



Visitor Capacity:

Big and Little Cottonwood Canyons

The background of the slide is a photograph of a snowy mountain slope. Several people in winter gear are standing on the snow, and a large coil of orange rope is in the foreground. The text is overlaid on this image.

USFS Mission

The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

Why Visitor Use Management?

Watershed



- Watershed Desired Conditions

Why Visitor Use Management?

Ecological



Decisions responding to increasing recreation demands will give first consideration to desired water quality and riparian conditions, and the limited wildlife habitat...

Why Visitor Use Management?

Recreation



Various uses and developments (ski resort design and development, campgrounds, picnic areas, trailheads and trails) will be designed to prevent or fully mitigate impacts...

Why Visitor Use Management?

Recreation



A balance of diverse landscapes offer a variety of settings for a wide range of activities, including primitive settings where there are opportunities for solitude, risk and challenge, to more modified settings where there are opportunities for social interaction, comfort, and less risk...

Why Visitor Use Management?

Recreation



Development and modification at the resorts will continue to be designed to balance the comfortable carrying capacity within each resort, based on the latest technologies, use patterns, and existing facilities, within the capabilities of the natural environment and transportation infrastructure...

Why Visitor Use Management?

Recreation



Visitors will make increasing use of mass transit to reduce congestion on the highways, and mass transit opportunities will expand to include year-round operations...

Watershed protection mandates, the relatively short distances to backcountry destinations, the relative ease of non-motorized access, and the relatively small area within which to buffer the competition and conflict between motorized and non-motorized uses are factors to consider in dealing with specific recreation management decisions...

INHERENTLY COMPLEX!



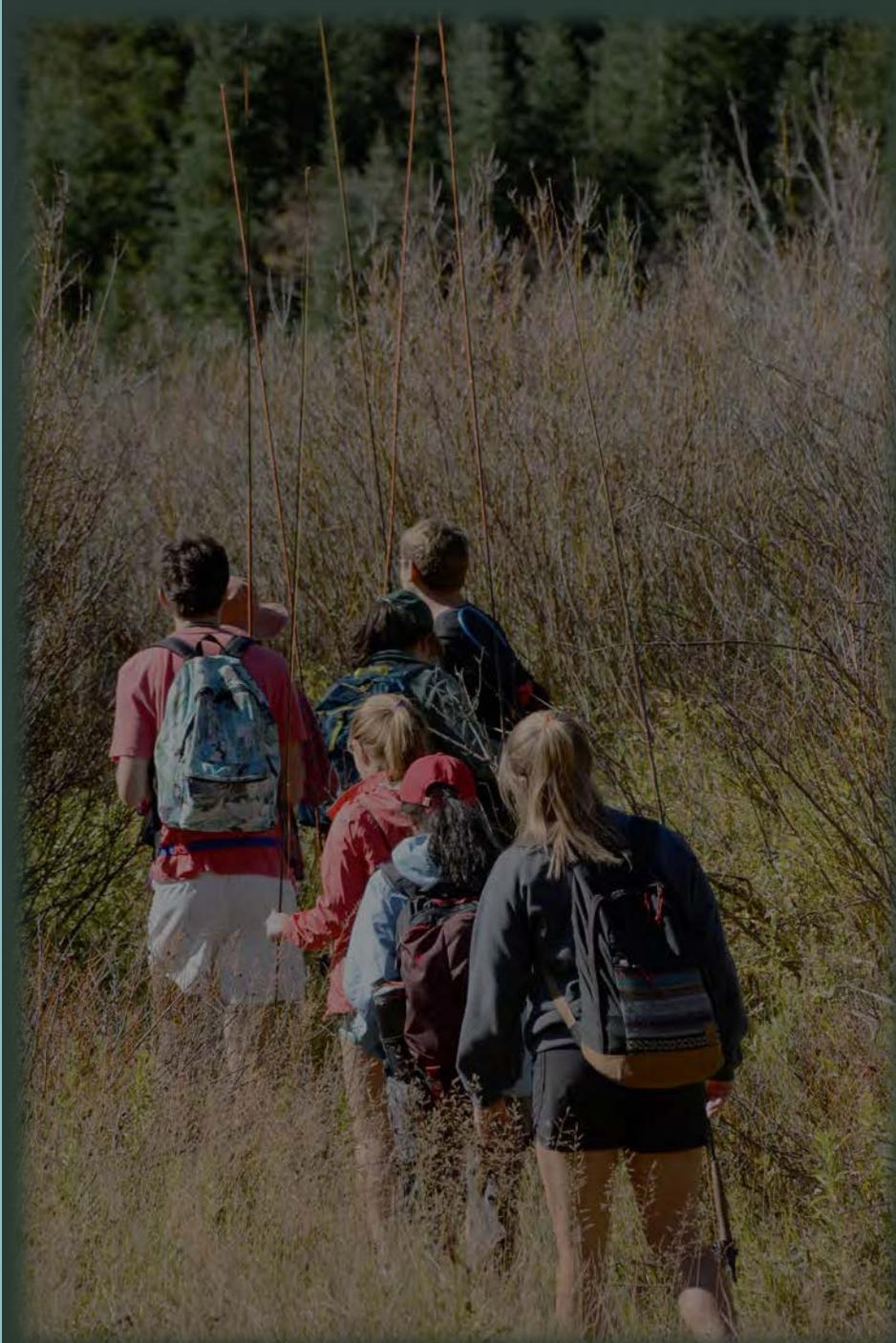
Impacts vary with...

