Asian Tsunami: A Protective Role for Coastal Vegetation

Finn Danielsen,[1*] Mikael K. Sørensen,[2] Mette F. Olwig,[2] Vaithilingam Selvam,[3] Faizal Parish,[4] Neil D. Burgess,[5,6] Tetsuya Hiraishi,[7] Vagarappa M. Karunagaran,[3] Michael S. Rasmussen,[2] Lars B. Hansen,[2] Alfredo Quarto,[8] Nyoman Suryadiputra[9]

FISH and FISHERIES, 2007, **8**, 14–30

Global constraints on rural fishing communities: whose resilience is it anyway?

Martin D Robards[1] *& Joshua A Greenberg*[2]

Departments of [1]Biology and Wildlife; [2]Resources Management, University of Alaska, PO Box 756100, Fairbanks, AK 99775-6100, USA

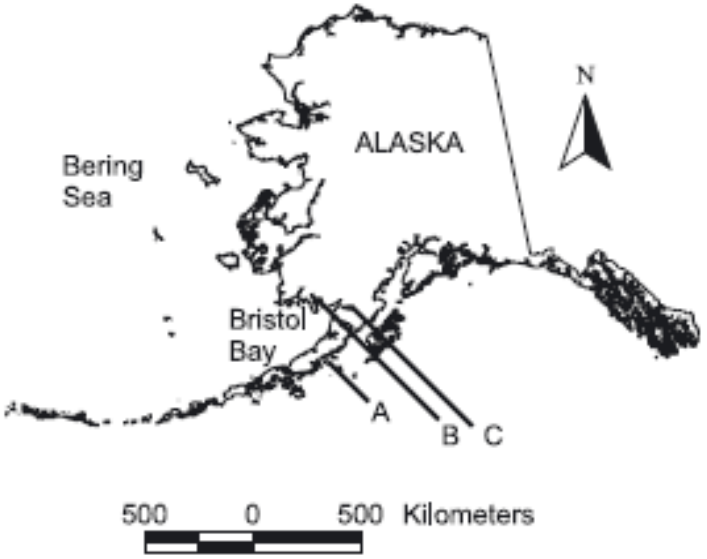
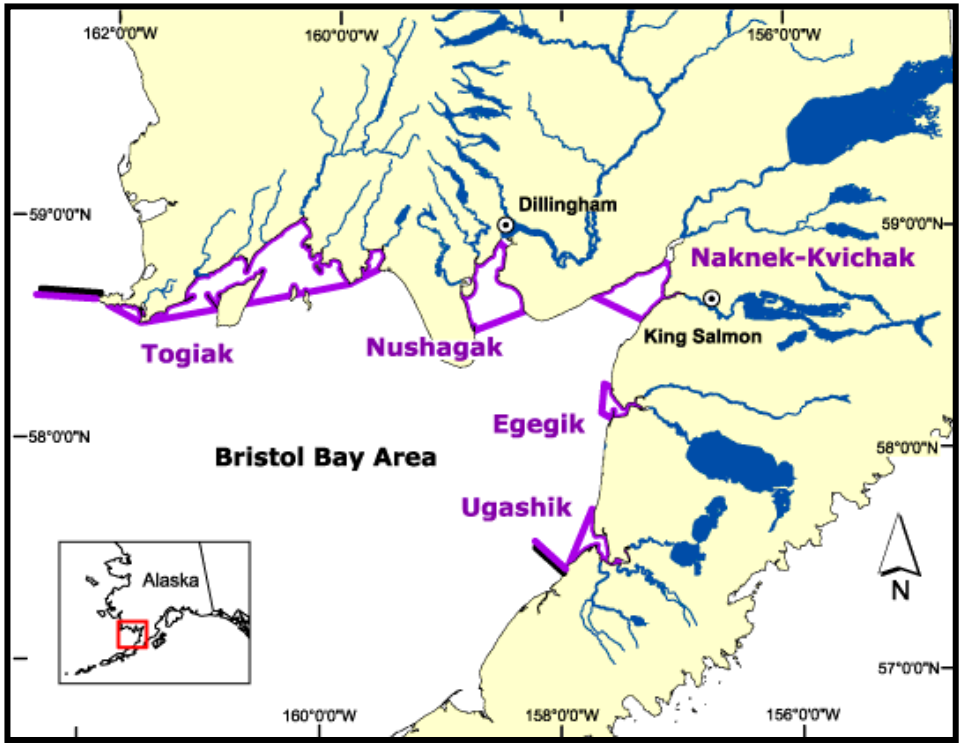
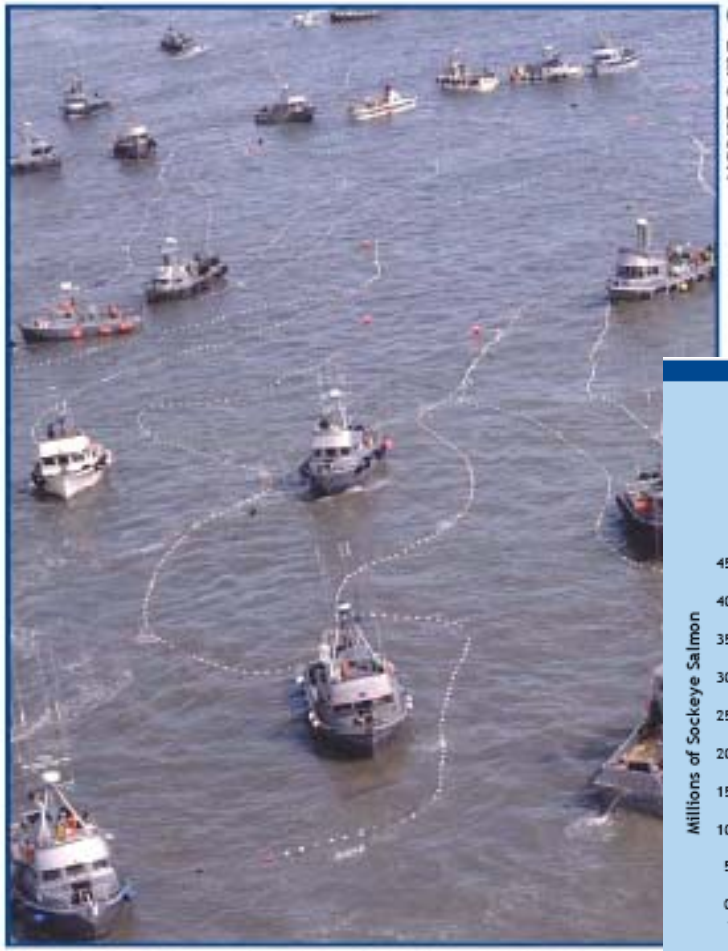


