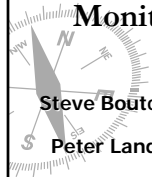




## Monitoring Wilderness Character

Troy Hall  
 Steve Boutcher – USFS Wilderness & Wild and Scenic  
 River Program  
 Peter Landres – Aldo Leopold Wilderness Research  
 Institute



## Overview

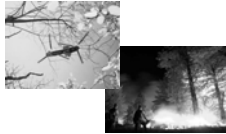
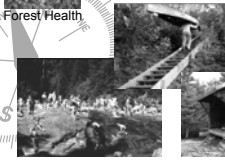
- ▶ What & Why?
- ▶ How? Conceptual Development
- ▶ How? Implementation
- ▶ Future?



2

## So what – Why should we care about Wilderness character?

- Improve stewardship: identify and communicate what improvement is needed



## Wilderness Act of 1964

- Statement of Policy, Section 2(a):  
 “a National Wilderness Preservation System...shall be administered...so as to provide for the protection of these areas, *the preservation of their wilderness character*”



- Use of Wilderness Areas, Section 4(b):

“each agency administering any area designated as wilderness shall be responsible for *preserving the wilderness character of the area*”

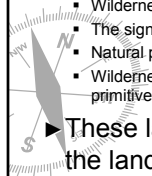
4

## What is “Wilderness Character”

- ▶ Few would agree on a precise definition, but most would agree on general concepts:

- Wilderness is free-willed
- The signs of modern humans are minimal
- Natural processes are allowed to flourish
- Wilderness recreational experiences should include solitude, primitive conditions, risk and self-exploration

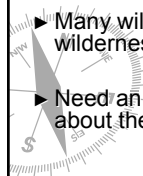
- ▶ These lands are managed in contrast to the lands around them.



5

## Statement of Need

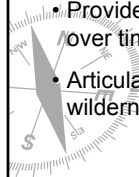
- ▶ The phrase “wilderness character” has never been sufficiently defined to monitor our success
- ▶ Managers need a tool to assess their success at fulfilling mandate to preserve wilderness character
- ▶ Many wilderness managers sense a decline in the wilderness character
- ▶ Need an integrated view of how what is unique about these areas is changing over time



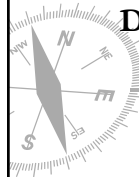
6

## What will monitoring Wilderness Character accomplish?

- Improve accountability
- Guard against legal vulnerability
- Provide legacy information that will endure over time when personnel change
- Articulate a positive vision for what wilderness is instead of what it is not



7



## Defining and Measuring Wilderness Character

## USFS Wilderness Monitoring Committee

- ▶ National team
- ▶ Primarily field and forest wilderness managers
- ▶ Representatives from the other 3 wilderness agencies



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## What is “Wilderness Character”

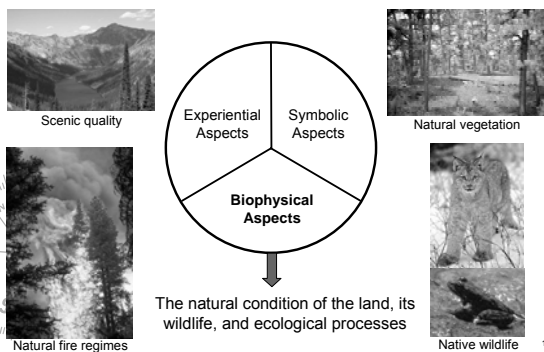
*No definition in the Wilderness Act and no legislative history on the meaning of the phrase.*

- Character
  - ▶ “the combination of qualities or features that distinguishes one person, group, or thing from another” – American Heritage Dictionary
  - ▶ “The aggregate of distinctive qualities” – Webster’s 3<sup>rd</sup> New International Dictionary



10

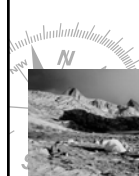
## WHAT IS WILDERNESS CHARACTER?



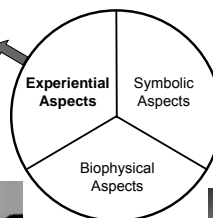
11

## WHAT IS WILDERNESS CHARACTER?

The personal benefits and meanings people derive from their experiences in wilderness



Experience of nature, free from constraints of culture



Recreation and the use of primitive skills



Personal challenge and self-discovery

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### WHAT IS WILDERNESS CHARACTER?

