



NOAA
FISHERIES

Pacific Islands
Fisheries
Science Center

Protecting Resources through Communication and Compliance

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QUEST Webinar
4/4/2018

Protecting Fish Stocks

- **Primary Tool: Fishing Regulations**
(e.g., gear restrictions, closures, catch limits), only effective if followed
- **Rely on:**
 - Education/outreach
 - Observers
 - Reporting
 - Enforcement





Compliance with Regulations

- 165th Western Pacific Regional Fisheries Management Council (2016) recommended the Fishery Ecosystem Plan Objectives include “Promote Compliance”
 - Understand factors that result in non-compliance
 - Develop ways to increase compliance with fishing regulations
 - Ensure regulations written and implemented to be easy to follow
- Objective 4 in Draft Fisheries Ecosystem Plans
- Recurring theme in discussions with Hawaii Division of Aquatic Resources

Protected Species Management



FISHING AROUND SEA TURTLES
ACCIDENTAL TURTLE CATCH
It's OK to Help!

SAFETY FIRST
If safe to help

REEL-IN turtle with care
HOLD by shell / flippers
CUT line close to hook
RELEASE with no line attached

Remember to:

- ✓ Check bait after every nibble
- ✓ Use barbless circle hooks to reduce injuries
- ✓ Clean your catch away from turtles

For Injured or Dead Turtles Call:
(808) 725-5730

For more information, visit www.fpir.noaa.gov/PRD/prd_index.html



Past PIFSC Research

- **Hawaii Longline Fishermen's Experiences with the Observer Program (2007)**
 - Observer program has led to better estimates of interactions between longline fishing and species at risk
 - Concerns were with the overall program as a form of enforcement
 - Lack of trust in monitoring
 - Lack of adequate reimbursement
 - Variation by ethnic group

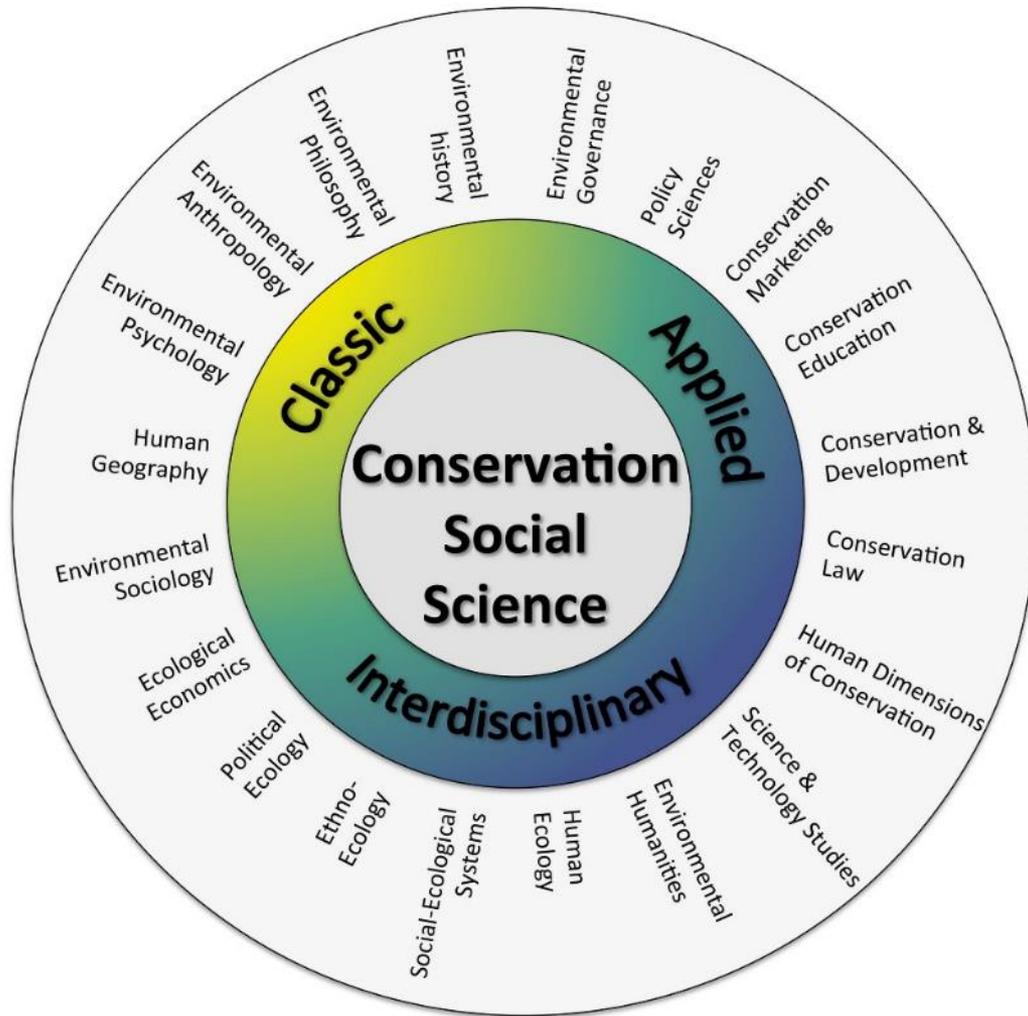


Past PIFSC Research

- Fisher perceptions and interactions with protected species (2015)
 - Cetaceans (false killer whale)
 - Fishers may not be able to accurately id species
 - Fishers try to avoid interactions and communicate with each other when cetaceans are present
 - Monk seals
 - Interactions are rare
 - Protection → habituation
 - Protection → feeding
 - Fear of prosecution/closure
 - Monk seal as symbol



Building Capacity



- **Science of Science Communication**
 - Risk Communication
 - Conservation Marketing
- **Science of Compliance**
 - Conservation Marketing
 - Conservation Criminology

Figure from Bennett, N.J. et al., 2017, Conservation Social Science



Science of Science Communication

- **Myths of Science Communication:**
 - The information deficit model is effective (if we just gave people the facts, they would think/behave like us)
 - You need to “dumb down” the science to communicate effectively
 - It is straightforward to create communication messages that result in widespread behavior change

Science of Science Communication

- **Aligning Goals with Communication Approach**
 - **Education** = Awareness and Knowledge
 - **Persuasion** = Beliefs and Attitudes
 - **Risk Communication** = Informed judgments about risks to health, safety, and the environment
 - **Conservation Marketing** = Pro-environmental behaviors
- **Common theme:** Requires understanding how people seek and process information, identify trusted sources, perceive risks and benefits



