Conceptualizing Governance Feedback Mechanism in the contexts of Long-term Socio-ecological Research in the US

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INTRODUCTION

The Long-Term Ecological Research (LTER) Network fundamentally is focused on change over time and understanding the dynamics within ecological systems. Beginning in the 1990s there was a shift toward incorporating "human" elements within systems most notably with the inclusion of two urban sites, Baltimore and Phoenix, in the network. Internationally, the term social has been added (Redman et al., 2004) explicitly to some of the international work (Long Term Social Ecological Research) in 2005, and then the network adopted a social-ecological framework, which motivated study across all the 28 sites in the US.

PURPOSE

The purpose of this study is to explore governance (using broad institutional perspective) within the socio-ecological and technical systems (SES/SETS) context of LTER. We will use literature from the LTER network to set the stage and possibly focus on CAP contributions to the dynamics of the urban system. A key goal is to understand better the effectiveness of governance in managing socio-ecological-technical systems in the 28 LTER sites. After that, we aim to bring a novel approach to governance feedback mechanism through identifying feedback discrepancies between formal rules/actors, and local knowledge and actual practices.

METHODOLOGY

We are searching online databases and websites to locate potentially eligible articles. The meta analysis also involves reviewing bibliographies in the annual reports and site reviews covering each individual LTER site.

LTER Site	Authors / Year	Type	Title
Andrews Forest LTER	Jones et al.2018	Report	Chapter 4: Forest Landscape Hydrology in a 'New Normal' Era of Climate and Land Use Change
Andrews Forest LTER	van Noordwijk et al.2018	Report	Chapter 2: Climate-Forest-Water-People Relations: Seven System Delineations. Forest and Water on a Ch
Andrews Forest LTER	Abrams et al.2019	Journal Article	Tracking a Governance Transition: Identifying and
Baltimore and CAP LTER	Erickson et al.2016	Journal Article	Demystifying governance and its role for transitions in urban social–ecological systems
Baltimore LTER	Romolini et al.2016	Journal Article	Toward an Understanding of Citywide Urban Environmental
Baltimore LTER	Fraser et al.2013	Journal Article	Covenants, cohesion, and community: The effects of neighborhood governance on lawn fertilization
Baltimore LTER	Bixler et al.2016	Journal Article	Network governance for large-scale natural resource conservation and the challenge ofcapture
Baltimore LTER	Romolini et al.2013	Journal Article	Assessing and comparing relationships between urban environmental stewardship networks and land
Bonanza Creek LTER	Bronen, R. F.S. Chapin, III. 2013.	Journal Article	Adaptive governance and institutional strategies for climate-induced community relocations in Alaska.
Bonanza Creek LTER	Beier, Lovecraft and Chapin, III. 2009	Journal Article	Growth and collapse of a resource system: An adaptive cycle of change in public lands governance and for
Bonanza Creek LTER	Kofinas, G. P.. 2009	Book Section	Adaptive Co-management in Social-Ecological Governance. in Chapin, F. Stuart, III, G. Kofinas, and C. Folke
Bonanza Creek LTER	Kofinas, Herman ,C. L. Meek. 2007.	Book Section	Novel Problems Require Novel Solutions: Innovation as an Outcome of Adaptive Co-Management.
Bonanza Creek LTER	Chapin, F.S., III &N. Hamilton 2009.	Report	Policy options for arctic environmental governance. Pages 1-8 in Transatlantic Policy Options for the
CAP LTER	Hopkins et al.2018	Journal Article	Influence of governance structure on green stormwater infrastructure
CAP LTER	Netzband, 2007	Book	Applied remote sensing for urban planning, governance and sustainability
CAP LTER	Cordell et al.2017	Book Section	Transforming cities: Securing food and clean waterways through phosphorus governance
CAP LTER	Hondula et al.2018	Journal Article	Toward precision governance: infusing data into public management of environmental hazards
Coweeta LTER	Burke and Heynen 2014	Journal Article	Transforming Participatory Science into Socioecological Praxis Valuing Marginalized Environmental Knowl
Coweeta LTER	Burke et al.2015	Journal Article	Can Science Writing Collectives Overcome Barriers to More Democratic Communication and Collaboration
Coweeta LTER	Gustafson 2015	Journal Article	The making of a landslide: legibility and expertise in exurban southern Appalachia
Coweeta LTER	Rice et al.2015	Journal Article	Knowing Climate Change, Embodying Climate Praxis: Experiential Knowledge in Southern Appalachia
Coweeta LTER	Gustafson et al. 2014	Journal Article	Megapolitan Political Ecology and Urban Metabolism in Southern Appalachia
Coweeta&Florida LTERs	Ogden et al.2013	Journal Article	Global assemblages, resilience, and Earth Stewardship in the Anthropocene
Coweeta LTER	Ogden et al.2015	Book Section	The Politics of Earth Stewardship in the Uneven Anthropocene
Florida Coastal	Yoder&Chowdhury 2018	Journal Article	Tracing social capital: How stakeholder group interactions shape
Florida Coastal	Yoder, 2019	Journal Article	Compelling collective action: Does a shared pollution cap
Harvard Forest LTER	Bawa et al.2011	Journal Article	Rights, Governance, and Conservation of Biological Diversity
Luquillo LTER	Uriarte & Chazdon, 2016	Journal Article	Incorporating natural regeneration in forest landscape restoration in tropical regions:
Moorea Coral Reef LTER	Cinner et al.2016	Journal Article	Bright spots among the world's coral reefs
Northern Temperate	Gillon et al.2016	Journal Article	Shifting drivers and static baselines in environmental governance:
Northern Temperate	Giampietro et al.2006	Journal Article	The epistemological predicament associated with purposive
Northern Temperate	Giampietro et al.2007	Book Section	Science for Governance: the implications of the complexity revolution. In: Interfaces Between Science
Northern Temperate	Olsson et al.2006	Journal Article	Shooting the Rapids: Navigating Transitions to Adaptive
Northern Temperate	Wardropper et al.2017	Journal Article	Uncertain monitoring and modeling in a watershed nonpoint pollution program
Northern Temperate	Qiu et al.2017	Journal Article	Spatial fit between water quality policies and hydrologic
Northern Temperate	Rissman&Gillon,2016	Journal Article	Where are Ecology and Biodiversity in Social–Ecological Systems

