Adaptation, Resilience, and Transformation in Maine's Coastal Communities

THE UNIVERSITY OF MAINE School of Marine Sciences

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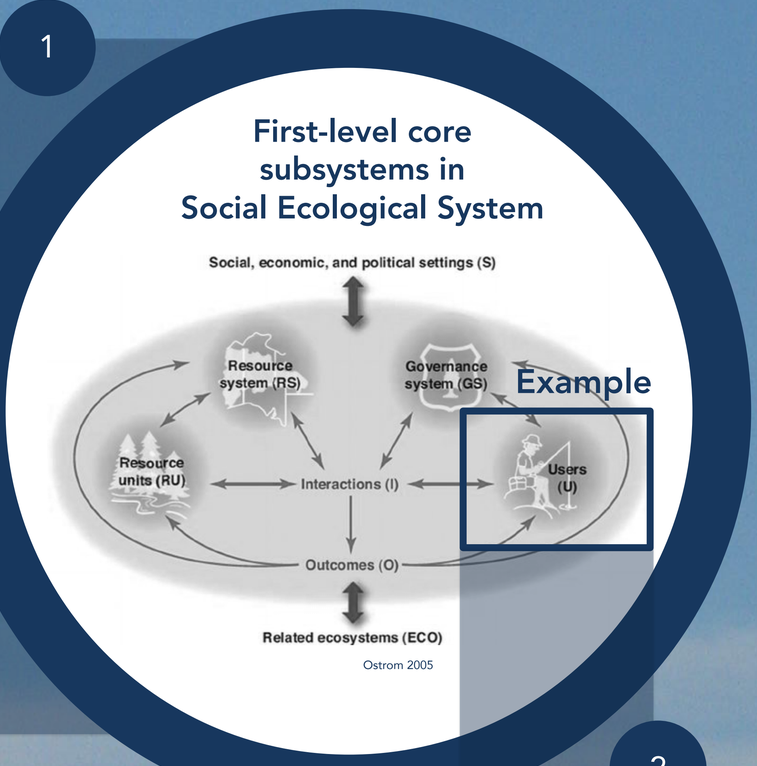
ABSTRACT: Fishing communities' ability to adapt to socioeconomic and environmental change is the subject of increasing attention. We use a social-ecological systems framework to investigate, map, and analyze the capacity for sustaining fishing-dependent, place-based communities across coastal Maine. Here, we describe our methods and present a subset of our results, which focus specifically on the human dimensions of the system. The research aims to contribute to a better understanding of the adaptive capacity, resilience, and risk of transformation in coastal communities in Maine and underscores the need for using a multi-species approach to studying adaptation in fisheries-dependent places.

APPROACH: (1) Using Ostrom's (2009) social-ecological systems framework and (2) its associated second-level variables, we (3) define measurable and context specific sub-tier variables that are relevant to Maine's coastal communities. Data are being used to develop spatially explicit assessments of adaptive capacity and resilience. (4) In-depth analysis of sub-tier variables are also being conducted, using a range of methods, including social network analysis, in-depth interviews, and Q-method. Finally, the results of this research are being integrated into bridge planning efforts across the state to support Maine's sustainable future.