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Risk Communication

- **Problem Framing**
 - Tells people what to pay attention to and how they should think about it
- **Risk perception**
 - Expert vs. layperson perceptions of risk
 - Focus on the “outrage” not the “hazard”
- **Risk communication**
 - Empower people to feel they can make informed judgments about risk
 - Build capacity for self- and societal- efficacy
- **Social amplification of risk**
 - Agenda setting, media framing, and “newsworthiness”
 - Utilize the power of story

Problem Framing

- Framing as a concept is often examined in public opinion and media communication
- Frames act as lenses or filters through which people interpret and process information
- Frames call attention to certain elements of an issue and direct attention away from other elements
- **Framing tells people what to pay attention to and how they should think about it**

Entman, 1993





NOAA photo by Adam Ayers



NOAA photo by Adam Av



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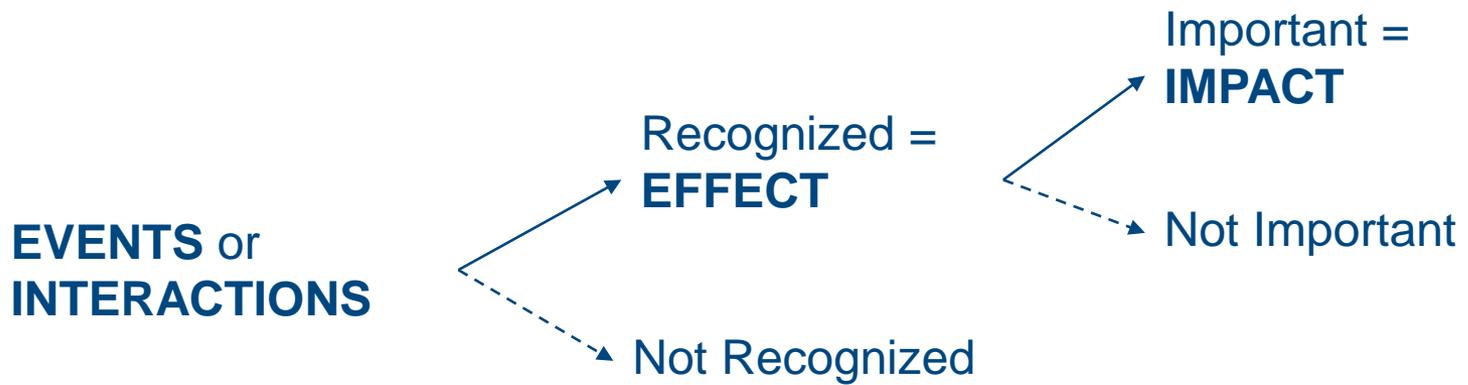




Impacts



NOAA photo by Adam Ayers



Organ et al., 2006

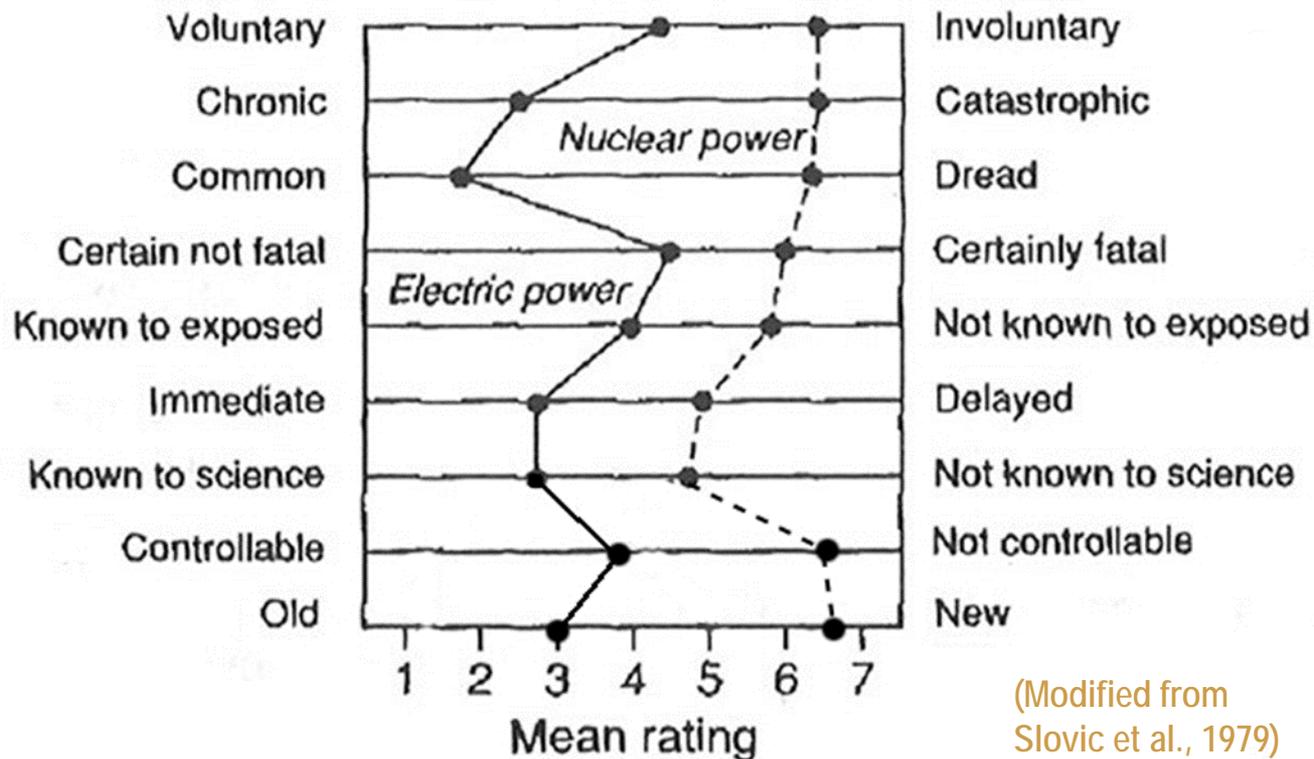
Risk Perception

- “People respond to the hazards they perceive”
(Slovic et al. 1979)
- Experts and the public perceive risk differently
 - **Experts:** risk = assessed risk (hazard)
 - **Public:** risk = hazard + outrage
(Sandman 2012)
- Cognitive (beliefs about probability of causing harm) and affective components (emotions)

