What explains policy impact of ecosystem service knowledge?

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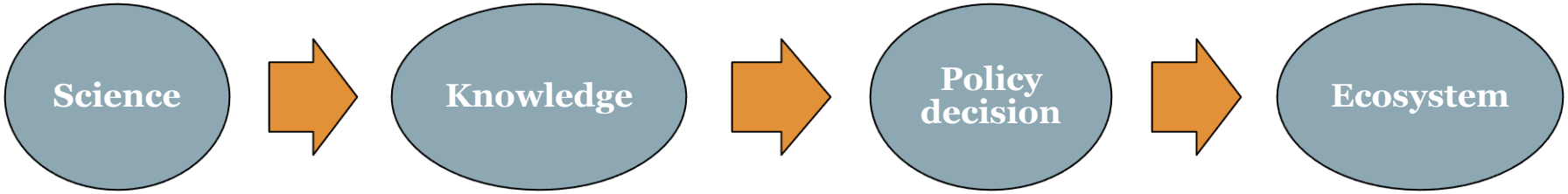
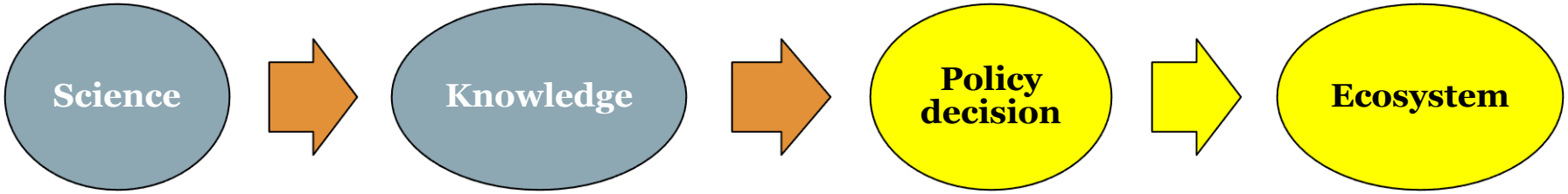
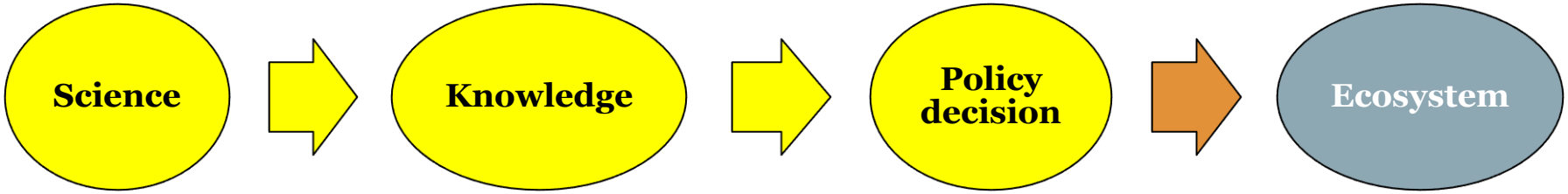
Science ←→ Policy



Science ←→ Policy



Science ←→ Policy



Research question 1

How do decisions-makers use ecosystem service knowledge?

