Outdoor Recreation and Ecological Disturbance

Impacts of Human-Powered Recreation & Public Land Management
Implications for the Colorado Plateau

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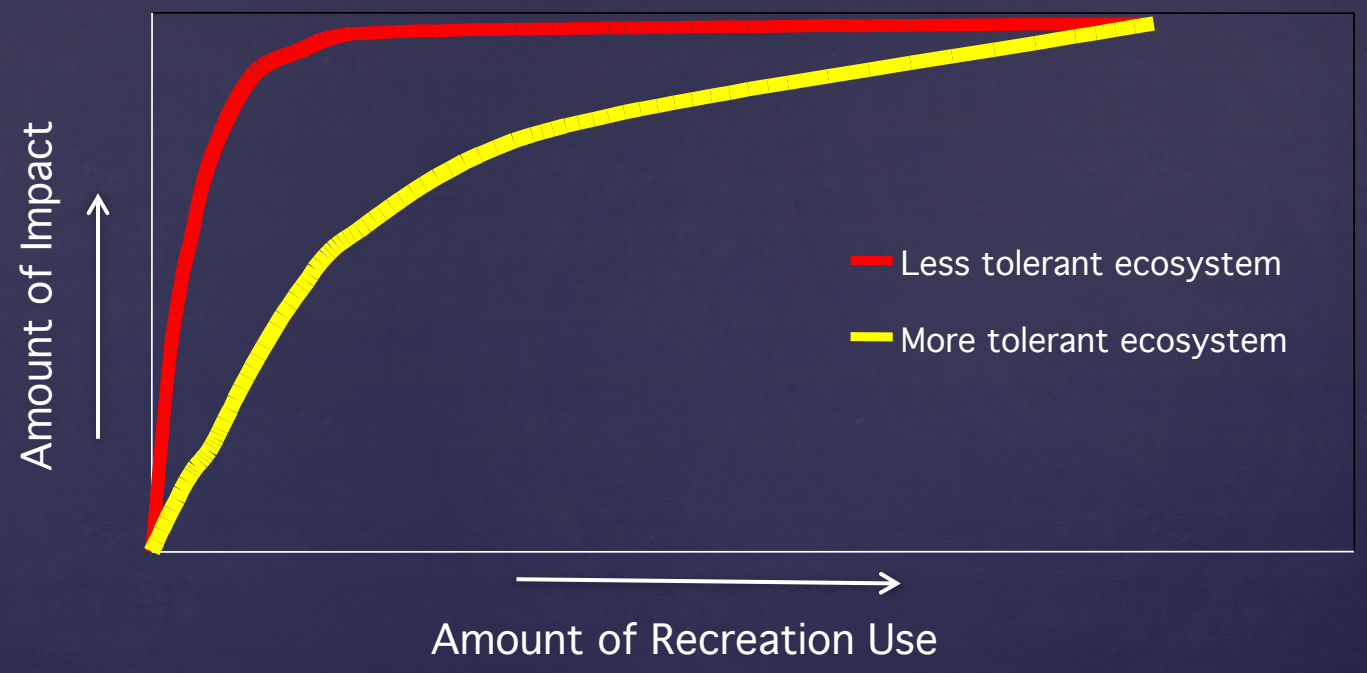
- Overview of Recreation Ecology principles and theory
- Summary of studies on the CO Plateau
- Implications for recreation management

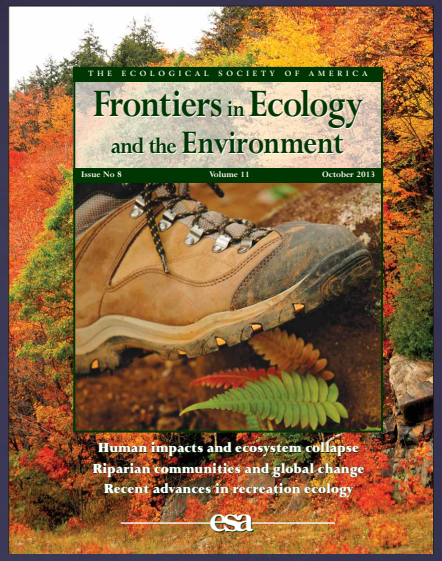
Presentation Objectives

- How recreation *activities* act as disturbance agents to soil, vegetation, wildlife, water and air
- How human disturbance affects the visitor experience in parks
- Inform sustainable management strategies