Risk Perception: Risk Profiles

Lower Outrage

Higher Outrage



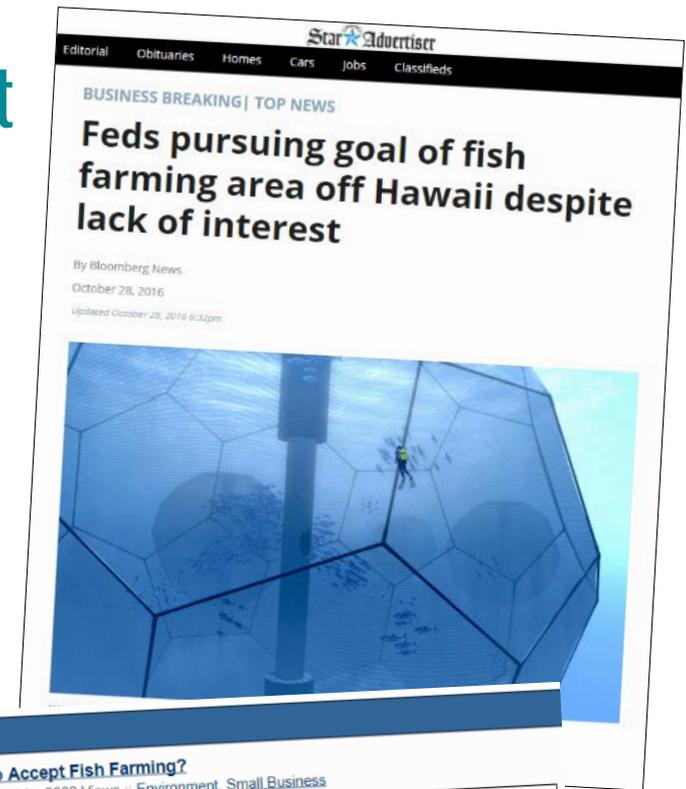
(Modified from Slovic et al., 1979)

Social Amplification of Risk

- “Information processes, institutional structures, social-group behavior, and individual responses shape the social experience of risk.” (Kasperson et al 1988 p.181)
- **Media agenda-setting:** The media “may not be successful much of the time in telling its readers how to think, but it is stunningly successful in telling its readers what to think about.” (Cohen 1963 p.13)
- **Newsworthiness:** conflict, drama, well-understood story themes, recognizable personalities, physical proximity to the reader, timeliness, or novelty (Price and Tewksbury 1997)

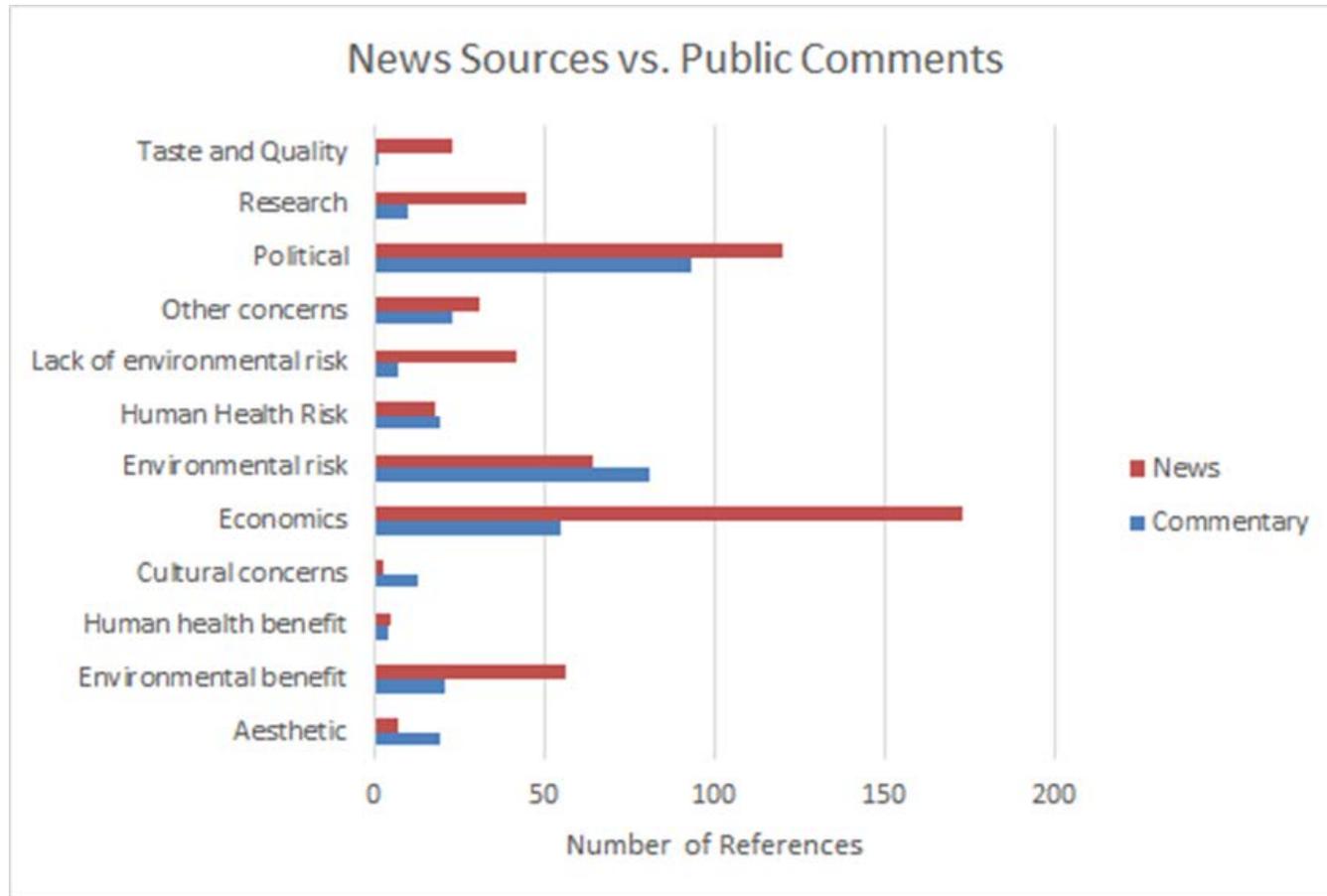
Aquaculture Programmatic Environmental Impact Statement

- Senior project for undergraduate UH student in Global Environmental Sciences program
- Content analysis of news media and public comments related to Aquaculture PEIS



