Strategies for Advancing Convergence Research in the Behavioral Sciences

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University of Colorado Boulder

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My Background

- PhD Psychology (social psychology)
- Postdoctoral fellowship – Vanderbilt Institute for Energy and Environment
- Assistant Professor, Environmental Studies (CU-Boulder)
- Environmental decision-making (conservation behavior, adaptation to climate change)

Engineering	Biology	Sociology/Demography
Earth Sciences	Law & Policy	Anthropology

Outline

1. Times have changed – correcting common misconceptions about inter/trans-disciplinary research

2. Common limitations of the social/behavioral components of integrative research

3. Unique challenges found in transdisciplinary teams (and a few recommendations)

1. Times are Changing…

False Assumptions	The New Normal
(1) Cross-cutting funding programs (CNH, INFEWS, NNA) don't really want social or behavioral science (SBS)	➢ Some of the most novel questions are 'social' in nature. ➢ Unique opportunity for high dollar funding for innovative SBS-led research
(2) "Ticking the box" on social science (SS) is sufficient	➢ Strong expectation of rigor and record of methodological expertise
(3) Interdisciplinary research is risky for early career scholars	➢ More jobs than many realize, but training gap is apparent ➢ Gatekeepers increasingly reward interdisciplinary innovation ➢ Imbalance of opportunities for those with non-disciplinary degrees

2. Common limitations of SBS components

- The social/behavioral science is isolated to research dissemination or outreach

- The science lacks a fundamental / generalizable research question

- To advance knowledge of human systems:
  1. Research question must be contextualized within a knowledge base
  2. Assessment about what is and is not known about a research question
  3. Defense of how methods address knowledge gaps
  4. Findings are relevant beyond a specific study site or topic

- Importantly – transdisciplinary work opens opportunities for advancements that are at the intersection of the social/natural sciences.

3. Unique Challenges in Transdisciplinary Team Science

1. Cultural divides
2. The question of scale
3. Loss of control

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Focal Areas	Common Challenges
Worldviews	■ Hidden divergent values and beliefs about scientific research ■ Different theoretical and methodological commitments
Language	■ Communication and language "policing" ■ Shared language with different definitions ■ Shared definition with different language
Research design	■ Methods considered to be disciplinary ■ Developing an interdisciplinary research design
Project goals	■ Motivations for project participation ■ Shared broad objectives with divergent specific objectives ■ Different expectations and needs regarding deliverables

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(Pathways Forward)

1. Communicate early & often (structured discussion)
2. Require a history or philosophy of science course for grad students
3. Understand that tensions can be productive (Nightengale, 2016)

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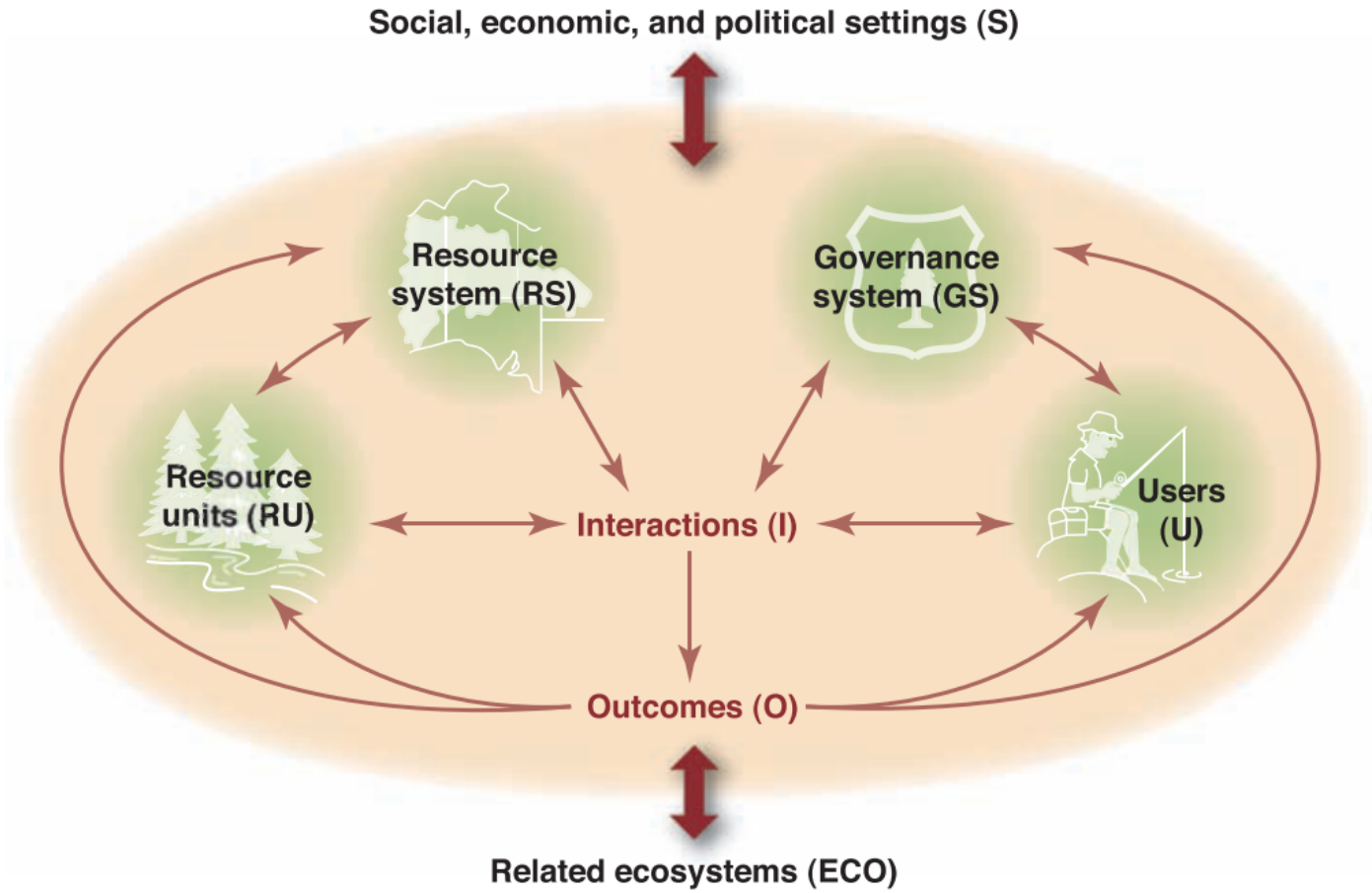