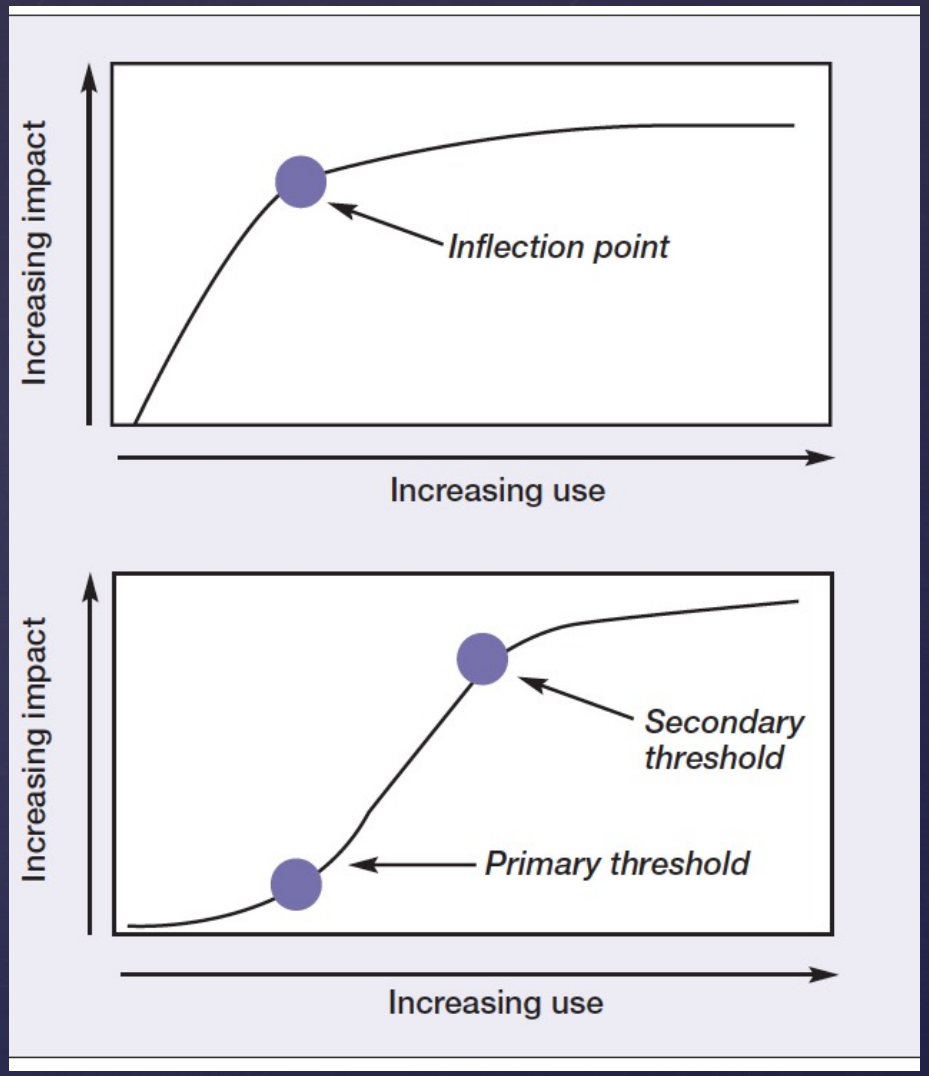
Recreation Ecology

Use- Disturbance Theory (c. 70's-80's)