- Type of use
- Timing of use
- Distribution of use
- Visitor expectations
- Environmental setting
- Number of visitors
- Site specific factors

A group of hikers with backpacks standing in a forest, looking towards the camera. The image is dark and serves as a background for the text.

Visitor Capacity?

...maximum amounts and types of visitor use that an area can accommodate while achieving and maintaining **desired resource conditions** and visitor experiences that are **consistent with the purposes** for which the area was established or reserved.



Visitor Capacity is...

- A management tool, and in some cases a legal requirement; achieving and maintaining desired conditions
- A number: maximum amounts and types of visitor use
- Varies over space and time

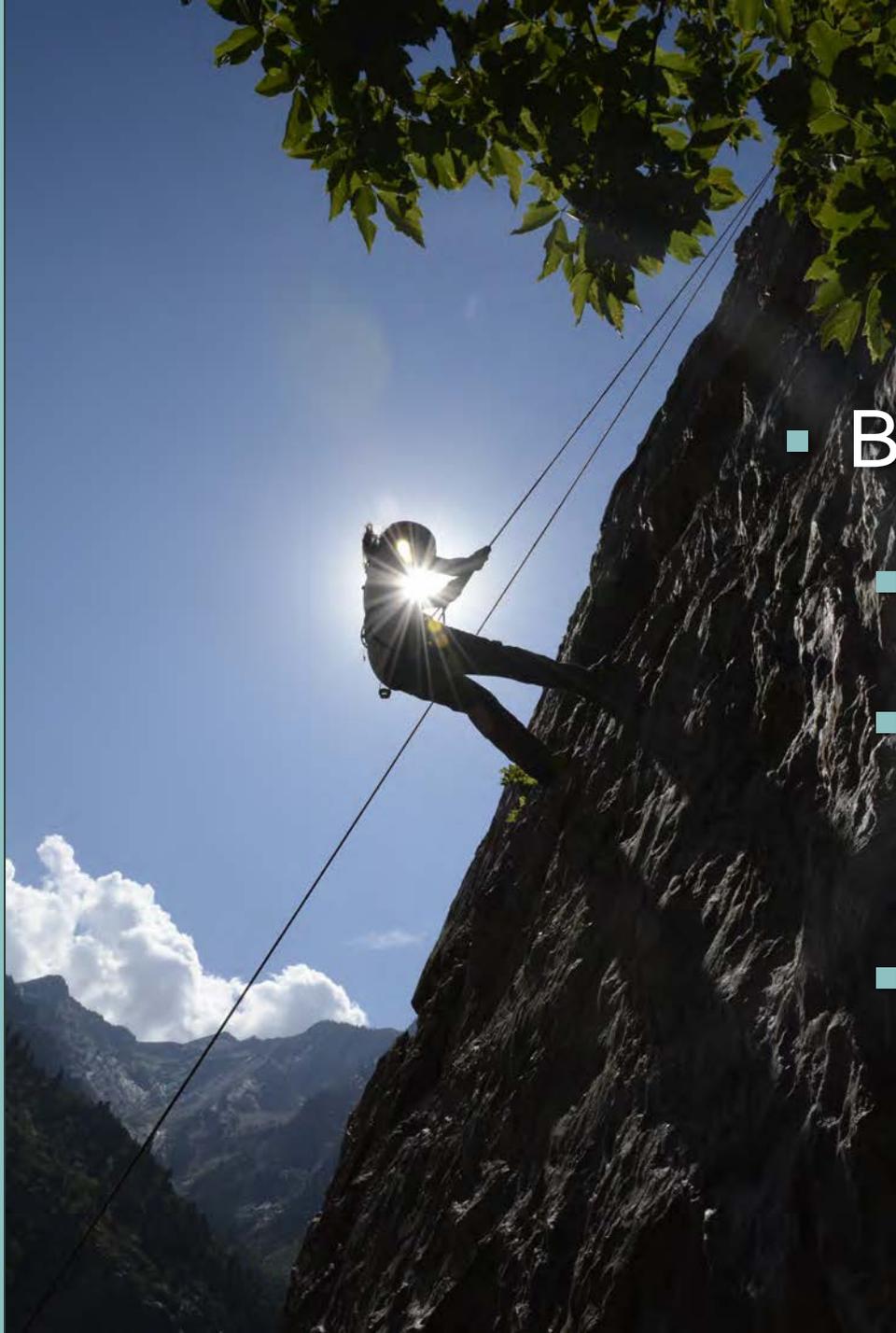




Visitor Capacity is ...

- A necessary precursor to making **allocation** decisions.
 - Local conditions
 - Agency guidance
 - Desired conditions
 - Professional judgment





Visitor Capacity is ...

- Based on desired conditions.
- Iterative process
- Considers social & biophysical factors
- Varies...



Visitor Capacity is...