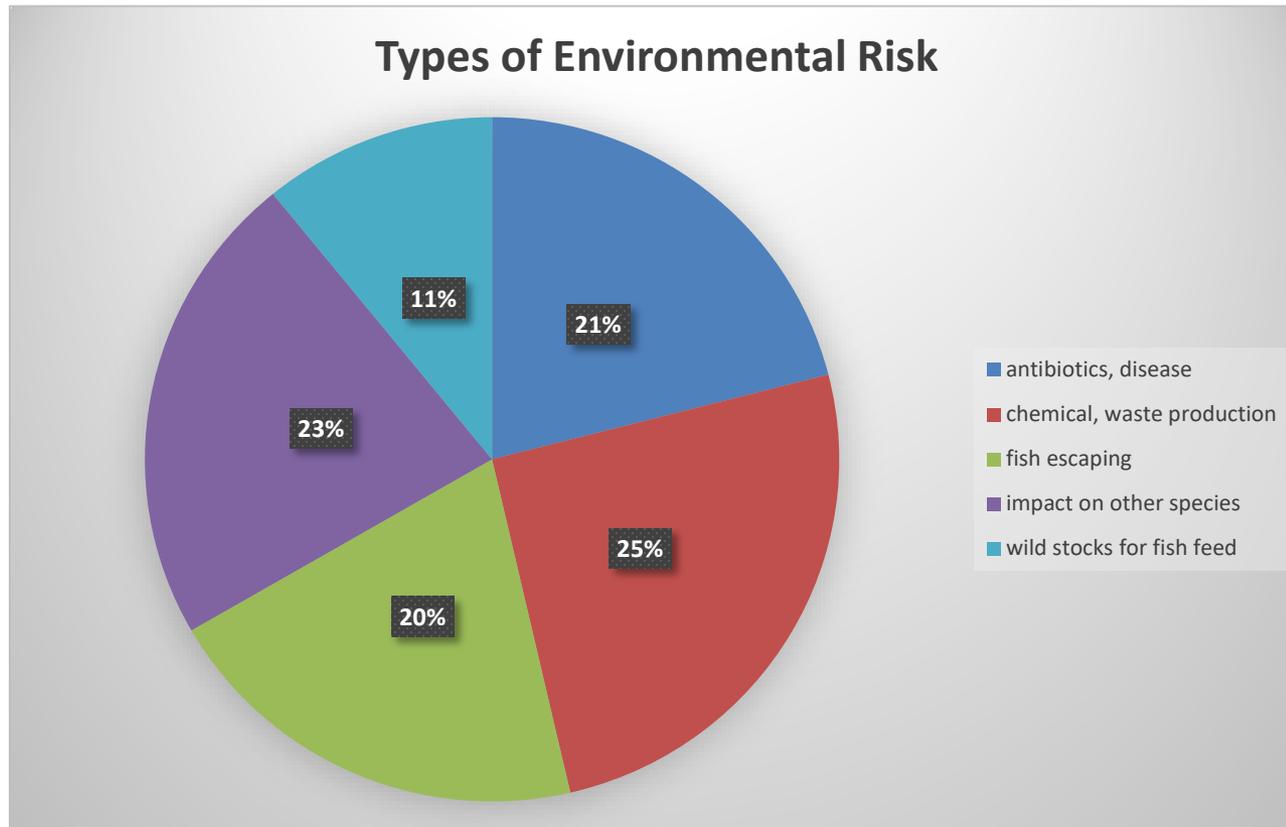
Aquaculture PEIS

- Initial coding of articles and comments complete



Aquaculture PEIS

- Initial coding of articles and comments complete



Conservation Marketing

- Builds off of work on human-wildlife interactions at NPS
- Adoption by outreach groups in Hawai'i

Regulatory Sign



Behavior-Based Messaging



Photos courtesy
Katie Abrams

Conservation Marketing

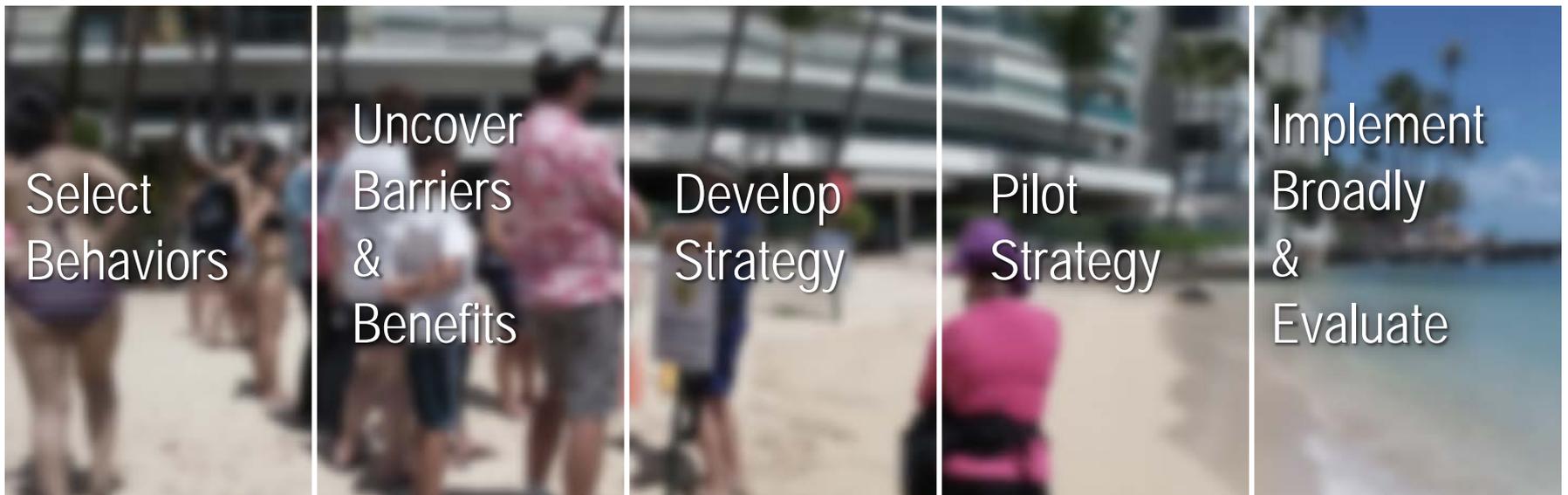
- Desired outcome is behavior
- Borrows strategies from advertising, “product” is pro-environmental behaviors (social good)
- Founded on social science research to identify target audience(s) and their motivations, as well as strategies for evaluation

Key Principles:

- **Make it enjoyable:** What’s in it for me?
- **Make it easy:** Is it do-able to the target audience?
- **Make it popular:** Are others like me doing it?