Figure 1 Alaska showing the Bristol Bay Area. Communities cited in the text are A, Chignik; B, Dillingham; C, King Salmon.

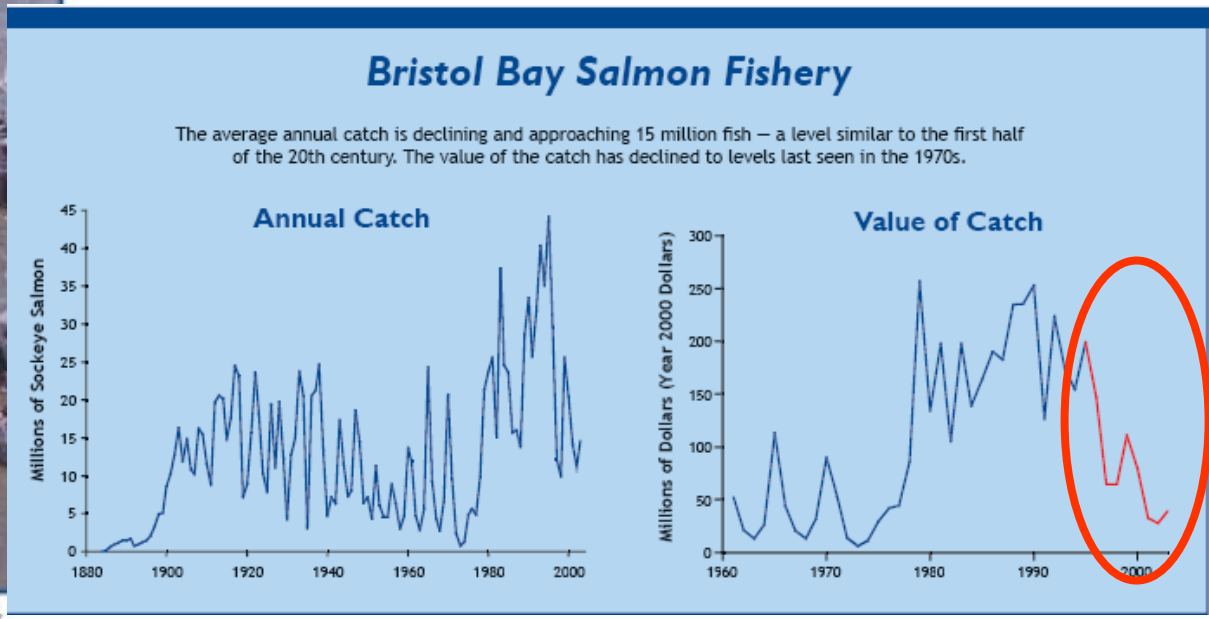


http://www.cf.adfg.state.ak.us/region2/finfish/salmon/bbayhome.php

Salmon Fishing in Bristol Bay, Alaska



Fishing the north Egegik line, Bristol Bay.



Bristol Bay Salmon Fishery Restructuring Study http://www.bbsalmon.com/

Resilience for Social-Ecological Systems: Evolving Definitions

- The ability of either system to withstand or adapt to "shocks" to itself or to other systems to which it is linked (after C.S. Holling 1973)

- The capacity of governance systems to accommodate change in ways that support societal development and environmental linkages for generations to come (Folke 2006, Robards and Greenberg 2007)

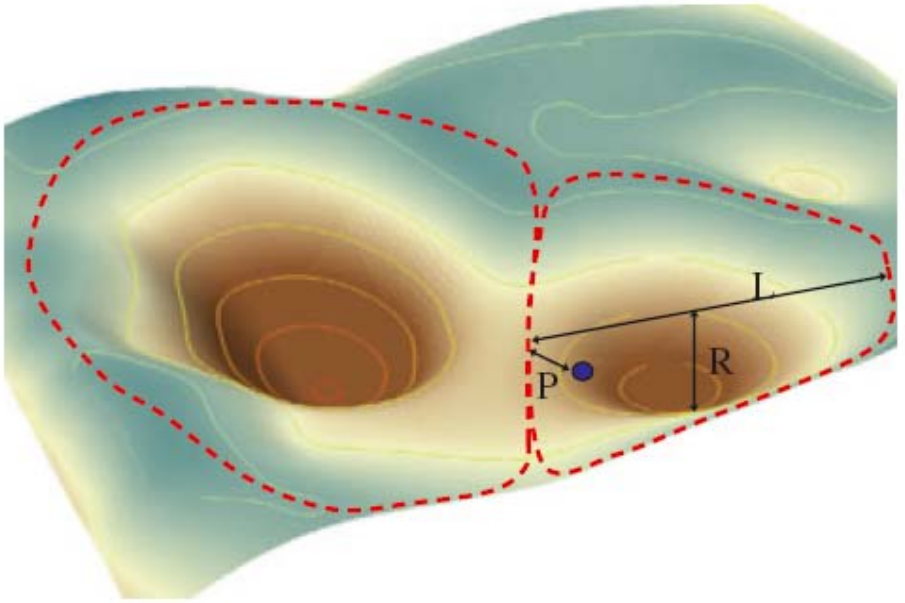


Figure 4 State space as represented by a three-dimensional stability landscape. Basins of attraction are areas within this space where a system tends to remain.

-From Robards and Greenberg, Global Constraints on Rural Fishing Communities: Whose Resilience Is It Anyway? (2007).