Based on a variety of inputs:

- Research
- Professional judgment, staff experience, expertise
- Lessons learned from comparable areas
- Public input
- Consistent with laws and policies (NEPA)

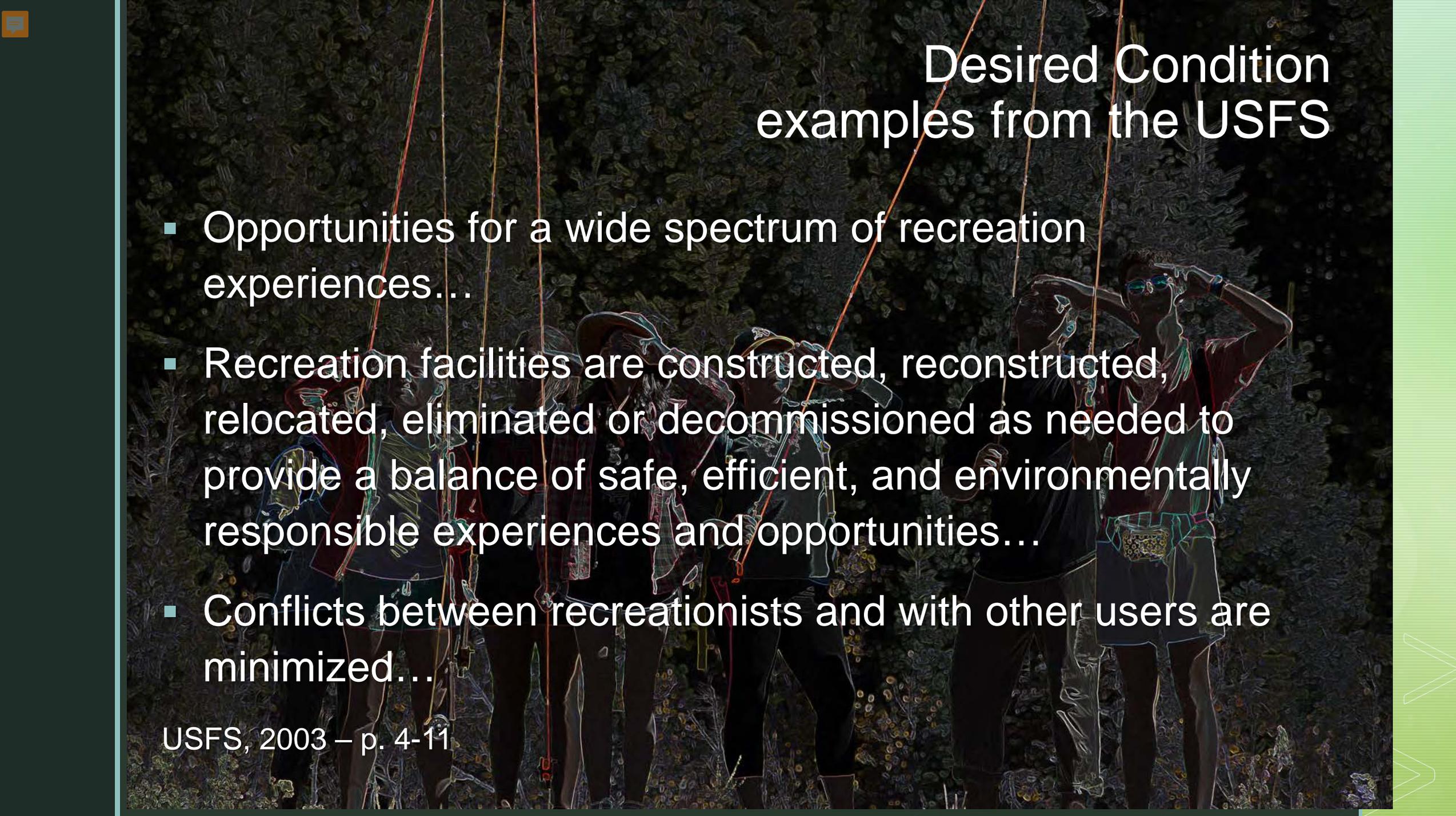


▸ Terms and Definitions...

- **Desired conditions** = resources, settings, and visitor experiences

- Character
- Condition
- Quality



A group of people are rappelling down ropes in a forest. The ropes are orange and yellow, and the people are wearing harnesses and helmets. The background is a dense forest with green foliage.

Desired Condition examples from the USFS

- Opportunities for a wide spectrum of recreation experiences...
- Recreation facilities are constructed, reconstructed, relocated, eliminated or decommissioned as needed to provide a balance of safe, efficient, and environmentally responsible experiences and opportunities...
- Conflicts between recreationists and with other users are minimized...

Terms and Definitions...

Indicators

- Track condition
- Assess progress at attaining desired conditions



▸ What makes a good indicator?

- Connected to visitor use
- Importance
- Sensitive to change
- Reasonable
- Reliable

Examples:

- Number of trail encounters with other groups per day
- Number of visitor created trails that access a stream per mile of stream
- Number of visitors that travel beyond .25 miles from a trailhead



Terms and Definitions...

- **Thresholds**
 - Management decisions on minimum acceptable condition for indicators...





Pre-requisites for defining visitor capacity...

- Need a clear statement of desired future conditions to include:
 - Goals describing resource conditions to be sustained over time
 - Definition on current amount and type of use
 - Goals defining the experience to be sustained over time



Visitor Use Level =



- levels of use,
- types of use,
- timing of use,
- location of use, and behaviors/activities

What we look for in developing visitor capacity ...