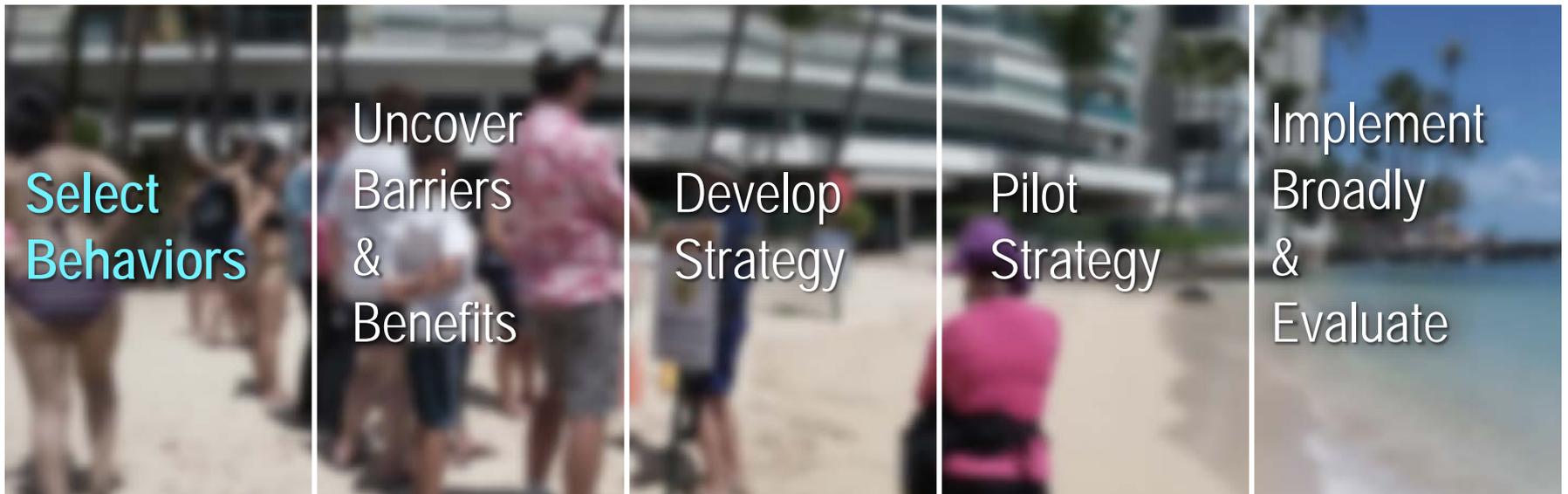
Conservation Marketing

- Process outlined in *Fostering Sustainable Behavior* (McKenzie-Mohr and Smith, 1999, www.cbsm.com)



Step 1: Select Behaviors

- Diagnostic questions:
 - What are the non-divisible end-state behaviors?
 - Which are more **impactful**, higher **probability** of adoption, lower **penetration** (fewer people already doing it)



Step 1: Select Behaviors

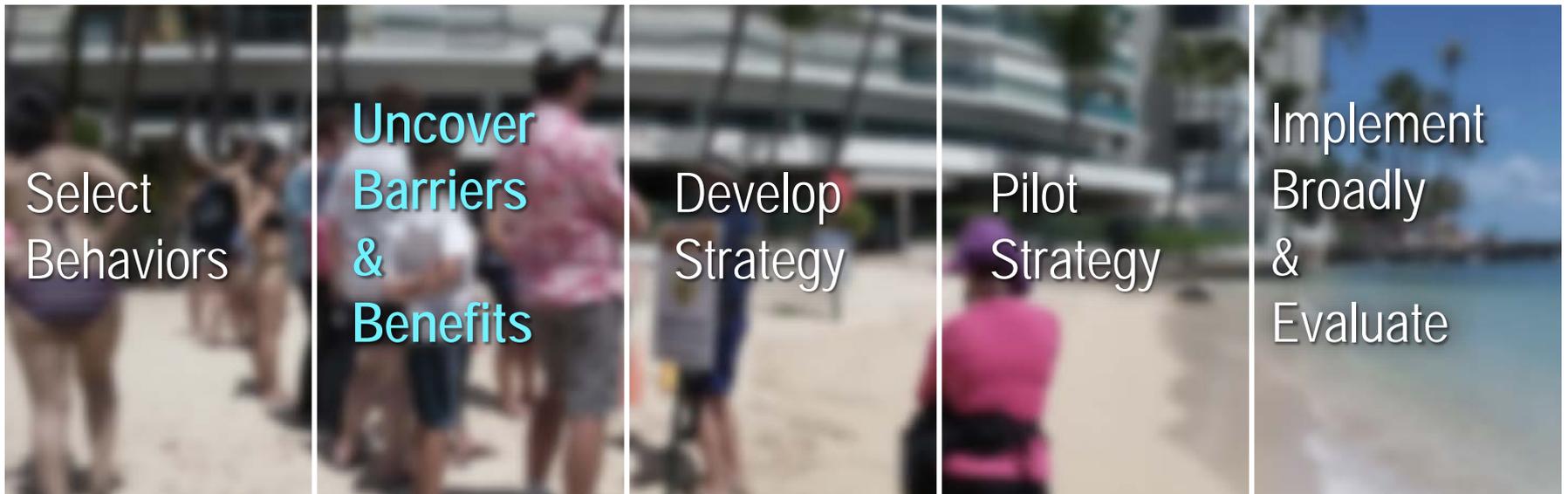
“Behavior” (suite of behaviors)

- Release hooked turtle
- Non-divisible behaviors
 - REEL-IN with care
 - HOLD by shell/flippers
 - CUT line close to hook
 - RELEASE with no line attached
- End-state behaviour
 - Release turtle with no line attached



Step 2: Uncover Barriers & Benefits

- Diagnostic questions:
 - What is impeding people from engaging in the behaviour?
 - What will motivate them to act?

