



Resilience, vulnerability, adaptive capacity, and social capital

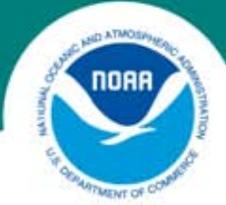
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What are we measuring?

Resilience?

Social Capital?

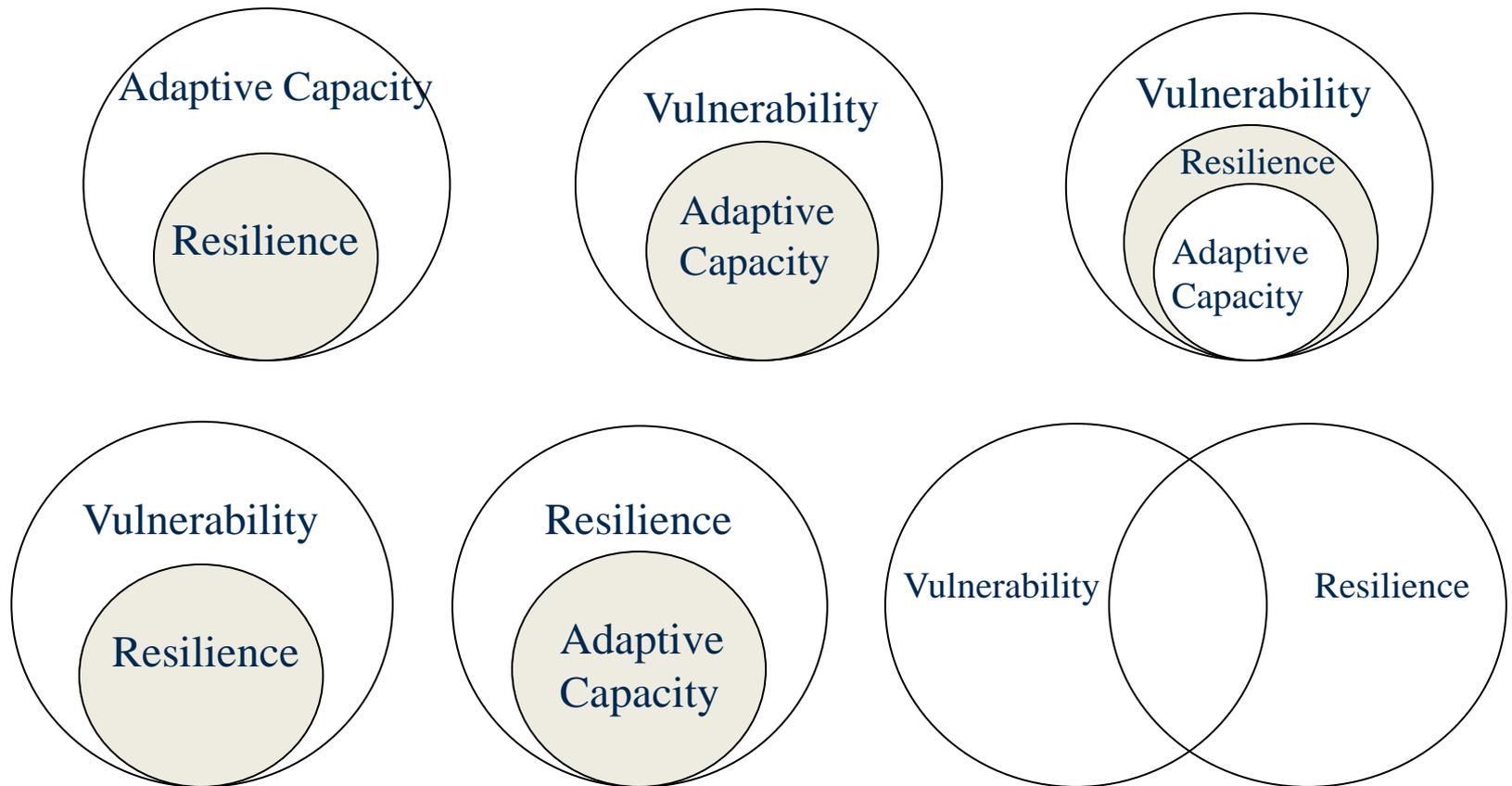
Vulnerability?

Adaptive Capacity?