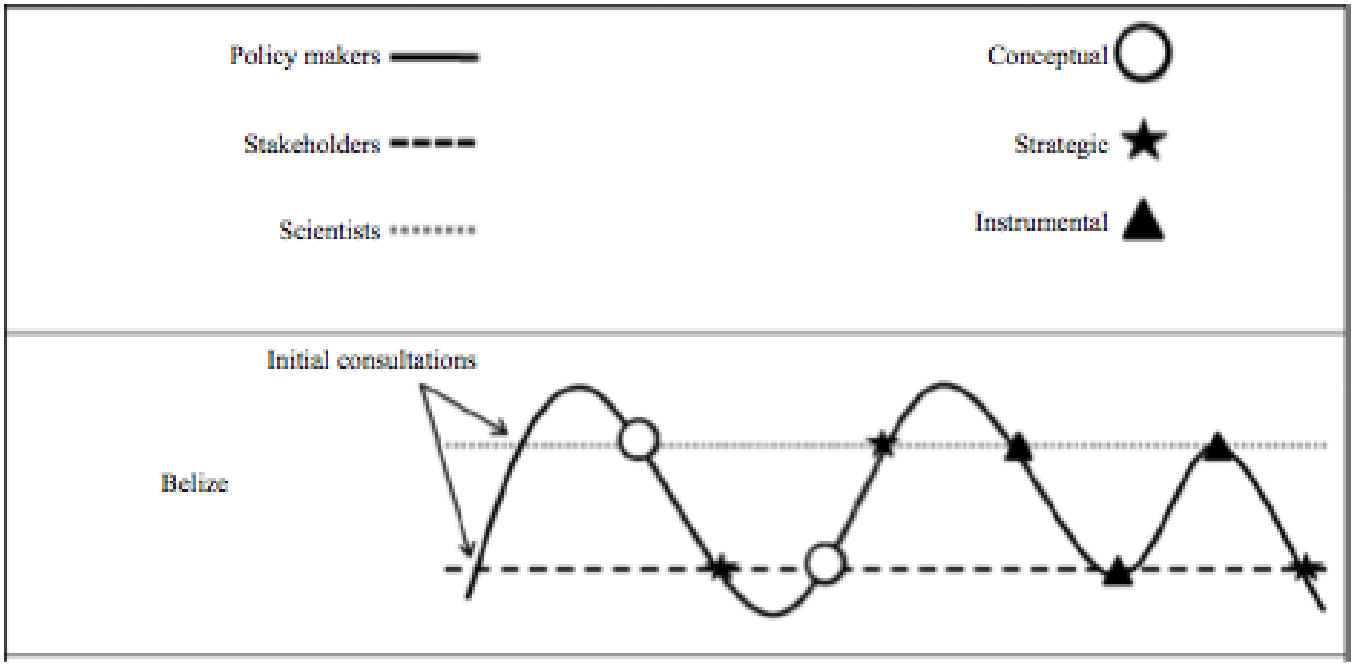
Research question 1

Interviews in Hawaii, Belize, Vancouver Island

Types of knowledge use:

- Conceptual
- Strategic
- Instrumental

McKenzie, E., Posner, S., et al. 2014. Understanding the use of ecosystem service knowledge in decision-making: Lessons from international experiences of spatial planning. *Environment and Planning C: Government and Policy*, 32(2): 320-340.


Policy makers
Stakeholders
Scientists
Conceptual
Strategic
Instrumental
Initial consultations
Belize

Research question 2

What factors explain the impact of ecosystem service knowledge?

Ecosystem Service Knowledge can be…

Salient

Relevant to the needs of decision-makers

Credible

Scientific arguments are trustworthy and expert-based

Legitimate

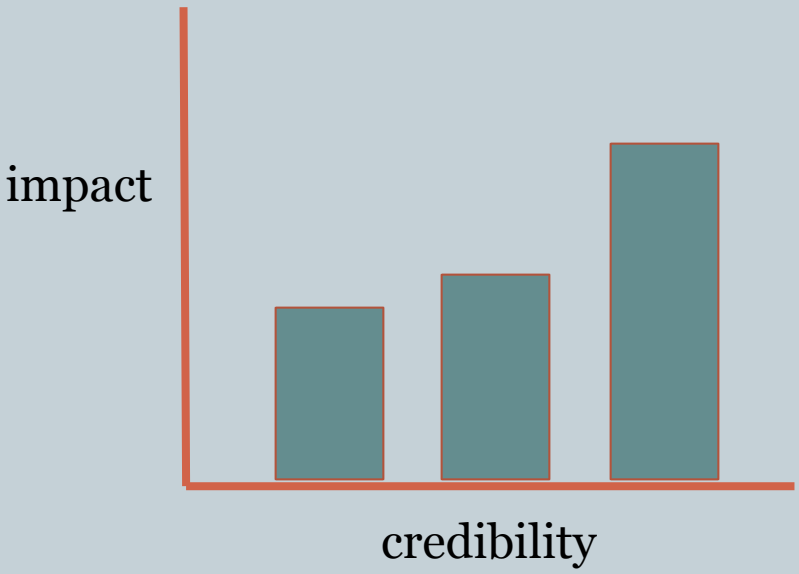
Produced in an unbiased way that fairly considers different points of view

Cash, D. W., Clark, W. C., et al. (2003). Knowledge systems for sustainable development. *PNAS, 100*(14), 8086-8091

Rowe, A., & Lee, K. (2012). Linking Knowledge with Action. Palo Alto, CA: Packard Foundation.