Facility Capacity



- Restrooms...
- Parking lots
- Trailheads
- Roads
- Campgrounds
- Lodging

Physical Capacity



- Canyons
- Cliffs
- Water surface
- Shorelines

Ecological Capacity

Sensitive areas that require special protection



L. Chamberlain



- Threatened & endangered species
- Riparian areas
- Soils
- Water quality

▸ Social Capacity

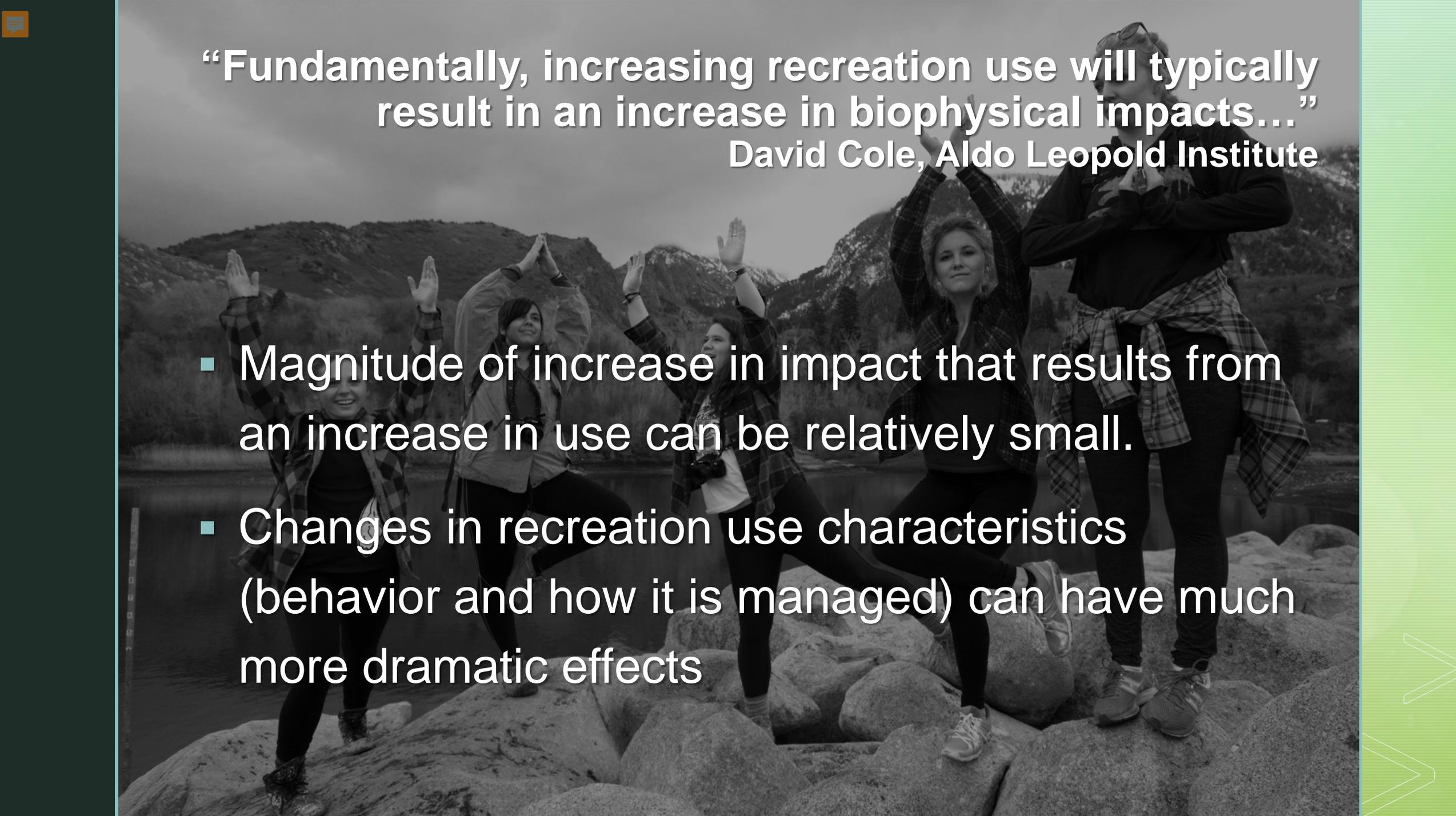


- Encounters
- Crowding
- Behavior

Relationship between the Amount of Visitor Use & Biophysical Impacts

- Biological and physical impacts (biophysical attributes)





“Fundamentally, increasing recreation use will typically result in an increase in biophysical impacts...”

David Cole, Aldo Leopold Institute

- Magnitude of increase in impact that results from an increase in use can be relatively small.
- Changes in recreation use characteristics (behavior and how it is managed) can have much more dramatic effects



Areal Extent of Impact / Intensity of Impact

- Rely on logic, professional judgment, and based on an understanding of how recreationists use an area
- Infrastructure, management of the area
- Environmental features
 - Distribution of attractions
 - Ease of access
 - Durability of sites
 - Ecological attributes (fragile etc.)



Information Needs Relative to Biophysical Impacts

- Number of users
- Type of use
- Frequency of use
- Type of impacts of concern
- Regional availability of recreation experiences
- Management actions / infrastructure
- Monitoring (additional resources needed)

Recreation Use and Impacts to Wildlife



“the number of visitors cannot be considered in isolation from species requirements and habitats, population dynamics, setting attributes, and type of recreational use” (Hammitt et al. 2015).