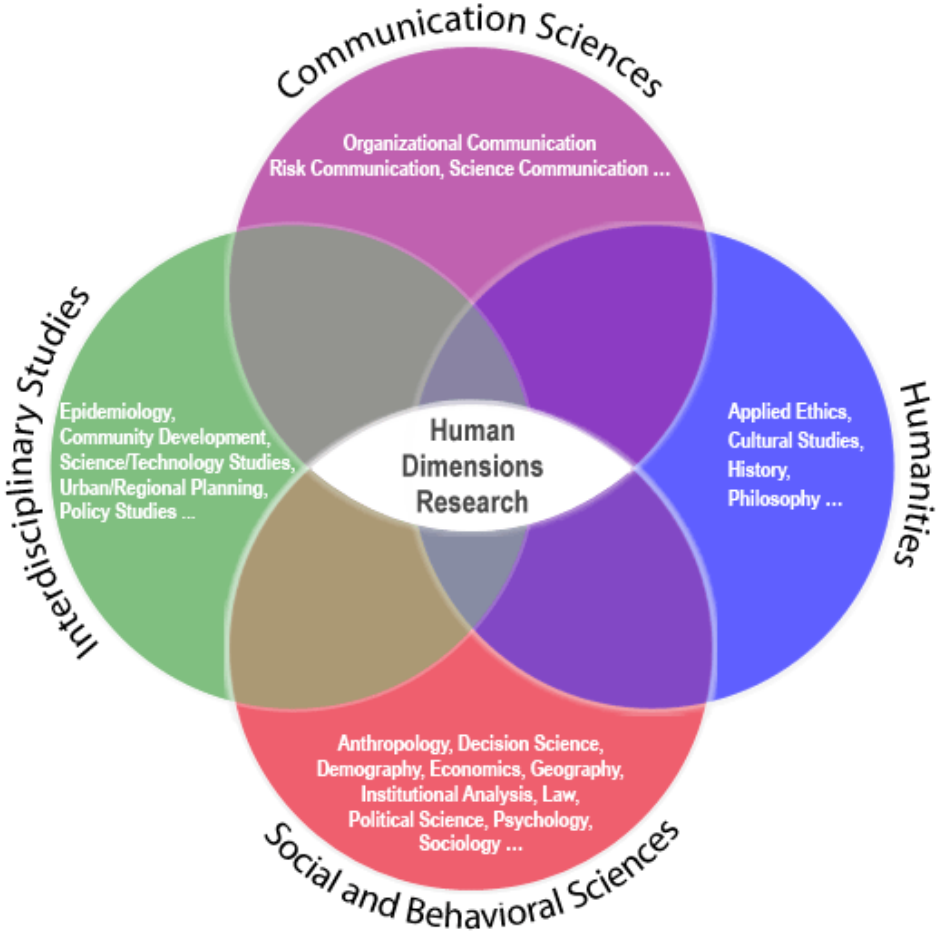
Decision Support

“Decision making in the [environment] can be complex and seemingly intractable, principally because of the inherent trade-offs between sociopolitical, environmental, ecological and economic factors.” [Kiker et al. 2005].

Thus, who should make the investment in the science needed to inform trade offs?

Human Dimensions Research

- **Understand human–environment interactions and facilitate use of this understanding to support decisions affecting environmental processes and their societal outcomes.**
- **Research on the human dimensions of ecosystems encompasses a broad array of interrelated disciplines across the social and behavioral sciences, humanities, communication sciences, and related interdisciplinary studies.**



http://www.ndces.noaa.gov/human/welcome.html

The Practice

First ideas about social dimensions

After the United Nations was founded, the requirements for social statistical information increased

- 1954: UN presented a comprehensive list of 11 social indicators

- 1997: The Statistical Commission developed a Minimum National Social Data Set (MNSDS)