Hypothesis 1

More *salient/credible/legitimate* ecosystem services knowledge is associated with more impact.



Ecosystem Service Knowledge **Impact**…

Change perspectives

- People become aware of and understand ecosystem services.
- Conversations and language shifts.

Change plans or policies

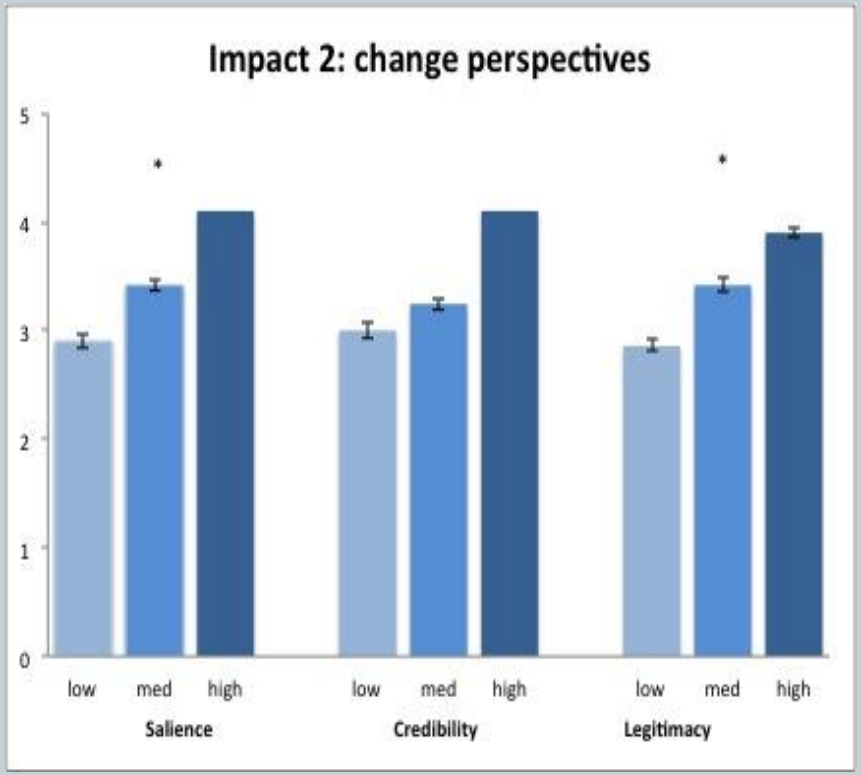
- A new policy or finance mechanism is established

based on an ecosystem service framework.

Based on: Ruckelshaus, M., McKenzie, et al. (2013). Note from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions. *Ecological Economics*.

Sample from the Natural Capital Project

Results


Impact 2: change perspectives
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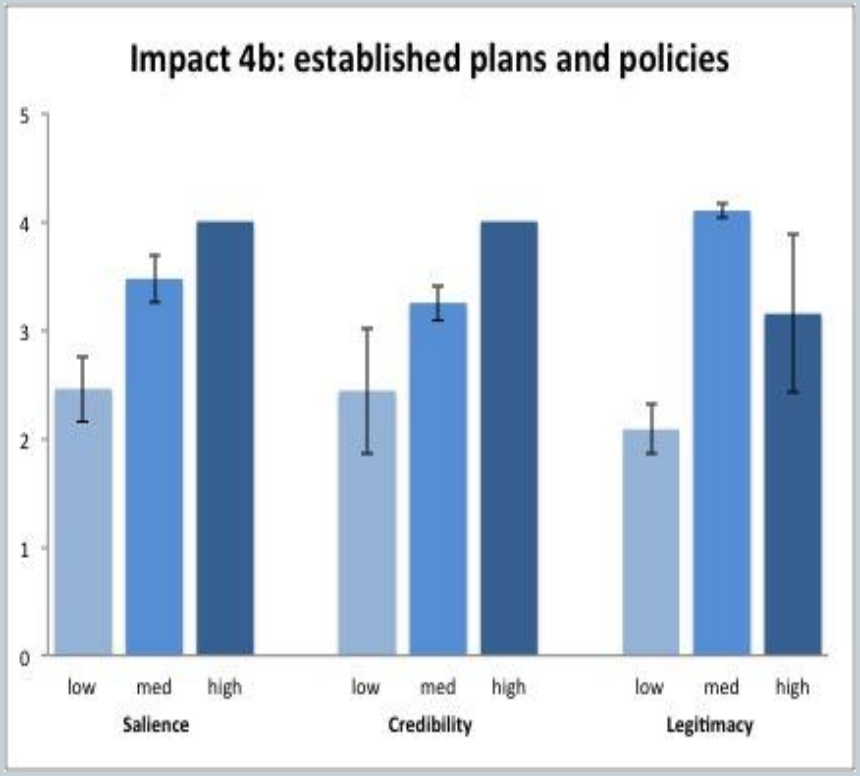
Credibility
Legitimacy