Understanding how recreational access and the level of visitor use may affect wildlife conservation objectives.

Recreation Use and Impacts to Wildlife: Strategies and Tactics

Reduce use of the entire area

Modify the location of use within the problem areas

Modify the timing of use

Modify type of use / visitor behavior

Modify visitor expectations

Increase the resistance of the resource

Maintain or Rehabilitate the resource

▸ Social Capacity



Descriptive



Prescriptive

▸ Social Capacity: Crowding

Personal Characteristics of Visitors

- Visitor motivations
- Expectations of crowding
- Level and type of past experience

Characteristics of Other Visitors Encountered

- Mode of travel
- Behavior
- Perceived similarity

Situational Variables

- Type of recreation setting
- Location within the setting
- Site design features

Visual representations or simulations...



Conflict...

Types of use present, rather than numbers of visitors

Visitor or groups goal or expectation is not met, or is diminished

Motorized vs non-motorized

Hikers and mountain bikers

Skiers and snowboarders

And others...



▸ Social Norms

Vary by setting

Timing of use

Many other factors



Management Actions

- Implementation, after a problem analysis to maintain or restore desired conditions

Las Cuencas del Wasatch



Bienvenidos a las cuencas del Wasatch. Estos cañones y montañas son una fuente principal de agua potable para el valle de Salt Lake. Utilizado como área de recreación por millones de visitantes anualmente, la cuenca abarca más de 185 millas cuadradas.

Se incluyen siete drenajes primarios, veinte lagos y depósitos, tres áreas de llano, una reserva de naturaleza, y cuatro lugares para esquiar que se comparan con los mejores del mundo.

Las Montañas del Wasatch - Islas de la Vida

Estas hermosas montañas son una isla de la vida en el borde del desierto del Great Salt Lake. Sin las montañas y la precipitación que reciben, nuestras ciudades y nuestra actual calidad de vida no existirían en este ambiente del desierto. Es muy importante que todos protejamos nuestras cuencas. Las cuencas no se pueden substituir una vez que sean destruidas. *¡Recuerda, el agua que ves en estas cuencas hoy, tu la podrías tomar mañana!*



Con algunas montañas que poseen más de 3,500 metros de elevación, esas montañas ocultan sus picos y guardan la precipitación que ocurre.

Las regiones para que están cerca del agua, nuestra vegetación y la tierra que guardan nuestra agua y tierra están para la especie humana y la naturaleza.

Los lagos y los depósitos en la cuenca del Wasatch guardan nuestra agua y tierra para nuestra vida actual.

Agua limpia significa que las plantas y los animales que viven aquí estarán sanos y nuestra fuente de agua potable seguirá siendo pura.

Si el agua limpia, nuestra calidad de vida sufre y nuestras oportunidades de disfrutar nuestra área de recreación disminuyen.

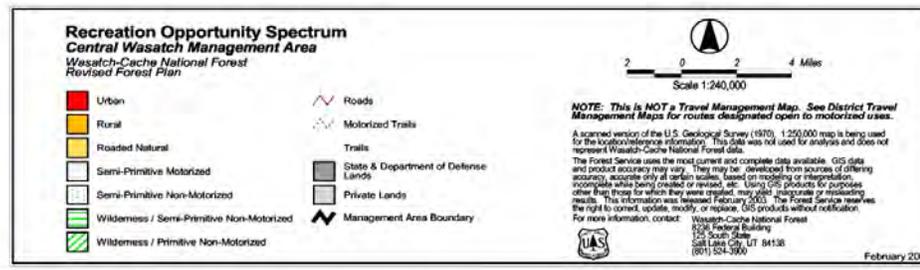
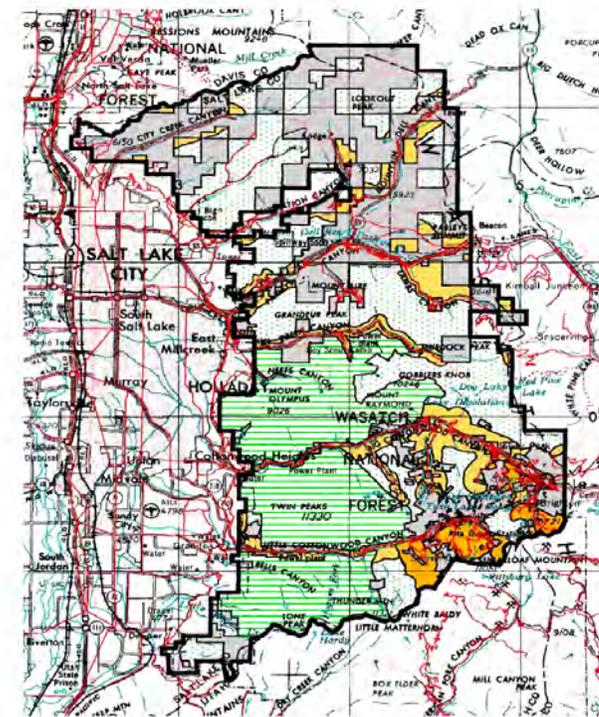
Keep It Pure™

De las Montañas a la Grifla

Salt Lake City Public Utilities - Watershed Management

Recreation Opportunity Spectrum (ROS)

