



Prioritizing Threat Management Action for Salmon Recovery

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- We take a decision science approach
- Predict impact of cumulative effects on valuable ecosystem components now and under alternative futures
- Develop actions to eliminate and mitigate these impacts
- Prioritize these actions based on their cost-effectiveness
- Co-develop this process with First Nations, other governments and decision makers



@NASA



@Michael Snyder

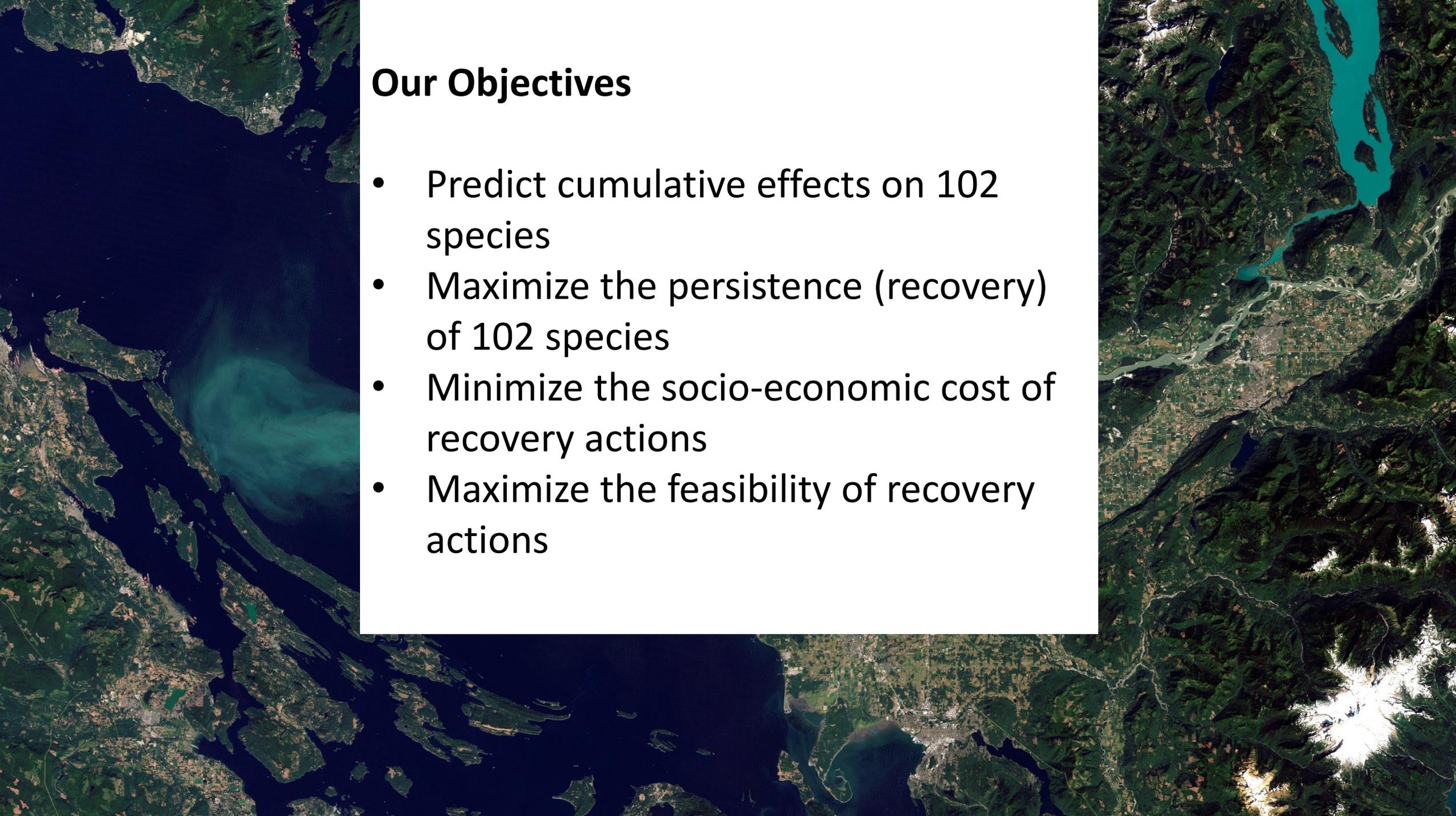


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The problem

- 102 species at risk of extinction
- Multi-government, multi-stakeholder, multiple decision makers
- Complex, biodiverse, highly contested region
- 25 year time-frame



Our Objectives

- Predict cumulative effects on 102 species
- Maximize the persistence (recovery) of 102 species
- Minimize the socio-economic cost of recovery actions
- Maximize the feasibility of recovery actions