The meanings that individuals and society derive from the existence of wildernesses

Interconnectedness

Humility and restraint

Part of something larger than the self

13

### THERE ARE UNIQUE ASPECTS OF WILDERNESS CHARACTER IN EACH WILDERNESS

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### What is "Wilderness Character"

- Wilderness character, as defined by WMC:
  - The combination of biophysical, experiential, and symbolic qualities that distinguishes wilderness from all other lands

15

### WILDERNESS CHARACTER IS STRONGLY INFLUENCED BY STEWARDSHIP DECISIONS AND ACTIONS

Stewardship decisions and actions

Imposing group # limits, permits, and designated campsites

Restoring fire regimes

Building structures

16

### PURPOSE OF THIS MONITORING:

Improve wilderness stewardship by providing information on trends in key national indicators that tie directly to the statutory requirements of the 1964 Wilderness Act, subsequent wilderness legislation, and Forest Service wilderness policy to "preserve wilderness character."

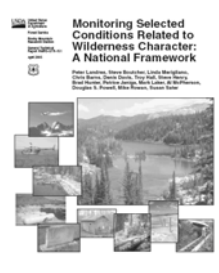
### HOW TO MONITOR WILDERNESS CHARACTER?

"That's why I never walk in front."

18

## Approach Used

- ▶ Produced "Monitoring Selected Conditions Related to Wilderness Character: A National Framework"
- ▶ Appointed SMEs for refinement of indicators and development of protocols
- ▶ Developed Technical Guide for Monitoring Selected Conditions Related to Wilderness Character



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## Key concepts for this monitoring

- Primary purpose is to improve wilderness stewardship
- Provides a whole-wilderness assessment of trends in wilderness character (stable, improving, or degrading)
- Uses nationally consistent indicators that are meaningful at the local level
- Indicators selected to be relevant, credible, cost-efficient (no new field data will be collected)
- Wildernesses are not compared to one another and no national standards are developed

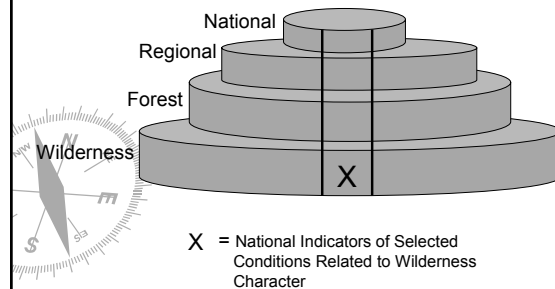
20

## Self-Imposed Guidelines/Sideboards

- ▶ Protocol will be applied in every wilderness
- ▶ Evaluates changes over time within a wilderness, not in comparison to other wildernesses or to a benchmark
- ▶ Relies on data which already exist in corporate databases or can be acquired at minimal cost
- ▶ Results are to be locally meaningful at the level of the wilderness; but not at a project scale
- ▶ Monitor agency's success at "preserving wilderness character" - not the full range of resources covered by other legislation or management needs

21

## THE "WEDDING CAKE" MODEL OF NATIONAL INDICATORS



22

## What to monitor

Select national monitoring indicators for selected conditions and actions, based on these criteria:

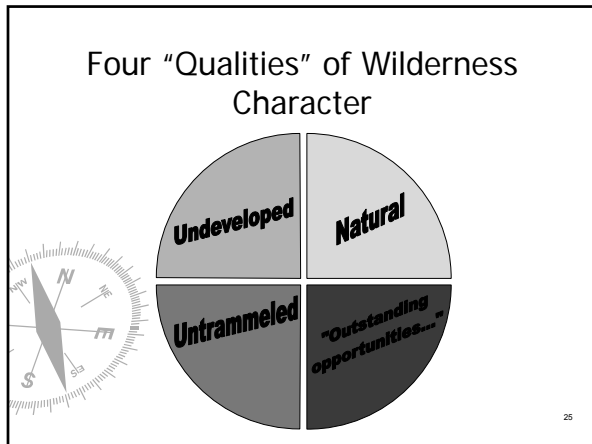
- Provide understanding and insight about the specific quality of wilderness
- Are scientifically credible, allowing assessment of long-term trends
- Are cost-effective, using data that are already being collected or are available nationally

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## What to monitor?

*First*, use Definition of Wilderness, Section 2(c), from the 1964 Wilderness Act to select "qualities" of wilderness that define management goals directly related to wilderness character in **every** wilderness

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### What to monitor?

- "Untrammeled"
  - "...an area where the earth and its community of life are untrammeled by man..." and "generally appears to have been affected primarily by the forces of nature."

26

### What to monitor?

- "Untrammeled"
- "Natural"
  - "...is protected and managed so as to preserve its natural conditions."

27

### What to monitor?

- "Untrammeled"
- "Natural"
- "Undeveloped"
  - "...an area of undeveloped Federal land...without permanent improvement or human habitation" and "where man himself is a visitor who does not remain."