Impact 4b: established plans and policies
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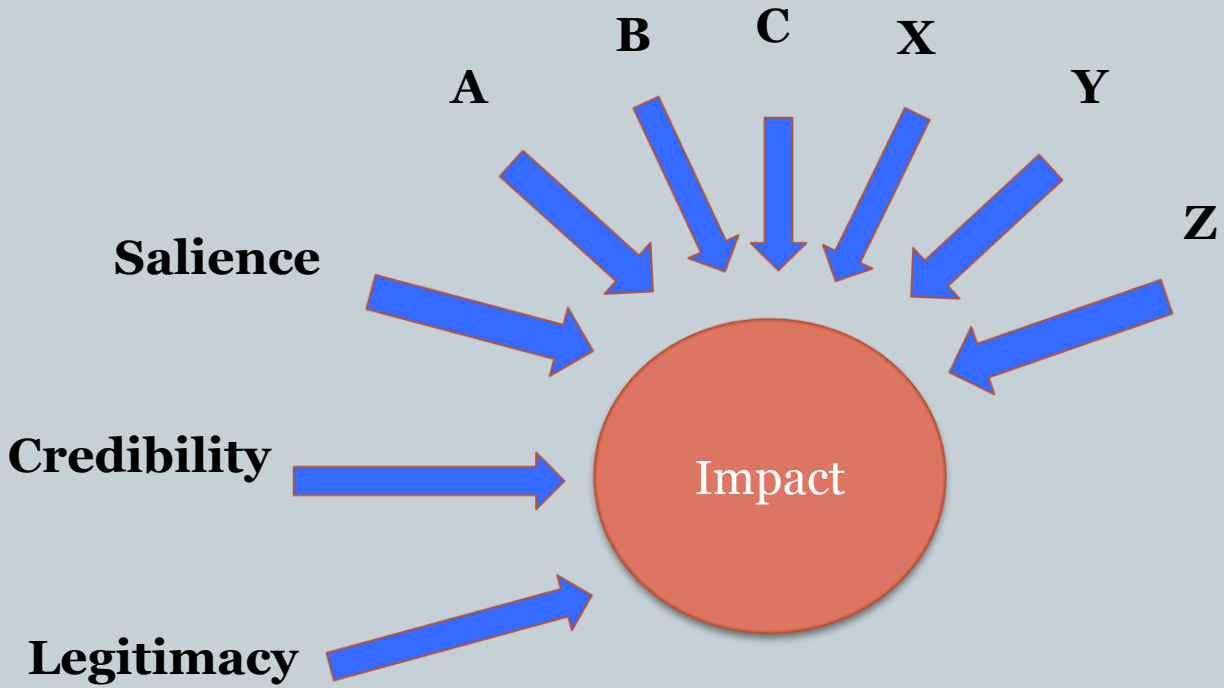
Hypothesis 2

I measured and tested many more explanatory variables…



Explanatory variables

Attributes of knowledge	Characteristics of process	Contextual conditions
• Perceived credibility, legitimacy, and salience of the ecosystem service knowledge • How ESK is represented (monetary valuation vs. biophysical units vs. social variables; maps vs. indices; absolute vs. relative values) • Sources of ESK (traditional vs. expert opinion) • Model complexity (Tier 0, 1, or 2 InVEST models)	• Joint production of ESK (frequency and type of interaction btwn scientists and decision-makers) • Stakeholder representation (% represented) • Presence of conflict or consensus • Trust among stakeholders • Power distribution among decision-makers and stakeholders • Length of project	• Capacity to measure baseline ES and human activities • Capacity to monitor changes to ES and human activities • Capacity to implement policies • Year

Results

Information theoretic approach

Factors that best explain impact:

- Legitimacy of knowledge
- Interactions between scientists and decision-makers
- Institutional capacities

Summary

Ecosystem service knowledge is most often used conceptually and strategically.