Priority Threat Management

LETTER *CONSERVATION LETTERS 2012*

Prioritizing threat management for biodiversity conservation

Josie Carwardine^{1,6}, Trudy O'Connor^{2,5}, Sarah Legge^{3,4}, Brendan Mackey^{5,7}, Hugh P. Possingham⁶, & Tara G. Martin¹

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LETTER

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Prioritizing recovery funding to maximize conservation of endangered species

Tara G. Martin¹  | Laura Kehoe^{1,2} | Chrystal Mantyka-Pringle³ | Iadine Chades⁴ |
Scott Wilson⁵ | Robin G. Bloom⁶ | Stephen K. Davis⁷ | Ryan Fisher⁸ | Jeff Keith⁸ |
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Karl P. Zimmer⁶ | Paul A. Smith⁵

Priority Threat Management

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- Which salmon CUs will be lost under ‘business as usual’?
- What strategies are needed to save all CUs and how much will it cost?
- Which strategies are most cost-effective (save most CUs per \$ spent)?
- How many CUs can be saved for a given budget?
- Which CUs are unable to be saved, irrespective of management?

102 Species at risk of extinction







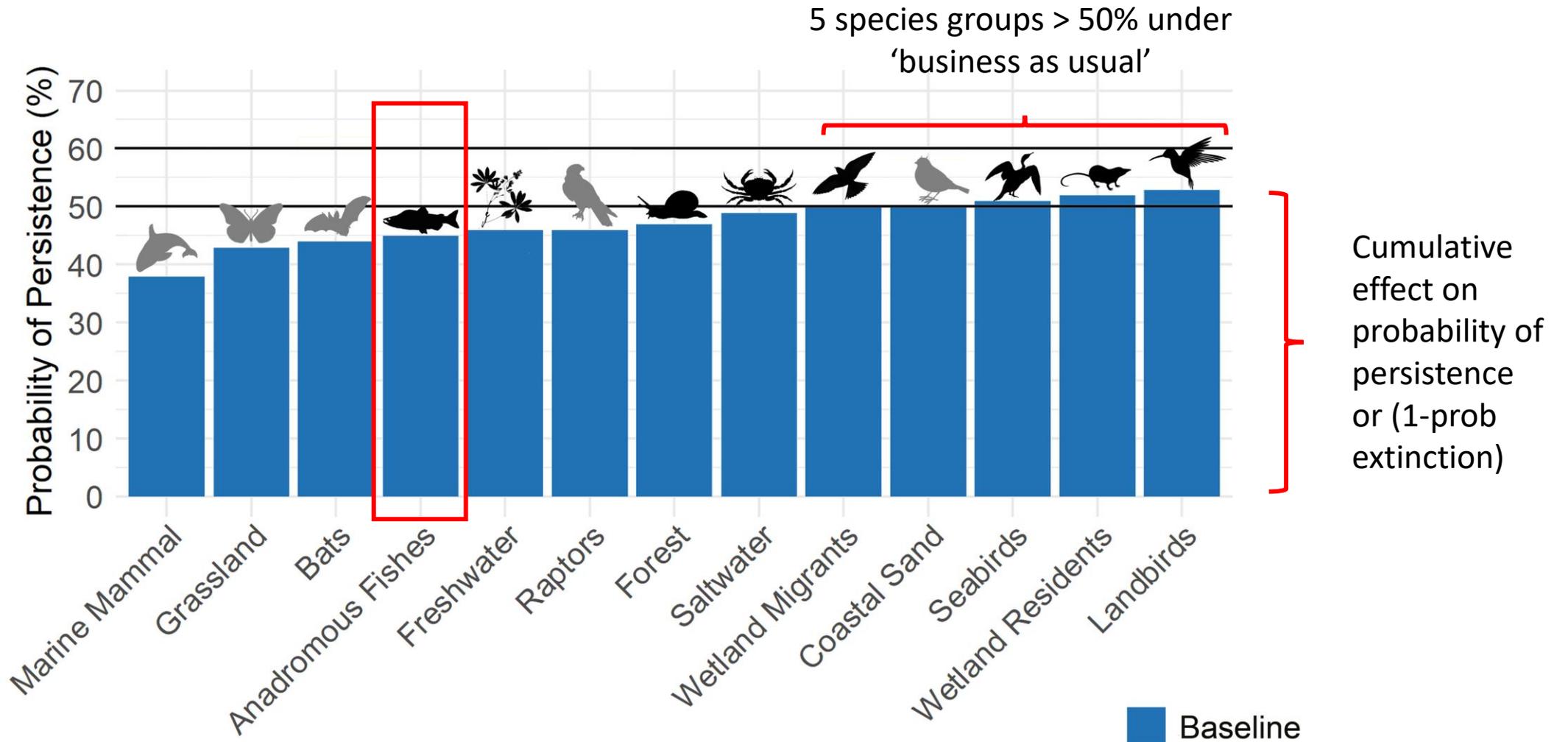
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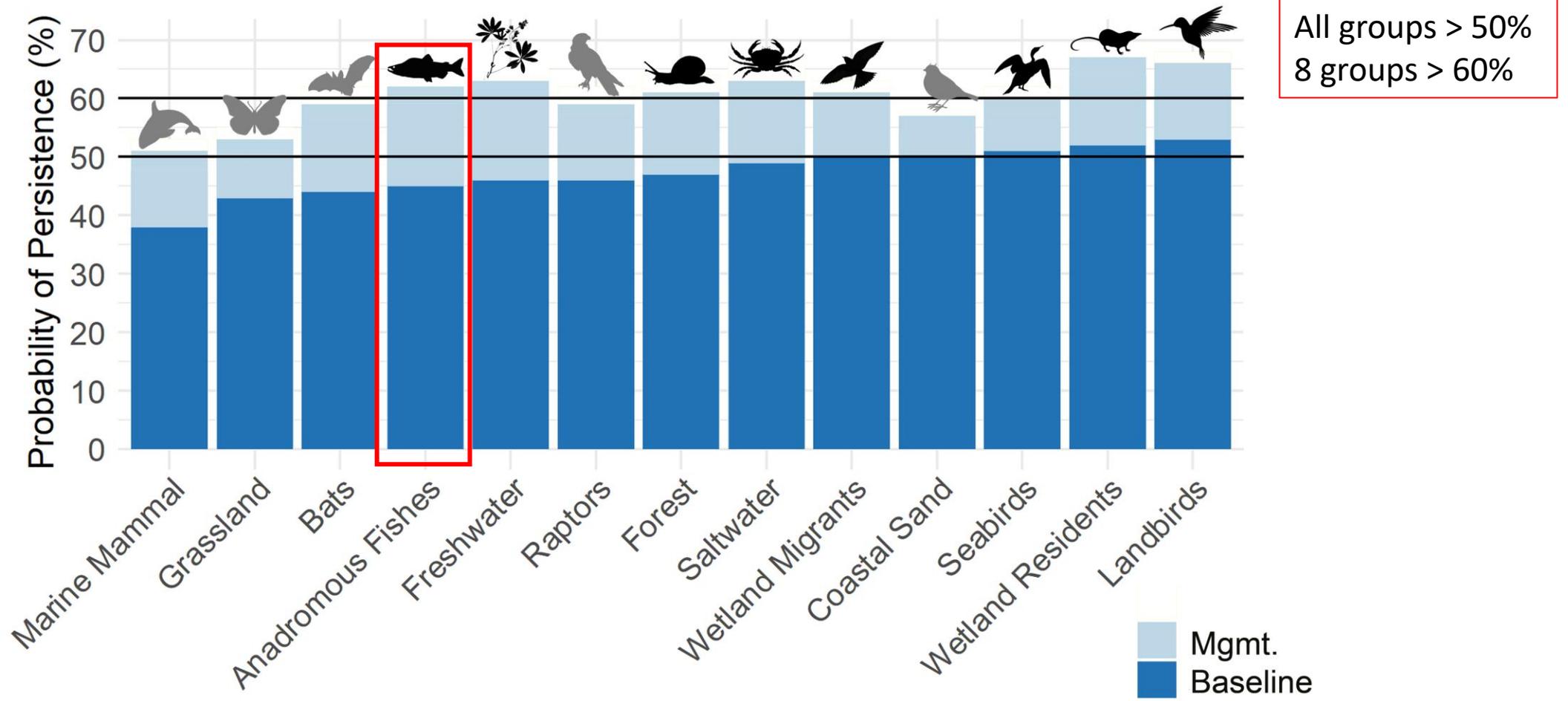
@Michael Snyder



Fraser River Estuary Outcome



Fraser River Estuary Outcome



Take Aways

- Co-development of process – choice of VECs, geography, time-frame
- Predict cumulative impacts based on best knowledge of the day
- Evaluate alternative futures
- Evaluate impact of uncertainty
- Identify strategies to mitigate impacts
- Prioritize these based on their cost-effectiveness and robustness to uncertainty
- Implement
- Monitor, learn, revise

102 species are **AT RISK** of extinction in the Fraser River Estuary

It's not too late to save them.



Kehoe et al. 2020. Conservation in heavily urbanized biodiverse regions requires urgent management action and attention to governance. *Conservation Science and Practice* **In Press**