- Three settings: Physical, social, and managerial
- Continuum of six classes
 - Primitive
 - Backcountry (Semi-primitive)
 - Middle country (Rural Natural)
 - Front country (Rural Developed)
 - Rural (Suburban)
 - Urban



USFS ROS

Managerial

Social

Physical

ROS CLASS	DESCRIPTION	
	Setting	Characteristics
Wilderness/Primitive	Managerial	Few signs, few encounters with rangers, travel on foot and horse, no motorized or mechanized travel allowed
	Social	<p>Local adjustment: High Uintas Wilderness may have the sights and sounds of commercial flight routes near by or directly over the Wilderness</p> <p>Off Trail System: Very Low encounters with other parties</p> <p>Trials: Low encounters with other parties</p> <p>Camp Spacing: Should not be closer than one mile apart</p> <p>Opportunities: Closeness to nature; self-reliance, moderately-high to high challenge and risk; little evidence of people off of trails</p>
Wilderness/Semi-Primitive Non-Motorized	Physical	<p>Theme: Remote (less than 3 miles from motorized use), predominately unmodified, naturally evolving landscape character</p> <p>Location: MPC 1.2 & 1.3, High Uintas MPC 1.1 - 1.3, Mt. Olympus, Twin Peaks, Lone Peak, Deseret Peak, Mount Naomi and Wellsville Mountain Wildernesses</p> <p>Infrastructure: <i>Access</i> – non-motorized trails are present <i>Fishing Sites</i> – rivers and lakes <i>Camp/Picnic Sites</i> – not developed or defined, leave no trace <i>Sanitation</i> – no facilities, leave no trace <i>Water Supply</i> – undeveloped natural <i>Signing</i> – minimal, constructed of rustic natural materials <i>Interpretation</i> – through self discovery and at trailheads <i>Water Crossing</i> – minimal, some bridges made of natural (non-dimensional) materials may exist, but are rare</p> <p>Vegetation: Natural, no treatments except for fire use</p>
	Managerial	Few signs, few encounters with rangers, travel on foot and horse, no motorized or mechanized travel allowed
	Social	<p>Off Trail System: MPC 1.1 in Mt. Olympus, Twin Peaks, Lone Peak, Deseret Peak, Mount Naomi, and Wellsville Mountain Wildernesses Low encounters with other parties</p> <p>Trials: MPC 1.1 in Mt. Olympus, Twin Peaks, Lone Peak, Deseret Peak, Mount Naomi, and Wellsville Wildernesses –Low encounters with other parties MPC 1.2, 1.3 in High Uintas, Mt. Olympus, Twin Peaks, Lone Peak, Deseret Peak, Mount Naomi and Wellsville Mountain Wildernesses –Low encounters with other parties</p> <p>Local Adjustment: High Uintas, Mt. Olympus, Twin Peaks, Lone Peak, Deseret Peak and Mount Naomi, and Wellsville Wildernesses all have the sights and</p>

▸ Questions



A person wearing a grey tank top, dark shorts, and an orange helmet is climbing a steep, grey rock face. They are secured by a red rope. The background shows a lush green valley with dense trees and distant mountain peaks under a clear blue sky.

Example of Guidelines in Identifying Visitor Capacity

- Strategically manage visitor use

Part of a large process...



Steps:

1. Clarify project purpose and need.
2. Review the area's purpose and applicable legislation, agency policies, and other management direction.
3. Assess and summarize existing information and current conditions.
4. Develop a project action plan.

Outcome: Understand why the project is needed, and develop the project approach.

Steps:

5. Define desired conditions for the project area.
6. Define appropriate visitor activities, facilities, and services.
7. Select indicators and establish thresholds.

Outcome: Describe the conditions to be achieved or maintained and how conditions will be tracked over time.

Steps:

8. Compare and document the differences between existing and desired conditions, and, for visitor use-related impacts, clarify the specific links to visitor use characteristics.
9. Identify visitor use management strategies and actions to achieve desired conditions.
10. Where necessary, identify visitor capacities and additional strategies to manage use levels within capacities.
11. Develop a monitoring strategy.

Outcome: Identify strategies to manage visitor use to achieve or maintain desired conditions.

Steps:

12. Implement management actions.
 13. Conduct and document ongoing monitoring, and evaluate the effectiveness of management actions in achieving desired conditions.
 14. Adjust management actions if needed to achieve desired conditions, and document rationale.
- Outcome:** Implement management strategies and actions, and adjust based on monitoring and evaluation.

- (1) Determine the Analysis Area(s)
 - Geographically
 - Notable Developments
 - New management tools
 - Limiting attributes



(2) Review existing direction & knowledge...

- Law & policies
- Prior applicable planning (desired conditions)
- Review of existing conditions
- Review of indicators, thresholds, objectives



- **Desired Condition:** Preserve naturalness while allowing recreational use

Indicator: Percentage of turbidity, nutrients, bacteria, and temperature in lakes near campsites

Threshold: There is no measurable change over baseline data in all zones.

- ▶ **Desired Condition:** Preserve opportunities for solitude.

Indicator: Number of encounters with other groups per zone per day

Threshold: Individual groups encounter no more than 1 other group in the pristine zone, 7 other groups in the primitive zone, and 10 other groups in the semi-primitive zone

▸ (3) Select Limiting Attributes ...

- Indicators related to the limiting attributes
- Season, type of use, and number of participants



▸ Limiting attributes...