- Concepts complexly defined and interrelated
- Need for a national agreement on a methodological approach on how to use and measure these concepts



Conceptual relationships between resilience, vulnerability, and adaptive capacity found in the literature



Adapted from Cutter, S. L., L. Barnes, M. Berry, C. Burton, E. Evans, E. Tate, and J. Webb (2008), "A place-based model for understanding community resilience to natural disasters." *Global Environmental Change* 18: 598-606.



Social-ecological systems (SES)

“The subset of social systems in which some of the interdependent relationships among humans are mediated through interactions with biophysical and non-human biological units” (Anderies *et al.* 2004:3).

- Resource
- Resource user
- Public infrastructure
- Public infrastructure providers

Anderies, J. M., M. A. Janssen, and E. Ostrom (2004) A framework to analyze the robustness of social-ecological systems from an institutional perspective. Ecology and Society 9 (1), 18



Community

Defined as social system interactions encompassed within a definite geographic space.

- Neighborhood
- Census tract
- City
- County



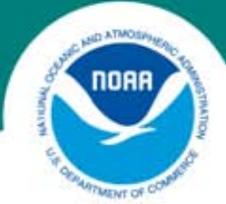
Resilience and Vulnerability

- Concepts complexly interrelated
- Exact relationship depends on definition, discipline, and personal preference
- In the SES literature the concepts are often seen as two ends on a continuum:



Or, as resilience as a component of vulnerability:





Policy strategies with different focuses

Resilience is linked to dynamics of social systems such as adaptability and transformability

- Policy strategy to **ensure sustainability** of natural resources and human communities

Vulnerability focuses on exposure, sensitivity, and adaptive capacity

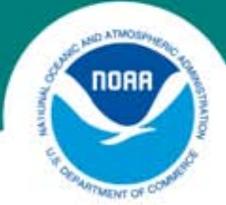
- Policy strategies that emphasize **assets of communities** that will **enhance adaptability** in the face of disturbance

Benson & Garmestani (2011), "Can we manage for resilience? The integration of resilience thinking into natural resource management in the United States." *Environmental Management* (48):392-399



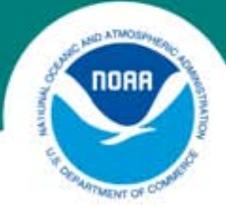
Resilience

- The ability of a social system to respond and recover from disasters
- Includes the ability of the system to absorb impacts
- Includes coping with the event as well as post-event adaptive response
- Facilitates the system's ability to reorganize, change, and learn
- Inherently functions well during non-crisis and is adaptive/flexible in response to disaster



Adaptive capacity

- The ability of institutions and networks to learn, and store knowledge and experience
- Creative flexibility in decision making and problem solving
- The existence of power structures that are responsive and consider the needs of all stakeholders



Vulnerability

- Pre-event, inherent characteristics of the of the social system that create the potential for harm
- Used to describe states of susceptibility to harm, powerlessness, and marginality of both physical and social systems
- Patterns of differential access to resources or differential susceptibility to loss



Components of vulnerability

Exposure

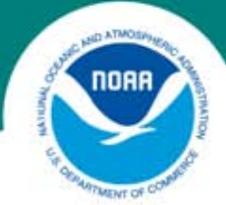
- “Degree, duration and/or extent in which the system is in contact with, or subject to, the perturbation” (Gallopín 2006: 296).

Sensitivity

- “Degree to which system is modified or affected by a disturbance or set of disturbances” (2006: 295).

Adaptive capacity

- “System’s ability to adjust to disturbance, moderate damage, take advantage of opportunities, and cope with consequences of transformations that occur” (2006: 296).



Social capital

- Captures the dynamic nature of society
- Improves the effectiveness of society
- Includes networks of social relationships defined by trust that can improve the society by coordinated actions of reciprocity
- Is often an indicator of resilience and vulnerability



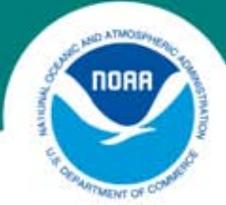
Social capital

Distinctions

- Vertical vs. horizontal
- Formal vs. informal
- Heterogeneity vs. homogeneity
- Bonding
- Bridging
- Linking

Depends on scenario/circumstance

- Culture specific
- Specific to certain types of fisheries



Some conceptual challenges involving resilience, vulnerability, adaptive capacity and social capital

- The idea of coping and adapting to change (whether it is called **resilience** or **adaptive capacity**) may be seen as a component of vulnerability that is associated with the capacity of social systems to respond to change
- Social capital and adaptive capacity may be components of either resilience or vulnerability or both