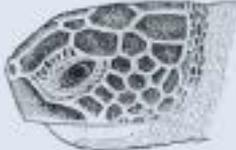


Step 2: Uncover Barriers & Benefits

- Drivers of barriers and benefits may be
 - Internal
 - External

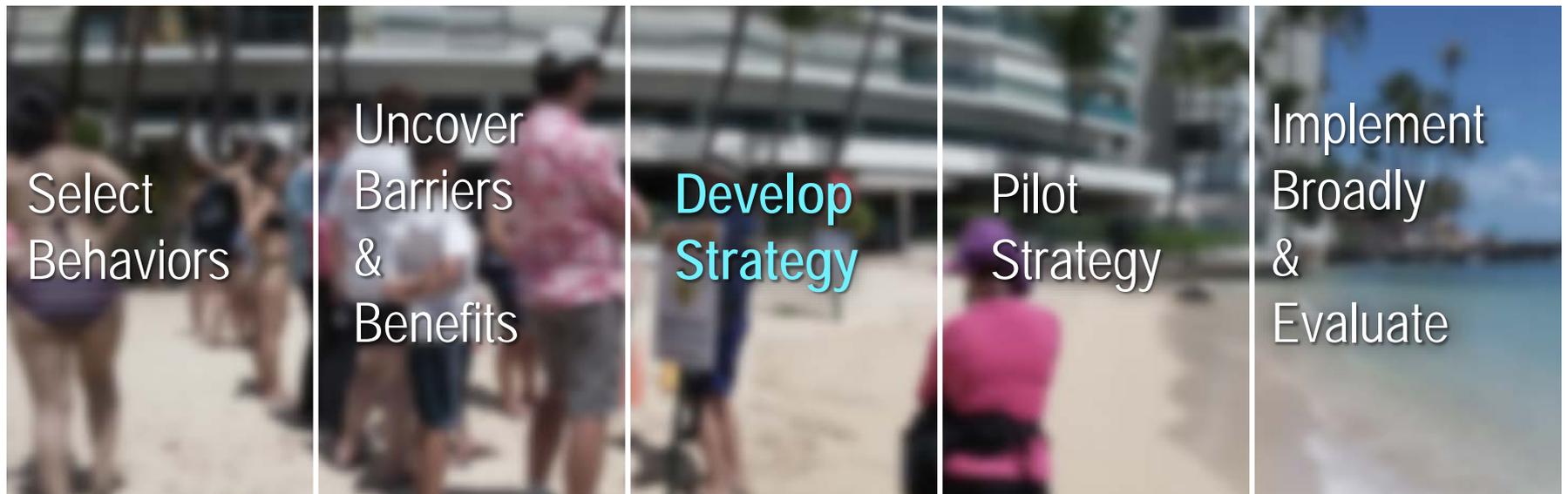


SEA TURTLE IDENTIFICATION
Green and hawksbill turtles occur in Hawaiian waters.
Learn the difference.

Green / Honu <i>Chelonia mydas</i>	Hawksbill / `Ea / Honu`ea <i>Eretmochelys imbricata</i>
	
<ul style="list-style-type: none">• Rounded head	<ul style="list-style-type: none">• Narrow head and pointed beak
	
<ul style="list-style-type: none">• 2 pre-frontal scales (between eyes)	<ul style="list-style-type: none">• 4 pre-frontal scales (between eyes)

Step 3: Develop Strategy

- Diagnostic questions:
 - Do you want to encourage or discourage behaviors?
 - How can you best affect the identified benefits and barriers?



Step 3: Develop Strategy

Specific Behaviour	Barriers	Benefits
Encourage		
Discourage		

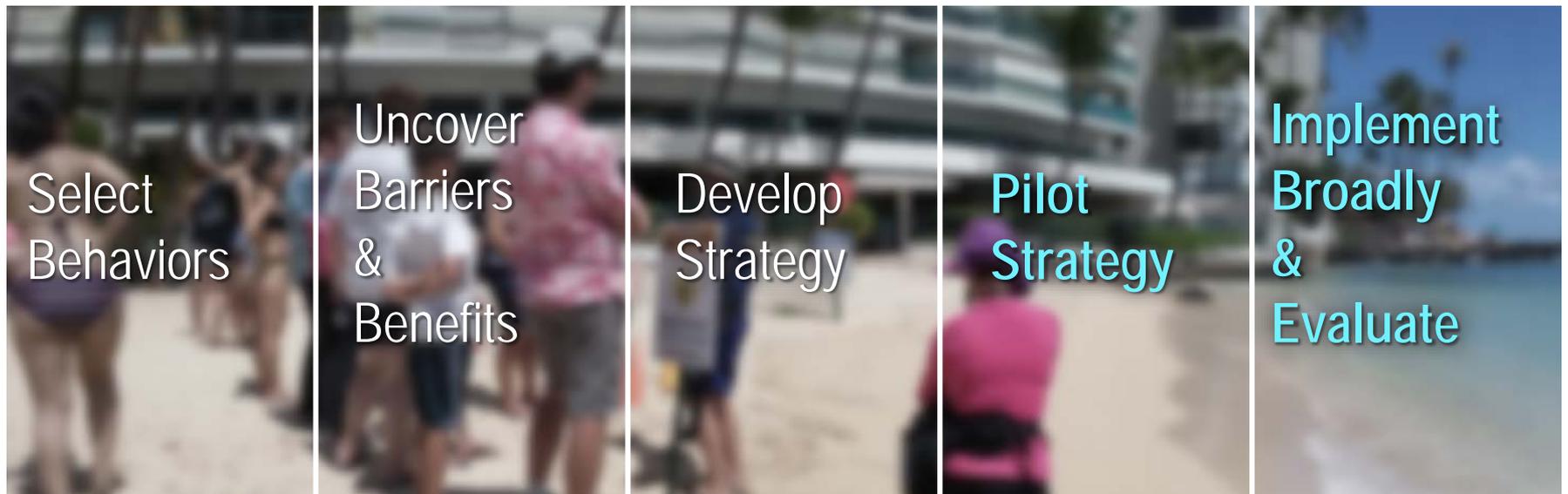


Step 3: Develop Strategy

- Communication
- Commitment
- Prompts
- Norms
- Incentives/Disincentives
- Convenience

Steps 4 & 5: Pilot, Implement, Evaluate

- Diagnostic questions:
 - How will success be measured?