Fig. 1. The core subsystems in a framework for analyzing social-ecological systems.

Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. Science, 325, 419–22.

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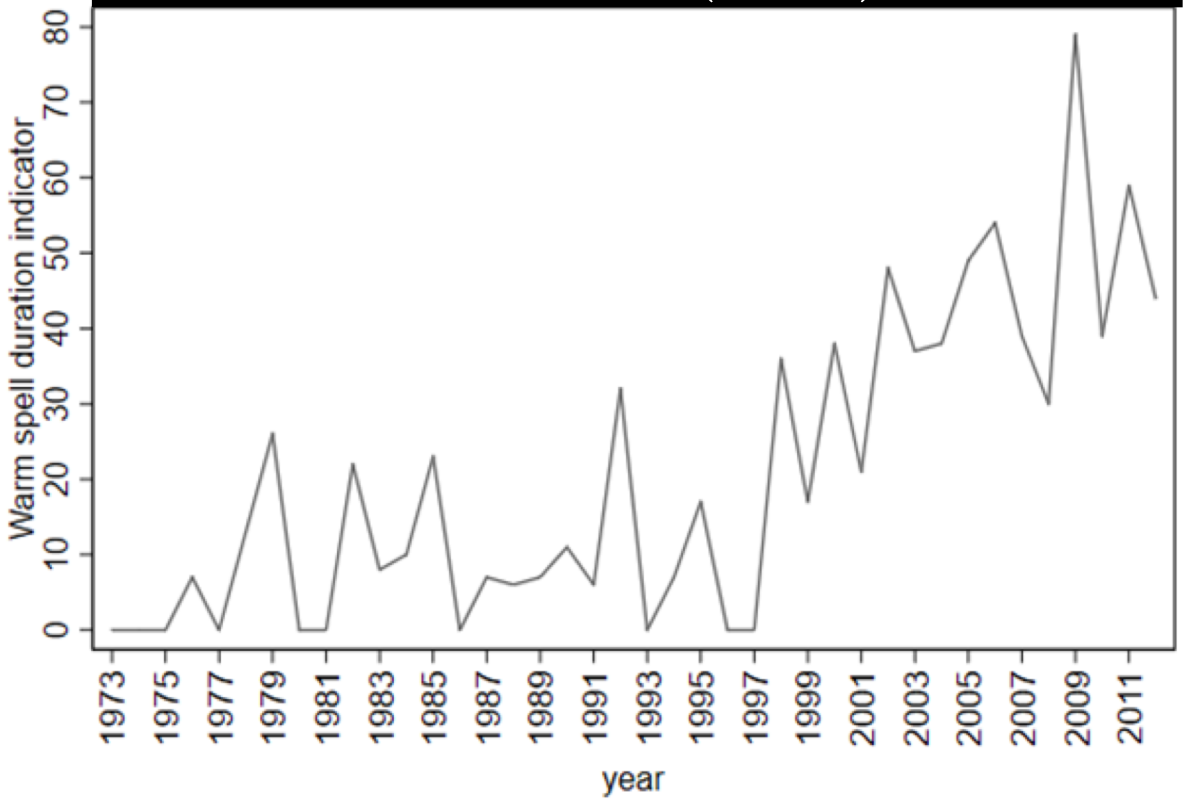
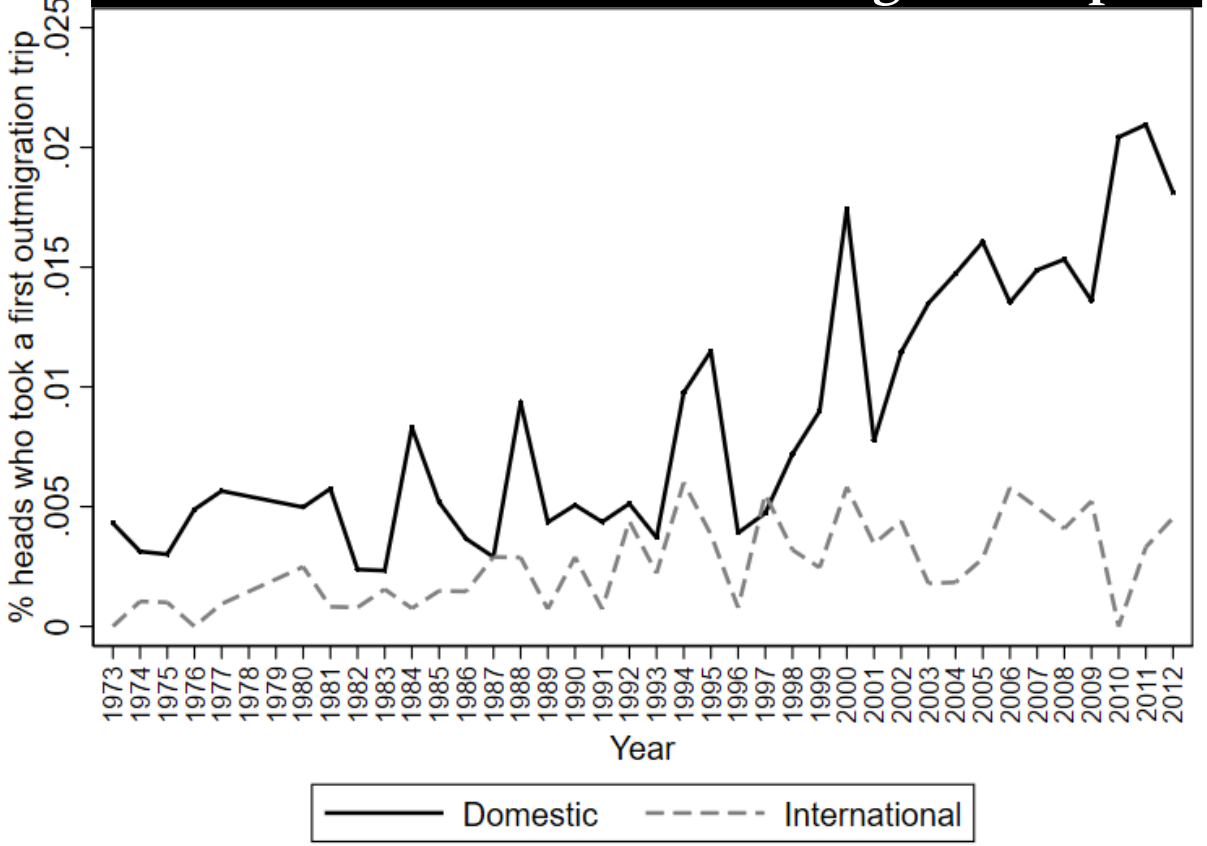
Heat Waves (WSDI)