28

### What to monitor?

- "Untrammeled"
- "Natural"
- "Undeveloped"
- "Outstanding opportunities for solitude or a primitive and unconfined type of recreation"

29

### What to monitor?

Second, monitor only a selected set of wilderness conditions and stewardship actions related to these qualities:

- Monitor *biophysical elements* such as trails, campsites, structures, dams, air pollutants, non-indigenous invasive species
- Monitor *stewardship actions* that directly or indirectly affect these qualities such as special use permits, authorizations for suppressing fire, administrative use of motorized equipment, visitor restrictions

30

## What would YOU monitor?

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## Undeveloped Quality

Wilderness is essentially without permanent improvements or modern human occupation

**Measures:**

- Physical evidence:
  - buildings
  - roads and trails
  - dams
  - fixed equipment sites
- authorized use days of motorized equipment and mechanical transport

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## Untrammelled Quality

Wilderness is essentially unhindered and free from modern human control or manipulation

**Measures:**

- # of actions that remove, introduce, or modify vegetation
- # of actions that remove or introduce fish and wildlife, and modify habitat
- # of actions that manipulate soil or water resources
- Percent of natural fire starts that are suppressed

33

## Natural Quality

Wilderness ecological systems are substantially free from the effects of modern civilization

**Measures:**

- Air pollutants (ozone – N100 and W126; wet deposition – sulfur and nitrogen)
- # dams on perennial streams
- % area with nonnative invasive species
- # species at risk (G-1 to G-3 listed species)

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## “Outstanding Opportunities” Quality

Wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation

**Measures:**

- Solitude
  - # acres more than ¼ miles from system road or trail;
- Wilderness visitation
  - Visitation
- Primitive recreation -- index of creature comforts; # developed trail miles (classes 3-5)
- Unconfined recreation -- index of restrictions on visitor behavior

35

## 3 years later...Now that we have indicators, what do we do?

36



## Database construction

The screenshot shows a database management application with a table of wilderness data. The table has columns for 'Wilderness Name', 'Type', 'Level', and 'Value'. The 'Wilderness Name' column contains entries like 'COMPTON PEAK WILDERNESS'. The 'Type' column has values like 'FOREST' and 'WET'. The 'Level' column has values like '10' and '11'. The 'Value' column has values like 'MEMBERS' and 'FEET'. There is also a 'Map' button and a 'Legend' section.

43

The screenshot shows a detailed record view for a building. The record is for 'JIMLY PROCTOR SHELTER'. It includes fields for 'Building ID', 'Name', 'Address', 'Operational/Energy', 'Acquisition', and 'Accessibility'. There are also sections for 'Property Type', 'Category/Subcategory', 'Managing Org', 'Ownership', 'Status', 'Remarks', 'List Condition', 'Year Constructed', 'Maintenance Level', 'Historical Status', and 'Facilities Condition'. The 'Facilities Condition' section shows 'Date' as 3,300.00, 'ORV' as 12,113.02, 'FOON' as 00, and 'FOR' as POOR.

## Infra-WILD Wilderness Character Module

The screenshot shows the 'Infra-WILD Wilderness Character Module' interface. It displays a list of wilderness areas and buildings. The 'Buildings' section is expanded, showing a table with columns for 'Building ID', 'Name', and 'Value'. The buildings listed include 'PACK CREEK TOWER', 'LAKE KATHLEEN CABIN', 'LAKE KATHLEEN WOODSHED', 'WEST FLORENCE OUTHOUSE', 'EAST FLORENCE CABIN', 'EAST FLORENCE CABIN OUTHOUSE', 'DISTR LAKE CABIN', and 'DISTR LAKE WOODSHED'. The 'Building Details' section shows details for 'PACK CREEK TOWER'.

46

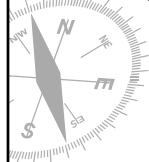
## USER SUPPORT

The screenshot shows the 'Wilderness Character Help' user support page. It contains sections for 'Untrammeled Quality', 'Monitoring Question 1: Actions that Manipulate Wilderness', 'Indicator for Question 1: Agency Actions', and 'Untrammeled Measures'. The text describes the objectives of monitoring untrammeled quality and provides guidance on how to interpret the data.

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## Who will use the info?

- ▶ Reporting for local, regional, and national audiences
- ▶ Handling the time lag
- ▶ Guarding against comparisons



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## Synthesis / Business Rules

- ▶ Have avoided condensing synthesis down to a single index or a report card
- ▶ Have developed business rules to synthesize data from the measures on up
- ▶ Will develop an assessment of whether wilderness character is stable or improving, or degrading for each wilderness



Only then, did all the king's horses and all the king's men regret not taking a first aid course of some kind.