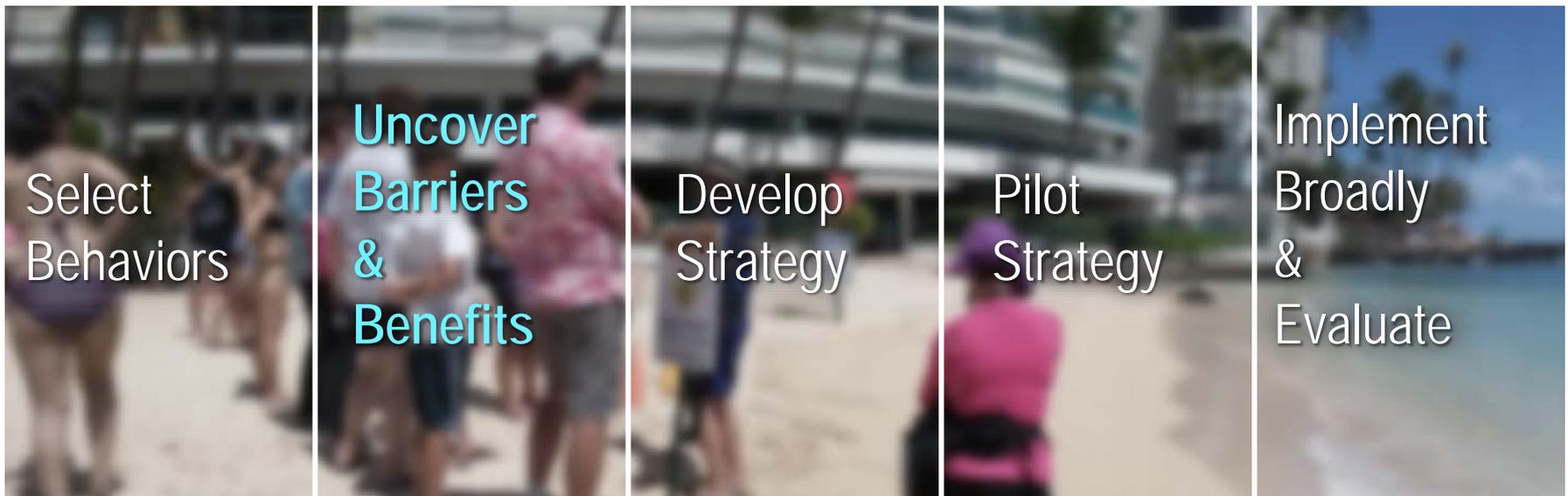
Reducing mortality of oceanic whitetip sharks

- UH M.S. student project, started Fall semester 2017
- Knowledge, attitudes, practice of fishers
- Information sharing patterns
- Funded by National Bycatch Reduction Engineering Program, as part of a shark tagging proposal



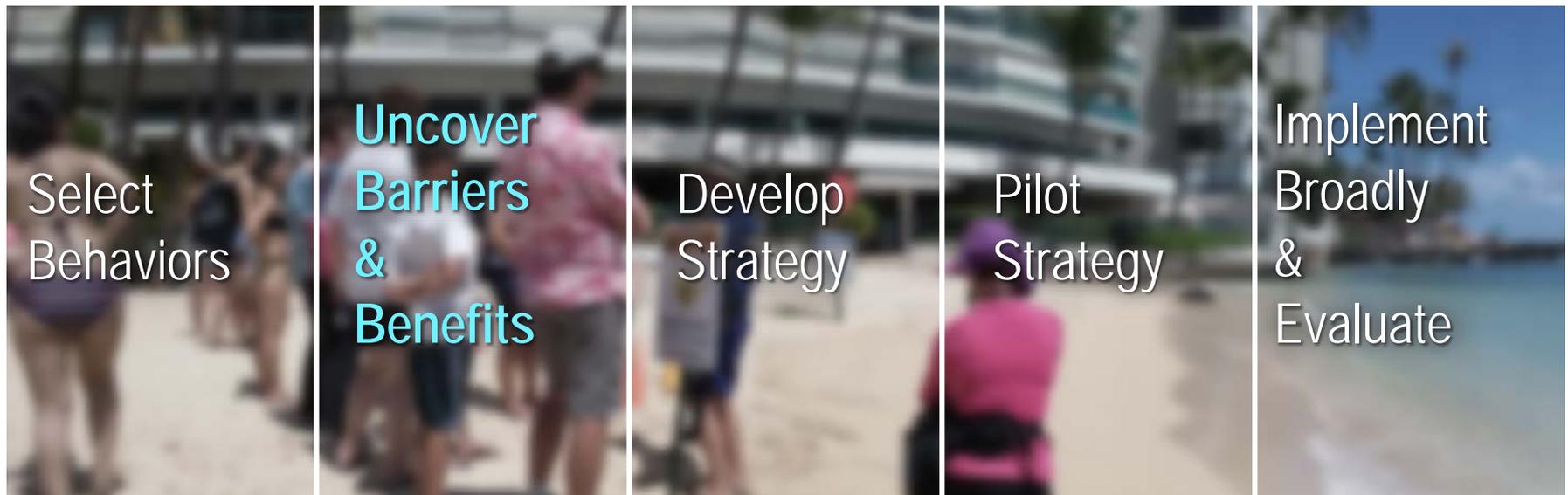
Reducing mortality of oceanic whitetip sharks

- Interviews in progress
- Importance of trust/respect building for study validity and collaborative solution seeking
- Fishers not interested if strategy doesn't help them



How can we reduce the impact of pelagic sharks on fishermen, and vice versa?

- Interviews in progress
- Importance of trust/respect building for study validity and collaborative solution seeking
- Fishers not interested if strategy doesn't help them