- Identifying the attribute(s) that most constrains the area's ability to accommodate visitor use...



Limiting attributes...

- Encounter rates
- Safety
- Declining resource conditions
- Existing visitor services (e.g., shuttle bus)
- Facility infrastructure (e.g., parking spaces)



(4) Identify Capacity

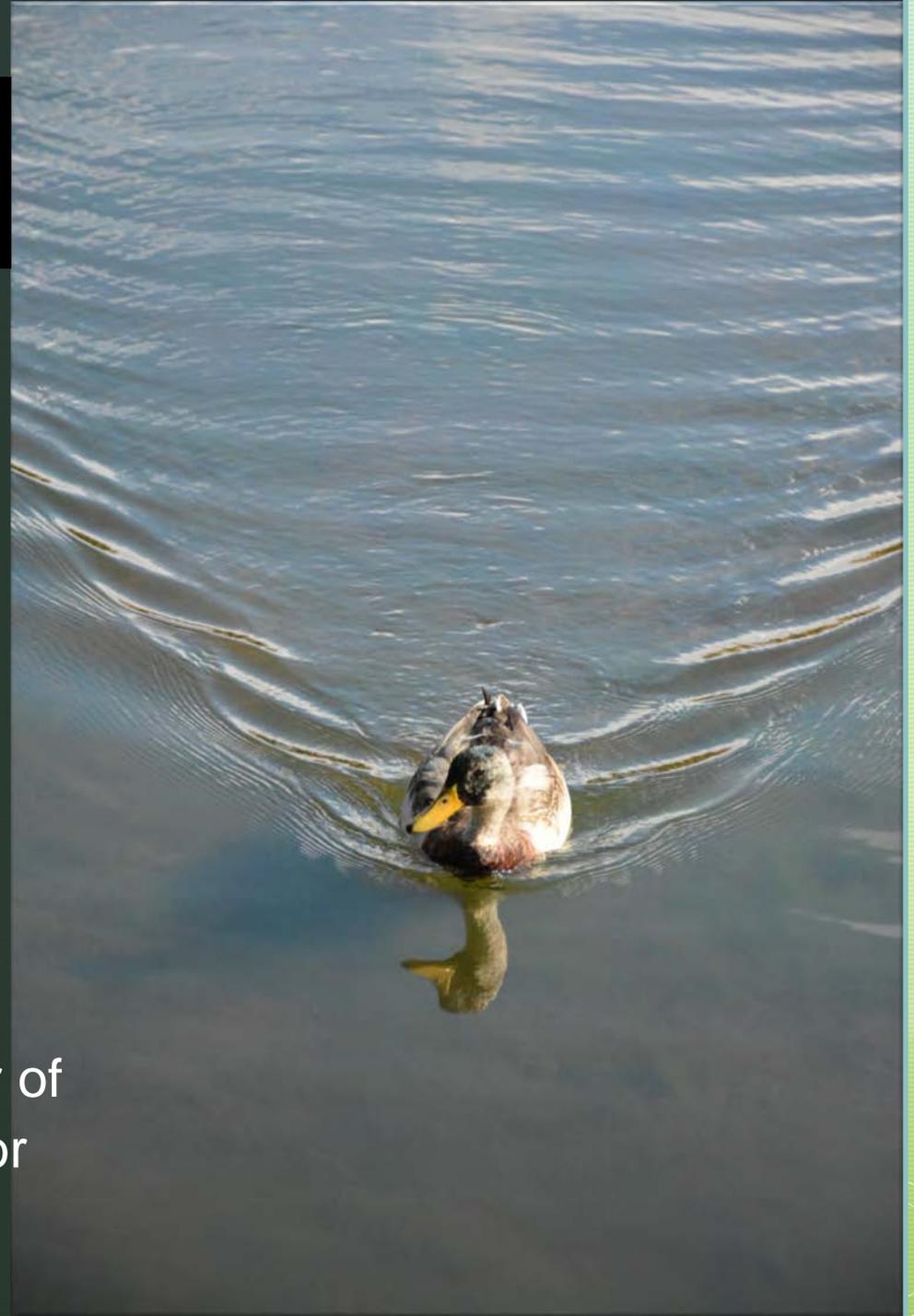
- Identify geographic area where capacity will be implemented
- New developments?
- New management tools
- Check on limiting attributes



Methods to achieving goals...

Less obtrusive first:

- Vegetative screening,
- Distributing use,
- Managing physical access and infrastructure,
- Shuttle or transportation systems,
- Changes in staffing levels,
- Assigning campsites, regulating number of outfitters, guides, transporters, zoning for types of uses, etc.



Lessons from Research

- What are acceptable resource and social conditions?
- Do not always need to establish a visitor capacity
- Monitoring



Implementation...

Visitor Capacity Management
Strategies and Actions

1. Modify type of use
2. Modify visitor behavior
3. Modify visitor attitudes and expectations
4. Modify the timing of use
5. Modify the location of use
6. Increase the ability of sites to handle use
7. Modify the spatial distribution of use
8. Reduce use or increase the supply

Implementing allocations...

- Physical separation-trail for certain types of users only
- Spatial or temporal – skiing part of the week, snowmobiling the rest; one way trails
- Historic use-capacity allocated based on % of categories of use
- Limited entry-allocate a certain number of groups or people per day; limit overnight use; designate campsites



What do we know about current visitors?

