Adaptive Management for Off-Road Vehicle Policy Implementation in Denali, Alaska

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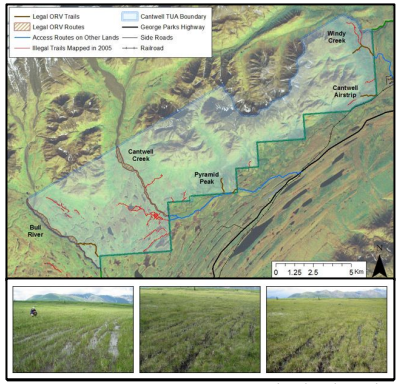
Introduction

- **Background**: Adaptive management (AM) is a form of decision-making in the face of ecosystem uncertainty. In Alaska's Denali National Park, uncertainty is present through climate change events such as melting permafrost. The National Park Service's (NPS) 2008 restrictions on off-road vehicles (ORV) as part of an AM strategy have concerned Denali residents reliant on ORVs for subsistence hunting and fishing.
- **Purpose**: To understand perceptions of implemented ORV policy in comparison with the principles of AM.
- **Research Questions**: (1) What are the principles of AM? (2) What are perceptions of stakeholders of Denali's ORV policy? (3) To what extent do perceptions align with principles of AM?



Source: National Park Service

Methods

- Performed content analysis of ORV federal codes and reports to identify incorporated AM principles
- Transcribed semi-structured interviews (n=11, dated 2019) of Denali stakeholders, both native and non-native. Interviews selected via snowball and purposive sampling
- Coded transcripts to examine perceptions of subsistence behavior, trail usage, personal values, and AM relevant to ORV use (*in vivo* coding framework)
- Identified themes among the data using constant comparison method to address research questions

(Section)
B: You still think you get those temperatures regularly?
W: No, uh, I don't. We haven't seen. I haven't see 60 below here in probably 5 years[1]. Uh… lots of 40 below last year. I don't know a 50 below that I can remember[2]; I'll have to look on my calendar. But um, yeah. Yeah it's cold. 50 below is cold
B: Yeah, yeah. 10 below is cold for me

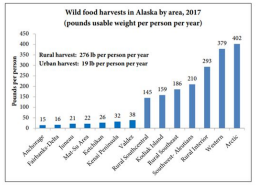
[1]"Haven't seen 60 below in 5 years"

[2]"Don't know a 50 below that I can remember"

Framework derived from: The Coding Manual for Qualitative Researchers, 2nd Edition (2012), Johnny Saldaña

Findings

- AM principles here focus on: **resource protection, public safety, overharvesting safeguards, ecosystem integrity, maintenance of aesthetics, and subsistence oversight**. All legislation is flexible to change by the park superintendent
- Data codes (n=161) from transcripts grouped into three main themes reacting to AM implementation
- Small overlap between NPS AM goals and residents' current perceptions of those goals show implementation conflicts, such as unpredictable access guidelines for ORV



ORV restrictions, applicable to both native and non-native groups, are noted to place added stress on rural harvest communities

Source: ADFG (2018)

Themes	Example Coded Dialogue
Heritage Stewardship	"humans are part of the ecosystem"
Exclusionary Decision-Making	"5 or 6 people making decisions for entire state"
Representation Issues	"375 million voices, you're only one"

Analyzation of perception themes against intended policy outcomes

Subsistence users (right) are often conflated with recreational hunters (left), creating representation issues when the NPS monitors non-essential harvest practices

Source: ADFG (left), Greg Kim (right)

Discussion

- AM ideally reduces uncertainty in the managed landscape through quick evaluation and restructuring of resource policies as needed
- Stakeholders note little community inclusion in decision making processes for ORV monitoring, as only NPS managers make the decisions
- Perceptions indicate that current AM implementation have actually created *greater* uncertainty overall, rather than reducing it

Implications

- NPS could take a position to increase trust with stakeholders through collaborative AM, such as:
1. Public recognition of what was said by stakeholders
2. Developing a intermediary organization that connects stakeholders to ORV policy makers
3. Clarifying policy in the language of stakeholders
4. Becoming more transparent with their ORV decision-making and justification of policies

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