Challenge: Regulatory to Behavior-based

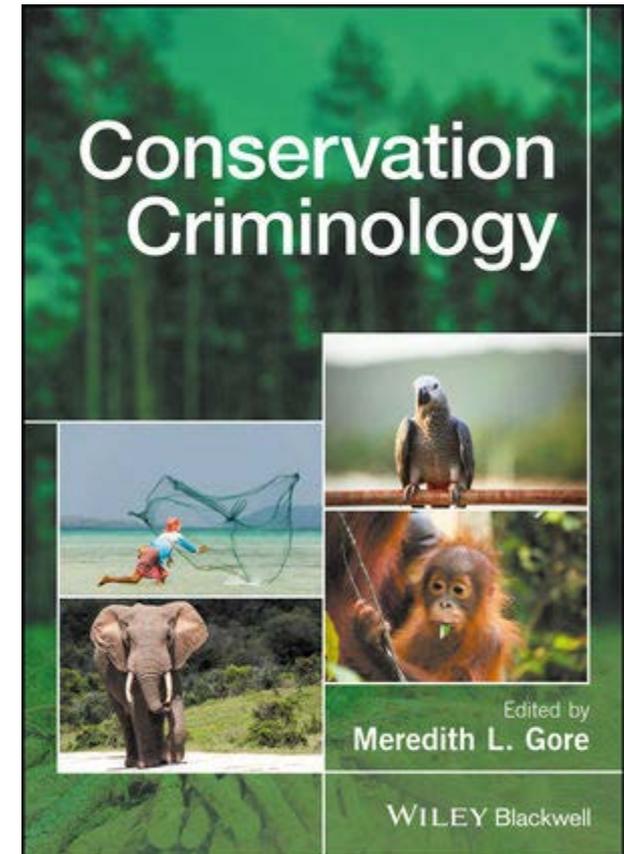
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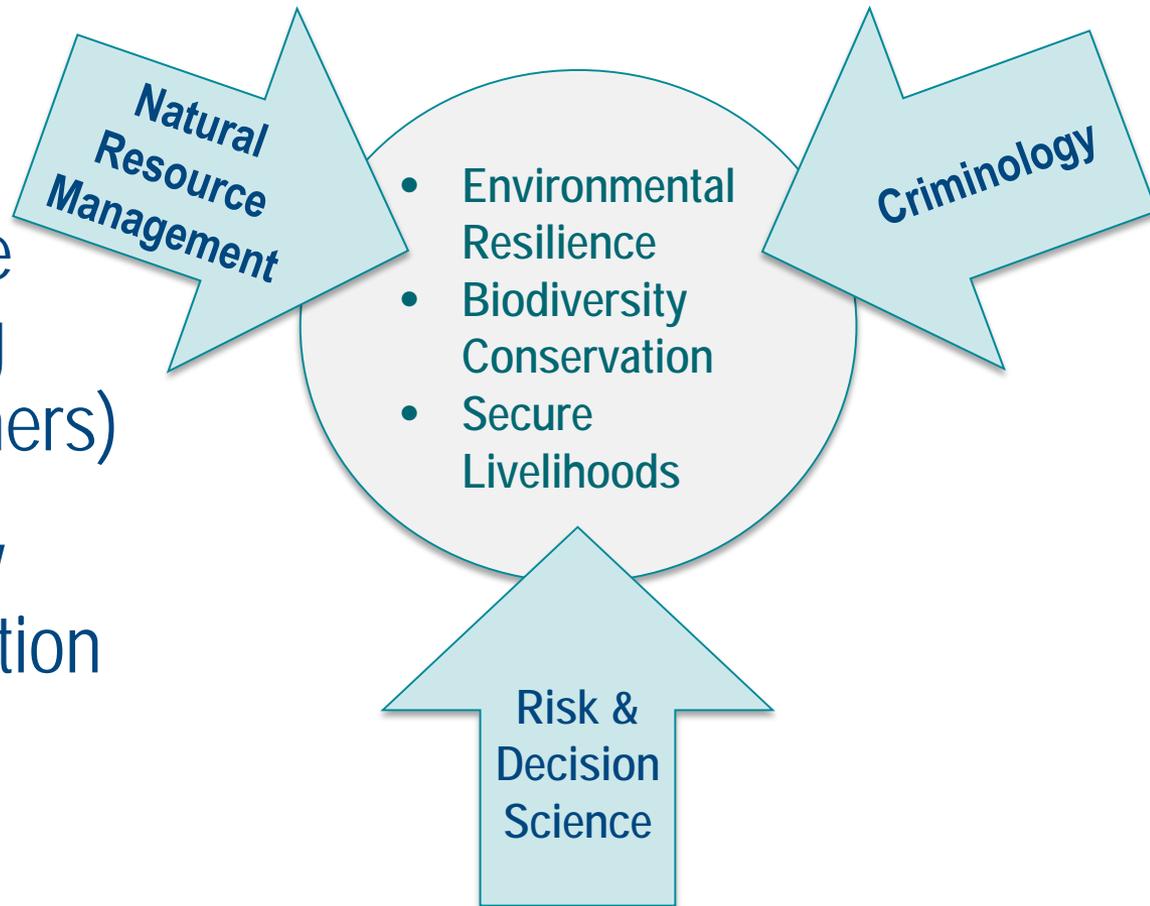
Science of Compliance

- Overlap with science of science communication
- Focus on **behavior**
- Emerging field of Conservation Criminology
 - Borrows from fields including law enforcement
 - New techniques for collecting data about sensitive topics



Conservation Criminology

- Interdisciplinary
- Understanding the context of the crime (e.g. understanding poaching vs. poachers)
- Interventions highly tailored to the situation (problem-oriented policing, situational crime prevention)





Conservation Criminology

- Drivers of non-compliance
 - e.g., Intentional vs. unintentional
- Motivations for non-compliance
 - e.g., Direct vs. indirect personal gains
- Drivers of compliance and cooperation
 - e.g. Regulations, economic incentives, communication
- Requires specialized data collection techniques to avoid self-incrimination, ensure accuracy of results
 - e.g. randomized response technique, indirect questioning



Seascape of Compliance in the Pacific Islands

- Objectives:
 - Identify the range of compliance issues in the region by management type and priority.
 - Identify and plan pilot project to address an issue that represents the most frequent type of compliance issue.
 1. High priority for Pacific Islands Regional Office and Council
 2. Represents compliance category with multiple needs for the region
 3. Politically and logistically feasible



Seascape of Compliance in the Pacific Islands

- Conducting interviews with PIFSC, PIRO, Council, and key stakeholder representatives
- Rather than specific topics, hearing more about criteria: can be affected by management, managers will commit to follow-through
- Commercial fishing thought to be fairly well-covered, most to gain from non-commercial fishing, interactions along shoreline with multiple stakeholders



Ongoing consultation for Protected Resources

- Toxoplasmosis and At-large Cat Technical Working Group
- False killer whale recovery planning
- Editing monk seal, sea turtle, spinner dolphin outreach materials
- Fishing around seals and turtles steering committee

→ Regional Office and Science Center have discussed a coordinated communication and outreach strategy for protected resources



Discussion

- Many conservation education and outreach efforts are actually intended to result in behavior change
- Communication and Compliance are very specialized applied social science disciplines
- Both are gaining attention in conservation research and practice
- Interest and support from Pacific Islands Regional Office and Council

Questions?

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Citations

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