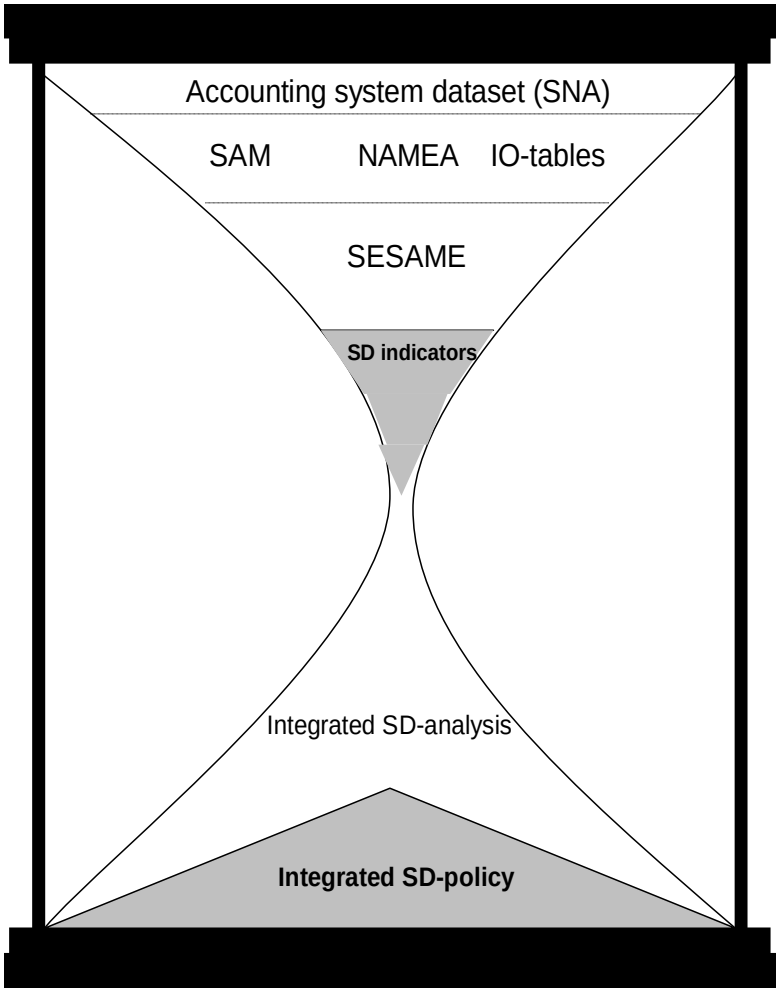
Comparison of social indicators 1954 and 1997

- Indicators defined as a compromise between data availability and usefulness for analysis about which one can still find agreement internationally
- Both sets of social indicators lack links to other important environmental and economic indicators
- However, they can be used as starting point for future work with social indicators in connection to SD

Social Accounting Matrices (SAM)

- SAM = National accounts incorporated into a matrix accountancy framework
- SAM extends national accounts data with more detailed statistics on the compensation of employees
- The design and construction method of SAM is not yet internationally standardized

The link between accounting systems and indicator systems



Other Approaches

See Makino's poster (5460) of the approach developed by the PICES Summer Course

This is an innovative bottom up, stakeholder-driven, quasi-Delphic approach. Quite useful in showing the diverse perspectives held within society about different indicators of human well-being. Still not necessarily a science-driven approach.

The Practice -USA

NOAA SAB Social Science Working Group

Federal Fisheries Management

MPA Science

NOAA Science Advisory Board

Terms of Reference – Social Science Working Group

- **How can NOAA better identify and measure (qualify and quantify) its programmatic outcomes?**
- **How can social science help NOAA and its partners effectively integrate natural science into decision-making?**
- **How can social science itself be integrated into decision-making of NOAA and its partners?**
- **How can social science capabilities at NOAA be strengthened where currently they are weak?**

NOAA SAB SSWG - Findings

Despite considerable increase in recognition of the need for social sciences across NOAA's line offices, the amount of funding actually decreased 2005-2008 and the number of social scientists hired increased more slowly than increase in total employment.

Social Science in Federal Fishery Regulatory Context

- **Social Impact Assessment/NEPA/ RIR/**
- **Direct Economic Impact**
- **Comparisons of Net National Benefit**
- **Other – largely anecdotal**

Severely lacking or incomplete data collection.

Essentially lacking in cost data.