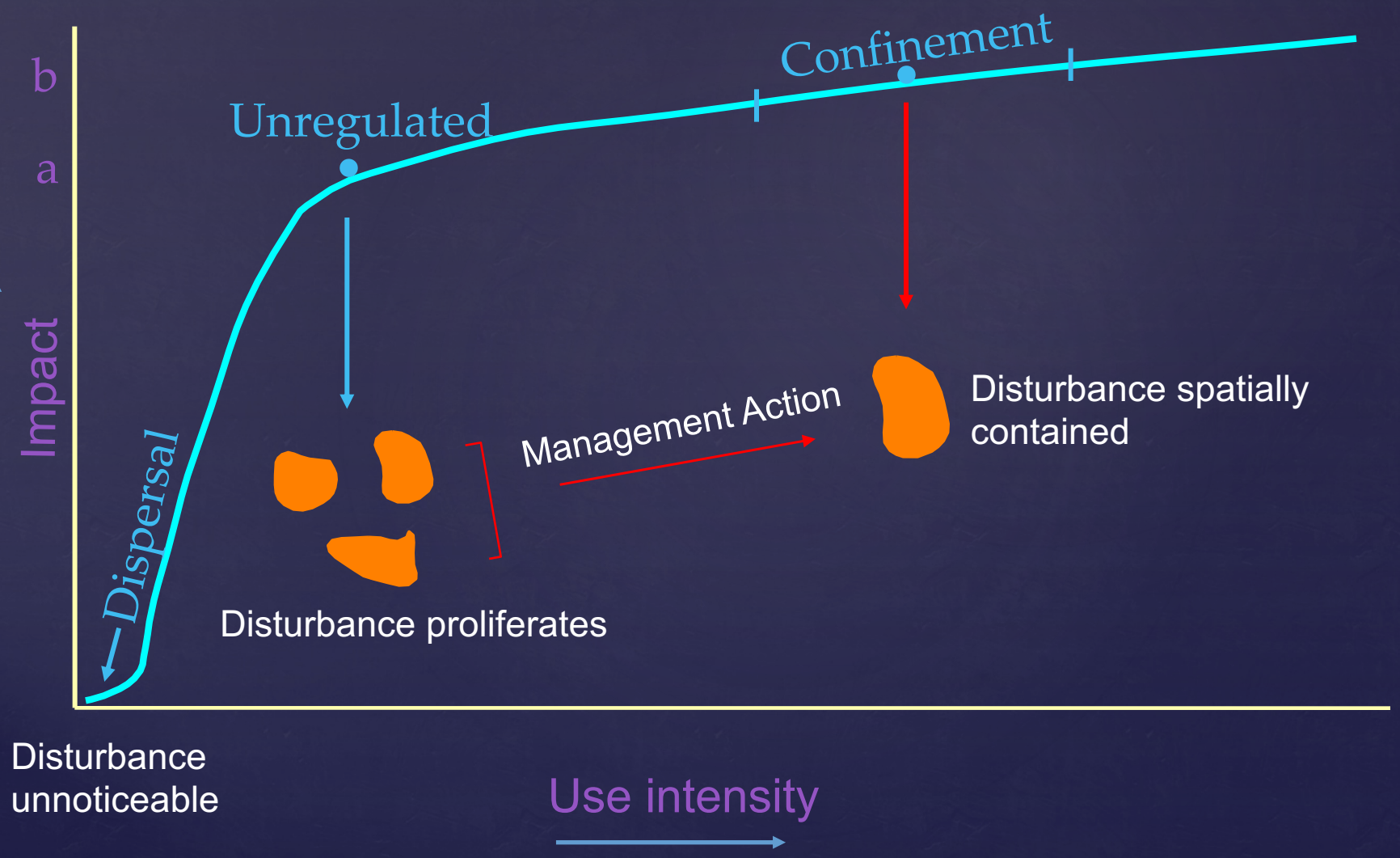


- Common generalization is still useful
- High/Intensive use requires spatial confinement to minimize ecological disturbance
- Dispersal only effective with very low use and durable environments
- NOTE: Common “dispersed camping” is a misnomer- “unmanaged” or ”at large”