1



2

Second-level variables

Ostrom 2009

3

Sub-tier variable

Modified from Leslie et al. 2015

4

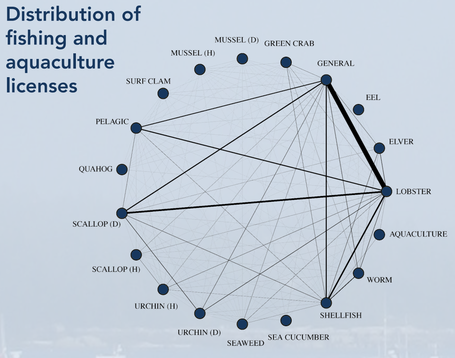
In-depth analyses

Mixed-methods

(U1)	(U2)	(U3)	(U4)	(U5)	(U6)	(U7)	(U8)	(U9)
Number of users	**Attributes of users**	**History of use**	**Location**	**Leadership**	**Norms/social capital**	**Knowledge of SES**	**Importance of resource**	**Technology used**
# of comm. fishers # of growers	Diversity of landings Diversity of licenses Dependence on species Distribution of landings Demographics	# years with fishing license # years with fishing landings Latency	Port of landing	TBD	Ability to participate in governance structures and self-organized fisheries organizations Extent to which fisheries are incorporated into local planning	TBD	Per capita landings/dollars Ratio of per capita dollars to household income Total value (economic and non-economic) Total landings Equity of wealth distribution	Gear types

Example 1. Sub-tier variable (U2)
Diversity of licenses across fishermen and aquaculture growers

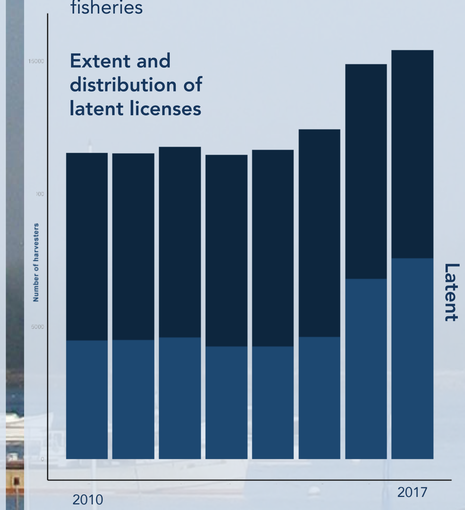
Distribution of fishing and aquaculture licenses



Stoll, J. S., Leslie, H. M., Britsch, M. L., & Cleaver, C. M. (2019). Evaluating aquaculture as a diversification strategy for Maine's commercial fishing sector in the face of change. *Marine Policy*, *107*, 103583.

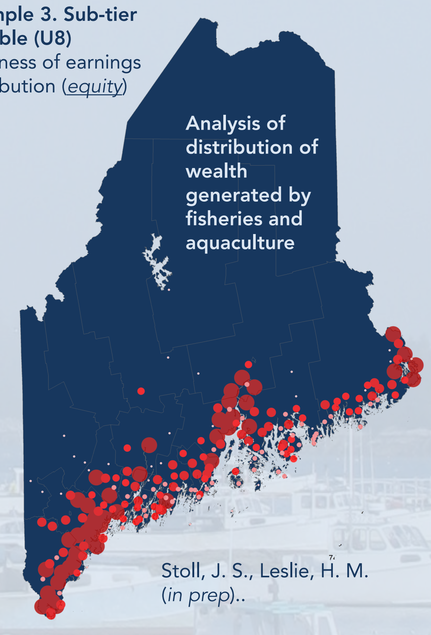
Example 2. Sub-tier variable (U3)
Latency patterns in Maine's commercial fisheries

Extent and distribution of latent licenses



Cucuzza, M. L., Stoll, J. S., Leslie, H. M. (*in prep*)..

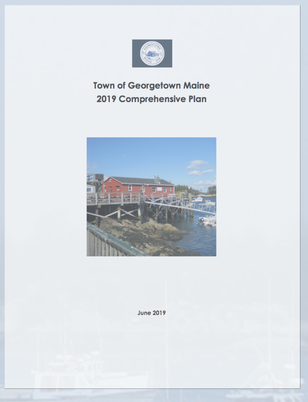
Example 3. Sub-tier variable (U8)
Evenness of earnings distribution (*equity*)



Stoll, J. S., Leslie, H. M. (*in prep*)..

Example 4. Sub-tier variable (U6)
Integration of fisheries into *local planning* and management efforts

State-wide assessment of com-prehensive plans



Cucuzza, M.L., Stoll, J.S., Leslie, H. M. Comprehensive Plans as Tools for Coastal Community Resilience. Journal of Environmental Planning (*in review*).

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