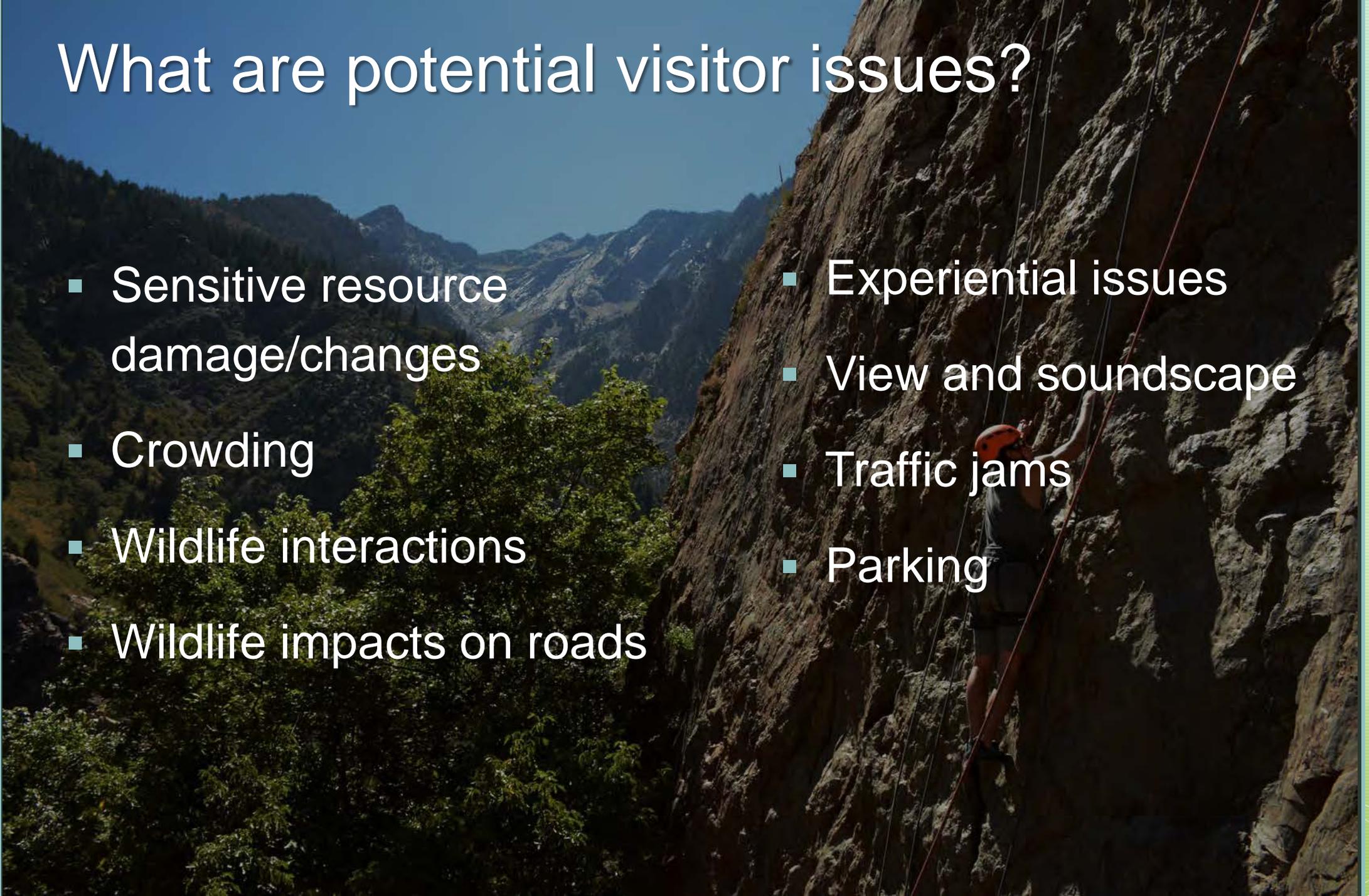
- Studies completed 2014-15 (summer, fall, winter, spring)
 - Summer, Fall, Winter, Spring
 - Little, Big Cottonwood, Mill Creek, Parleys & Wasatch Back
 - Demographics, visits per year, visitor satisfaction, recreational activities, number of encounters, places displaced, transportation, etc.

Things that may influence visitor use:

- Increasing or removing parking areas
- Improved accessibility to certain sites
- Trail conditions
- Wildlife / nature viewing opportunities
- Snow cover
- Transportation efficiency (bus, shuttles, etc.)
- Weather
- Signage (adding or removing)
- Improving camping/camping facilities

What are potential visitor issues?

- Sensitive resource damage/changes
- Crowding
- Wildlife interactions
- Wildlife impacts on roads
- Experiential issues
- View and soundscape
- Traffic jams
- Parking



What are the visitor use related current or future planning efforts?

- Visitor Survey Monitoring every 5 years
- Forest Plan Biennial Monitoring Report (every two years)



Current management strategies...

- Partnerships
- Permits



Parting thoughts...

Level of use is not necessarily the most important management concern...

Regular monitoring is essential.

Visitor information ...

Set goals & objectives to maintain a range of desired recreation experiences / benefits.

Challenging task...





Thank You!



Kristin Murphy, Deseret News 2016

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