CAP-CONCEPTUAL FRAMEWORK

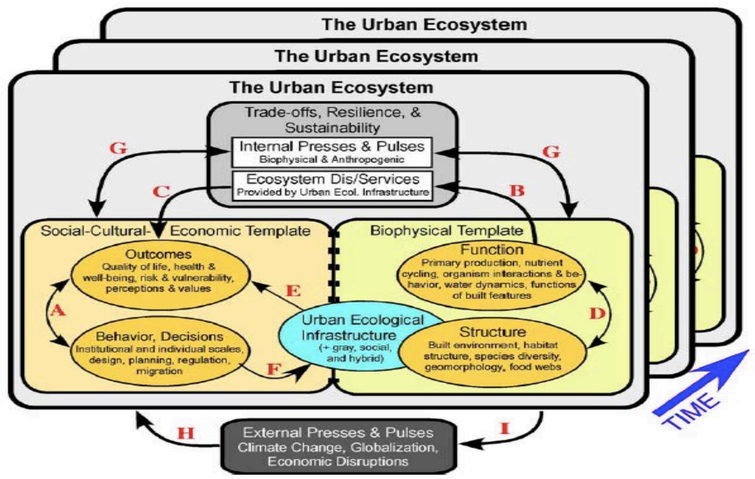

Figure 1. CAP IV Central Conceptual Framework (see CAP IV Project Proposal).

EXPECTED OUTCOMES

Instead of finding a single authority with great influence on a system, it is more common that multiple overlapping authorities interact, which from the standpoint of a researcher makes untangling governance in SETS especially challenging. There are LTER works that capture the intersections of formal and informal frameworks together. As can be seen in CAP framework (see Figure 1), governance is conceptualized as either static or descriptive. Within this study, we aim to capture dynamic way of interactions and feedback mechanism in governance structures through formal and informal settings (see Figure 2).

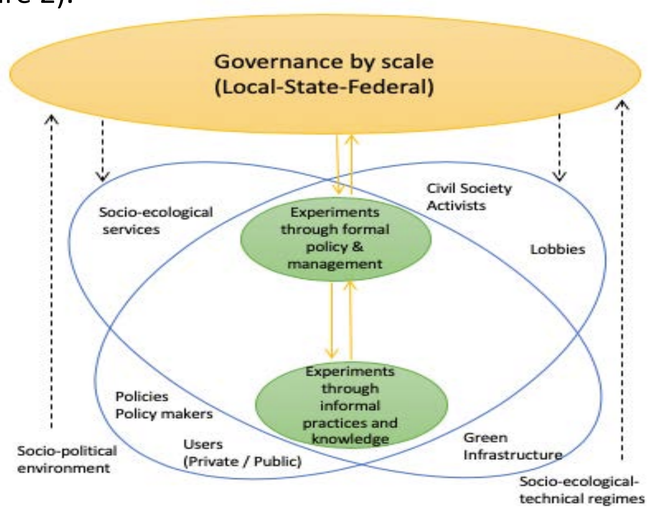

Figure 2. Tentative figure illustrates feedback governance mechanism.

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