Salience, credibility, and legitimacy of knowledge are associated with more policy impact.

Other factors matter too…

Thanks

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WWF Valuing Nature Fellowship, UVM Office of Sustainability

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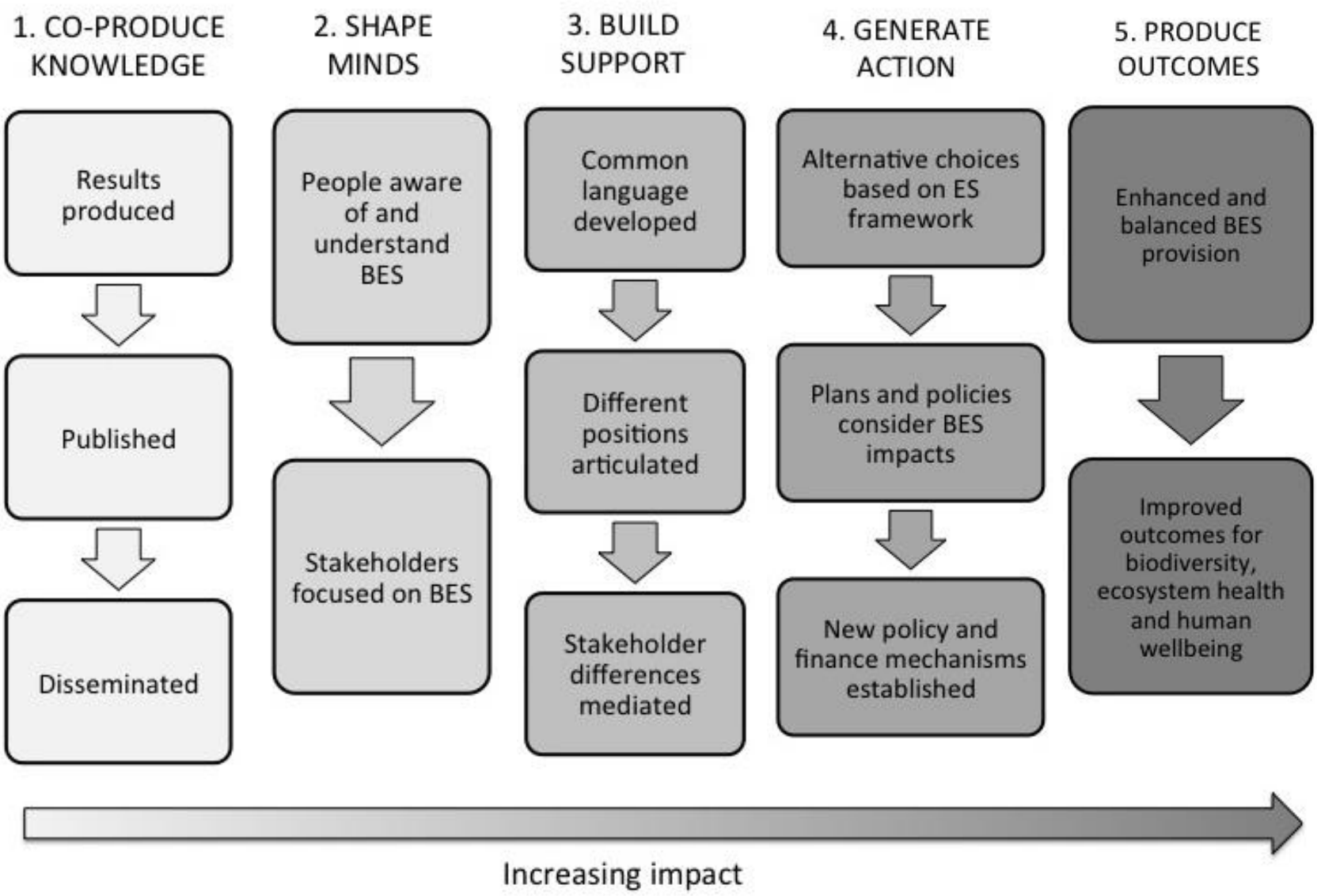
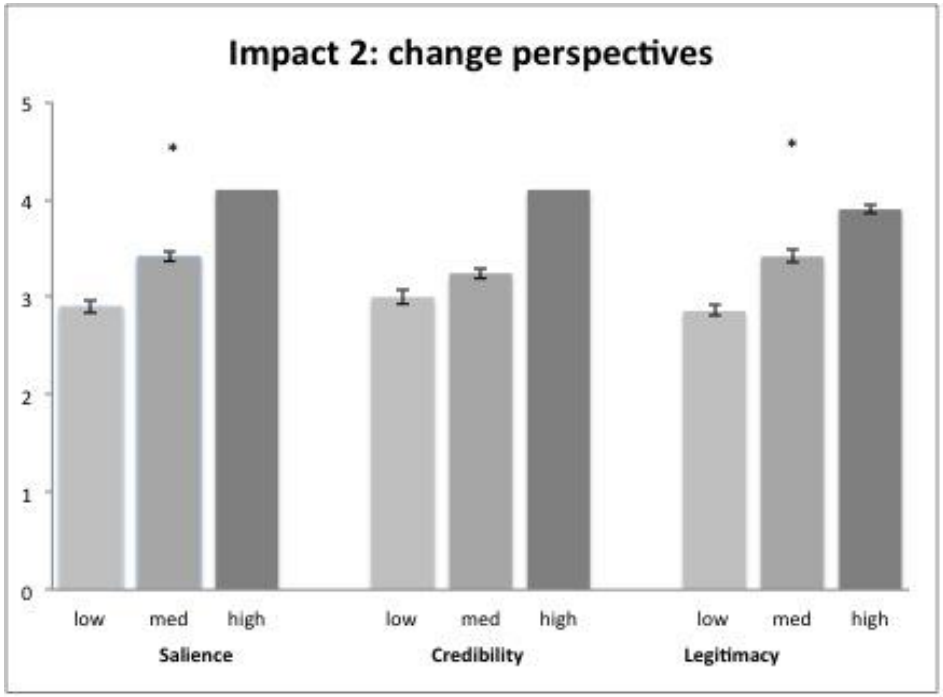
Impact pathways