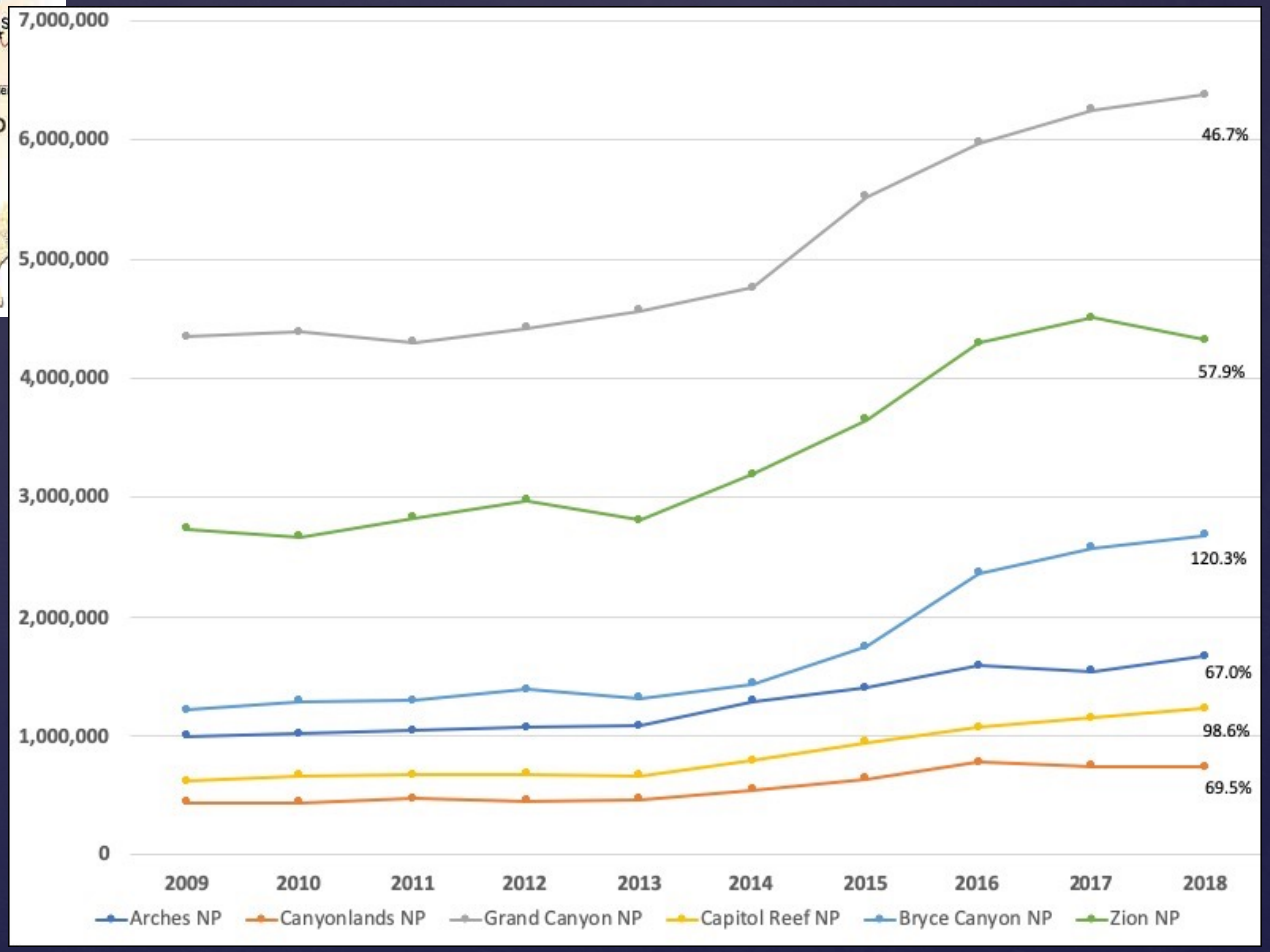


Rationale for Dispersal & Confinement Strategies

Examples at the Site Scale



The Intermountain West in 2021: There is “no place distant”



Many factors:

- Rapid growth
- Technology
- Promotion of Rec and Tourism
- COVID

- Soil and Vegetation Disturbance (Cole et al., 2008)
- Disturbance to Wildlife (spotted owls; Swarthout and Steidl 2003)
- Impacts to Cultural Resources (Hedquitst et al., 2014)

- Cryptobiotic soil crusts are fragile disturbance can be extensive
- Spatial overlap with use and wildlife a primary issue
- Access (trails roads) without active management it results in disturbance

State of Knowledge- CO Plateau Specific Studies

Backcountry travel management strategy	Use Level Typically Applied	Description	Effectiveness for minimizing impacts on the Colorado Plateau
UNREGULATED **Travel in locations without specific management and formal trails**	All	Visitors have the freedom to travel on routes and via modes of their choice.	Very ineffective in locations with soil crusts. Higher use locations will likely see the formation of networks of informal trails that are unsustainable.
DISPERSAL STRATEGY **Travel in areas of sparse vegetation; e.g., open summits, mesas**	Very Low to Low	Visitors are *asked to* travel on durable surfaces at low-use levels to avoid lasting impact. Durable surfaces include slickrock, sand, gravel, etc.	Likely ineffective in locations with soil crusts. Difficult to achieve in most situations and requires highly skilled visitors. Has been effective elsewhere, in some highly regulated settings, with low-use levels.
COFINEMENT STRATEGY **Travel on established but unmanaged routes: e.g., Canyoneering, climbing approach and descent**	Low-Moderate	Visitors are *encouraged to follow* well-established, sometimes informally marked routes	Likely effective with visitor compliance, but not all will comply. Allows for a more primitive experience and some visitor choice. More risk is assumed by the visitor, since routes are unmanaged.
COFINEMENT STRATEGY **Designated Trails**	Mod - High	Visitors are *required to travel only* on sustainably designed and maintained trails	Highly effective at limiting resource impacts. Limits visitor choice. In very high-use situations, often requires capacity

Backcountry management options

Speculation- Would more confinement be acceptable to visitors?

Motivation	Mean (1-5 scale of importance)
Risk Aversion	2.86
Learning about Nature	3.17
Spiritual Renewal	3.36
Challenge	3.36
Friends and Family	3.80
Outdoor Exercise	4.40

Recent results from conservation areas in Orange County, CA

Conclusions

- Limited research on the CO Plateau but much can be inferred
- Dispersal strategies tend to increase ecological disturbance
- Confinement reduces overall impact
- Importance of unmanaged experiences *may* be less to many contemporary visitors