Domestic & International Migrant Trips



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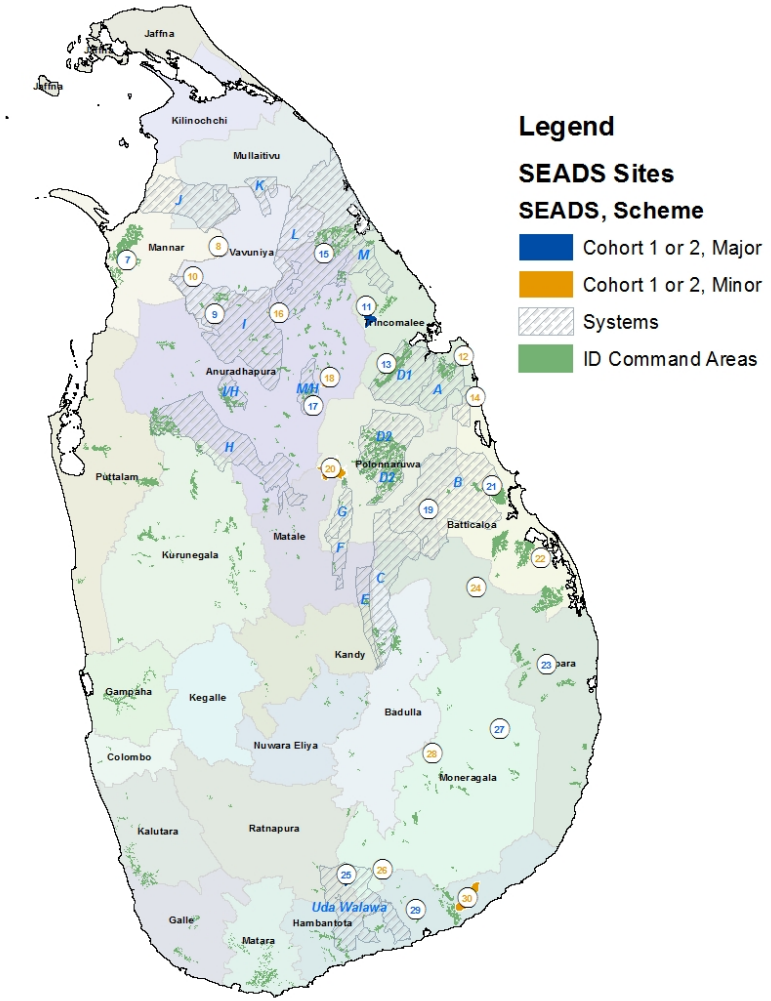
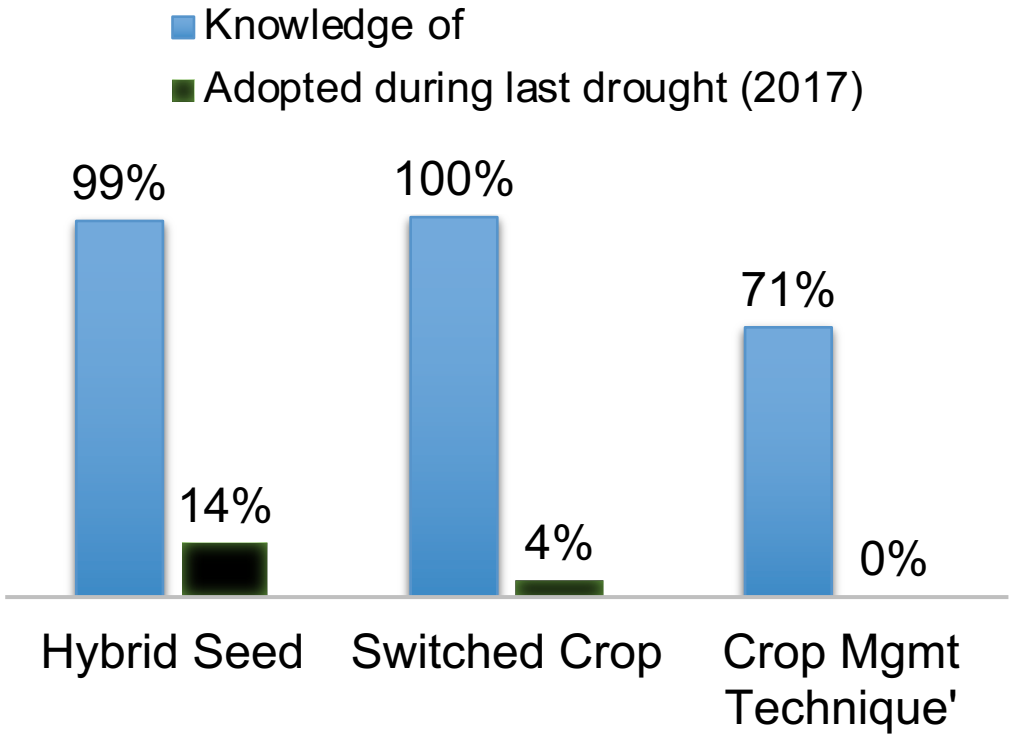


Adoption of Ag Adaptations during 2017 Drought



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4. Leadership is critical
5. Let the team flow from the research question, not the other way around
6. Mock up a data integration plan early and revisit often
7. Ask the "stupid" questions
   - What will this data look like (what format, what characteristics, how derived)?
   - At what scale (temporal/spatial) is it reliable?

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- Moving from multi-disciplinary to trans-disciplinary teams requires flexibility & openness
  - Standards of practice within a field may need to be modified to accommodate integration
  - Team members need be able to explain and educate one another about the relevance of their work
- Unpleasant but potentially productive tension
  - Leading to advances ***within*** and across disciplines

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8. Foster and select for important "soft skills": humility, flexibility, patience
9. "Gradual" approaches (Gilligan, 2019)
10. Train specialists ***and*** generalists

Thank you!

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