Based on: Ruckelshaus, M., McKenzie, E., Tallis, H., Guerry, A., Daily, G., Kareiva, P., . . . Bernhardt, J. (2013). Note from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions. *Ecological Economics,* in press.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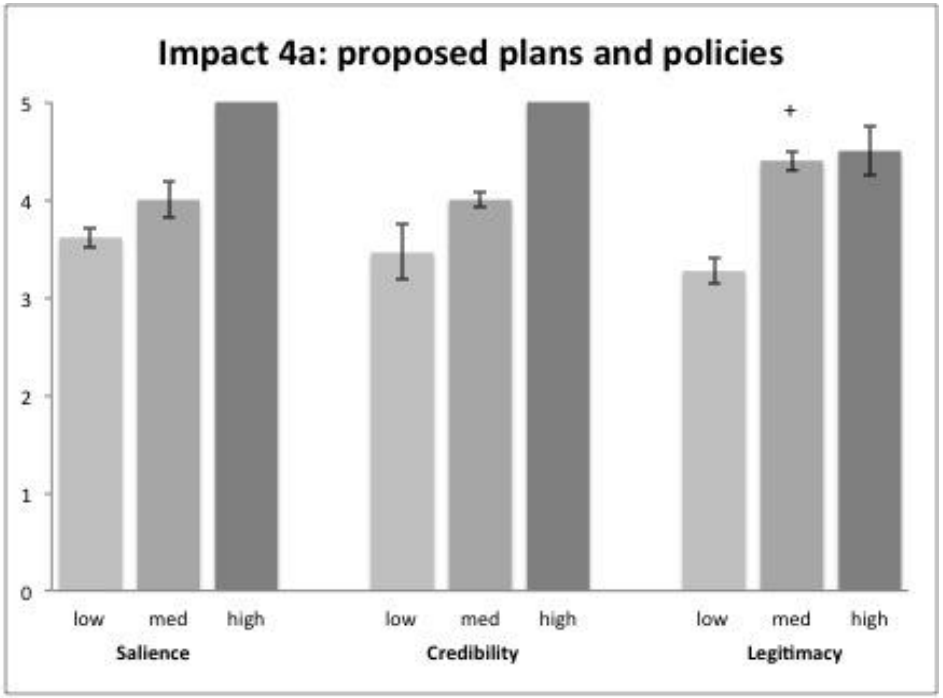
Impact 4a: proposed plans and policies