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## Synthesizing data to assess trends in Wilderness Character

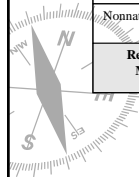
Measure	Possible Trends in the Measures									
Ozone N100	+	+	+	+	+	0	0	0	0	-
Ozone W126	+	+	0	+	0	0	0	0	-	-
Sulfur wet deposition	0	0	0	-	0	0	0	-	-	+
Nitrogen wet deposition	0	-	0	-	-	0	-	-	+	-
<b>Resulting Trend in the Indicator</b>	↑	↑	↑	↓	↓	↔	↓	↓	↓	↓



49

## Synthesizing data to assess trends in Wilderness Character

Indicator	Possible Trends in the Indicators							
Pollutants that degrade air quality	+	+	+	+	0	0	+	0
Developments that degrade rivers	+	0	+	0	0	-	-	0
Nonnative species	0	0	-	-	0	-	-	-
<b>Resulting Trend in the Monitoring Question</b>	↑	↑	↑	↓	↔	↓	↓	↓



50

## Synthesizing data to assess trends in Wilderness Character

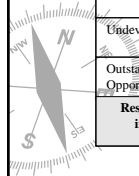
Monitoring Question	Possible Trends in the Questions					
Threats to natural conditions	+	+	+	0	0	-
Biophysical conditions and processes	+	0	-	0	-	-
<b>Resulting Trend in the Quality</b>	↑	↑	↓	↔	↓	↓



51

## Synthesizing data to assess trends in Wilderness Character

Quality	Possible Trends in the Qualities									
Untrammeled	+	+	+	+	+	0	0	0	0	-
Natural	+	+	0	+	0	0	0	0	-	-
Undeveloped	0	0	0	-	0	0	0	-	-	+
Outstanding Opportunities	0	-	0	-	-	0	-	-	+	-
<b>Resulting Trend in Wilderness Character</b>	↑	↑	↑	↓	↓	↔	↓	↓	↓	↓



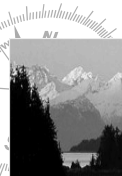
52



## Pilot Testing

## Pilot tests

- ▶ Phase I
- ▶ Phase II
- ▶ Purpose



## Reality-Imposed Guidelines/Sideboards

- ▶ Protocol will be applied in every wilderness
  - 50% of wildernesses must have data
- ▶ Relies on data which already exist in corporate databases or can be acquired at minimal cost
  - Corporate databases?
  - Local inputting of info
- ▶ Results are to be locally meaningful at the level of the wilderness; but not at a project scale
  - Jury is out
- ▶ Evaluates changes over time within a wilderness, not in comparison to other wildernesses or to a benchmark
  - We'll see

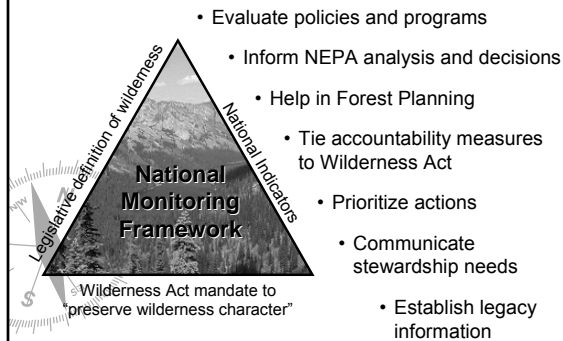
55

## How Will Results be Used?

- ▶ The essential value of this protocol is the synthesis of existing data to form a single evaluation of how wilderness character is changing over time
- ▶ This will (we hope):
  - Improve stewardship
  - Improve accountability
  - Provide legacy information
  - Articulate a positive vision of wilderness

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## How can this monitoring framework be used?



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## Taking Stock – Reflections after 3 years

## Issues

- ▶ Yin/yang
- ▶ Double dipping
- ▶ Are we monitoring effort or change?
- ▶ Are we monitoring what matters? (e.g., social trails)
- ▶ Philosophical issues of undeveloped & untrammeled

– *it's as much values as science*

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## The good & the bad

- |                              |                                    |
|------------------------------|------------------------------------|
| ▶ Concern about the resource | ▶ Existing data quality            |
| ▶ Timely (accountability)    | ▶ Staff workload                   |
| ▶ Smart leadership           | ▶ Boxes of data                    |
| ▶ Team composition           | ▶ Does this really help the field? |
| ▶ Thoughtful process         | ▶ Reification – golden numbers     |
| ▶ Peer review                | ▶ Forces outside mgt control       |
| ▶ Communication              |                                    |

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