Significant constraints relative to privacy and due process

Marine Protected Area Social Science

Attitudes, Perceptions, and Beliefs

- Examines factors influencing human preferences, choices, and actions, including
- Public support and opposition
- Quality of life
- Public expectations
- Aesthetic values
- Questions and Tools

MPA Social Science

Use Patterns

- Addresses how stakeholders access and use resources, including
- Recreational and commercial uses
- Historical use of resources
- Where, when, and how groups use resources
- Anthropogenic change
- Subsistence use
- Questions and Tools

MPA Social Science

Governments, Institutions, and Processes

- Explores public processes and institutional structures, including
- Decision-making processes
- Use rights
- Conflict management
- Monitoring and enforcement
- Questions and Tools

OBSERVATIONS

- **Progress is being made at the community level and to some extent at integrating into regional analyses.**
- **Most is driven by regulatory mandates but with little connection to research**
- **We lack robust theoretical constructs to link socioeconomic conditions to changes in policies**
- **It is useful to incorporate stakeholders and their perspectives into decision processes;**
- **But long-term commitment to funding research and data collection for social scientific analysis and modeling is required.**

THANK YOU FOR YOUR ATTENTION

QUESTIONS?

Dimensions

- Metrics
- Data
- Research – Theory
- Research -- Practice
- Development of Indicators
- Use of Indicators

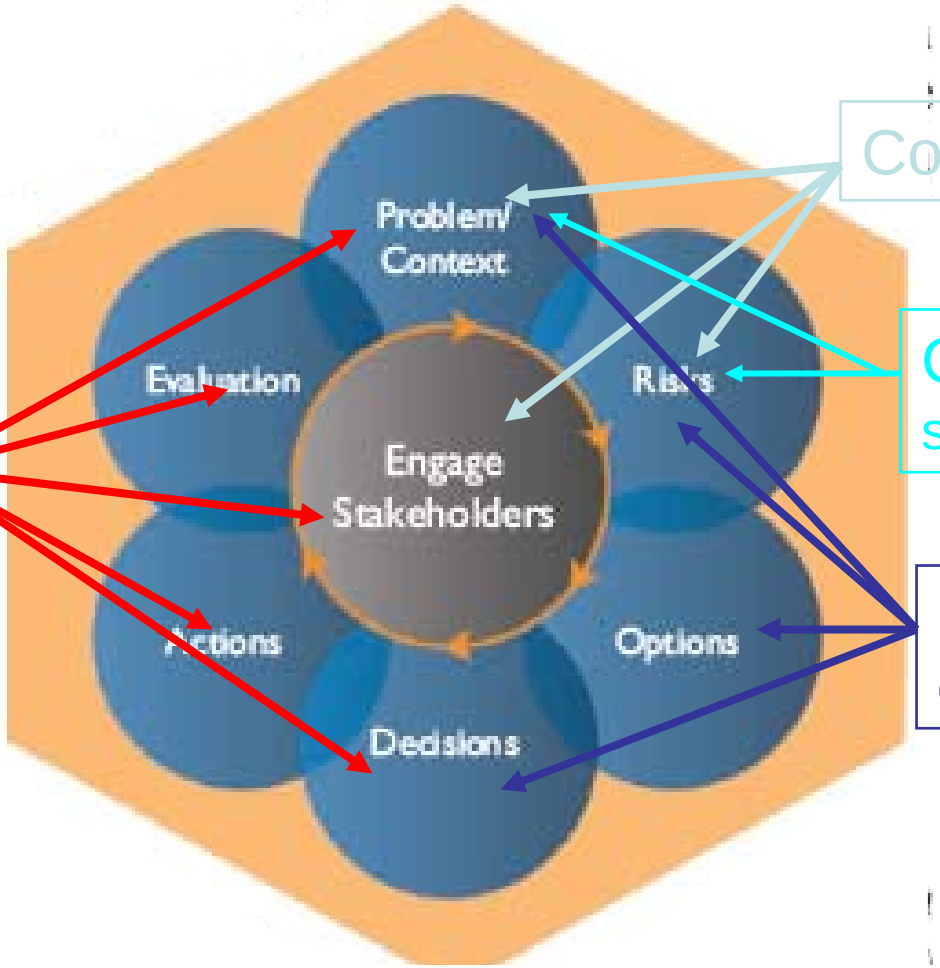
SMA's Proposed New Introductory Sequence

Course 1 (new 500)

Course 2 (under-standing change)

Course 3 (inte-grated assessm't.)

Course 4 (decide, act, evaluate)



PRESIDENTIAL ADDRESS

Grand Challenges and Great Opportunities in Science, Technology, and Public Policy

Gilbert S. Omenn