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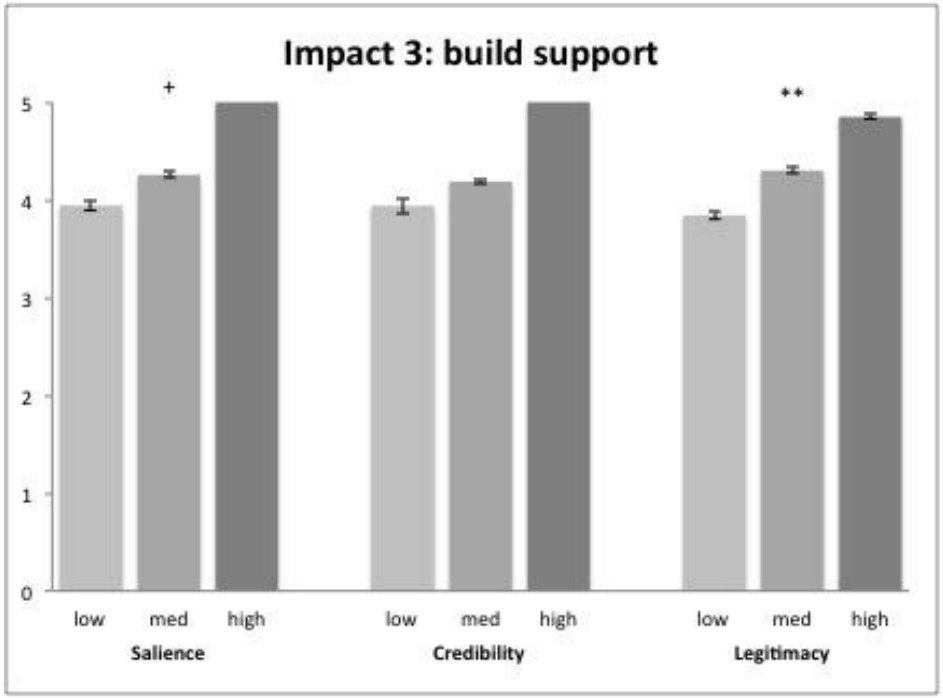
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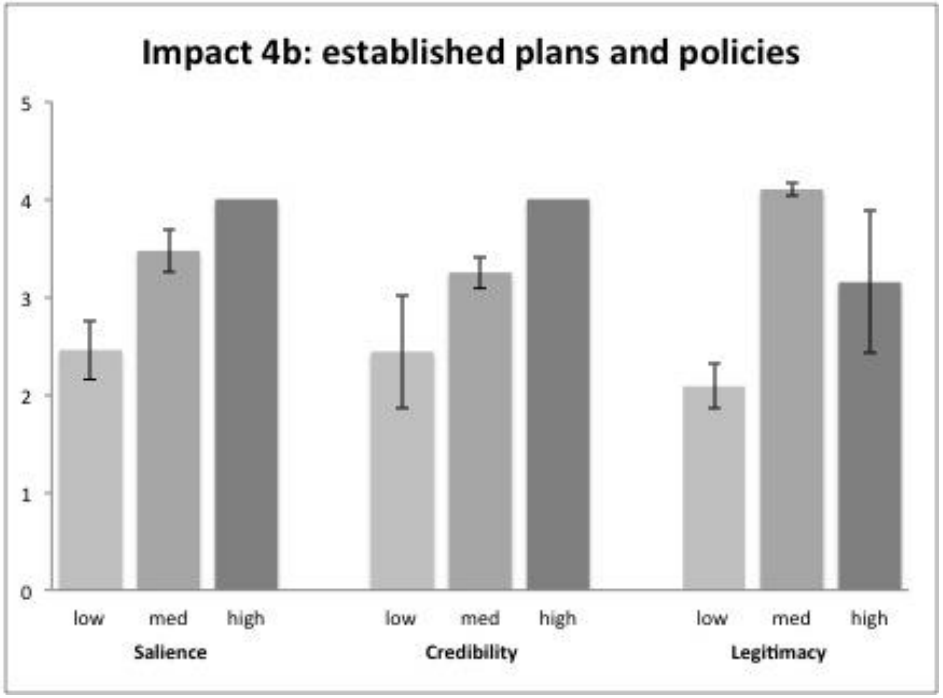
Impact 4b: established plans and policies
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Credibility
Legitimacy

Figure 2. Iterative progression of conceptual, strategic and instrumental use of ESK in the policy and planning cycle