

Presentation given at
Yosemite Visitor Capacity Symposium
February 2008

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Views of capacity...

“Can’t do it”
“Don’t need to do it”
“Just do it”

Grand Canyon

**Middle position:
“Can do it”**

- Requires care & expertise...
 - Resource
 - Professional judgment
 - Science
 - Public input

Niobrara River, Nebraska

Presentation agenda

- Concepts
- River capacities in the US
- “Short course” capacity examples:
 - Opportunities
 - Use measures
 - Indicators & standards
 - Use – impact relationships
 - Management actions

John Day River, Oregon

Concepts & definitions

Nenana River, Alaska

What type of experience?

Middle Fork Salmon, Idaho
Superimposed crowded beach

Umbrella concept vs. specific definition

Level of use beyond which impacts > standards

Niobrara River, Nebraska

Conflict vs. capacity

- Some confusion
- Resolve conflict first
- Capacities for each?

Jet boat and raft on
Upper Nenana River, Alaska



Comparing Frameworks

- Similarities > differences
- Better / worse acronyms
- Step order
- Focus on social vs. biophysical
- Focus on different likely actions
- Agency mandates / processes

Grand Canyon

Principles

- Any use creates some impact
- Impact not necessarily “damage”
- Provide opportunities by design
- Indicators & standards define opportunities
- Management actions to achieve standards
- Collaborative throughout

Main Salmon River, Idaho

Descriptive vs. evaluative information

- Descriptive: How does the system work?
 - Existing conditions
 - Management regimes
 - Use levels / user behavior
 - Impacts

Evaluative: What to provide?

- Which opportunities?
- What standards define quality?
- What “price” to meet standards?

Niobrara River, Nebraska

“Discovering” vs. establishing capacities

- Requires decisions (evaluative side)
- Part of a management equation...
- ...change a variable, change the capacity
- Consider a range
- Similar to other resource issues

Talkeetna River, Alaska

Clarifying terminology

- Capacity = “the reasoned number”
 - Approach 200, consider your options
- Use limit = “a number you enforce”
 - 201st person can't go

- Capacity = use limit = commitment?
- That's why it's “scary” to some

Niobrara River, Nebraska

Capacities are time & place-bounded

- Weaker use-impact relationships
 - Time too long (per year)
 - Place too big (entire river, park)
- Goal: appropriate scale

Lower Gorge, Grand Canyon

Niobrara example

- 480 mile river, 76 mile NSR...
- ...nearly all use in 30-mile reach
- 80% of use on Saturdays, so...
- ...annual use less important than per day use

Use limits on American rivers



Use limits commercial & private

- 25 Rivers (11 W&S)
- 19 multi-day trips
- 3 day use segments
- 3 non-boating (fishing & wildlife viewing)

Grand Canyon

“Partial” use limits

- 90 other rivers (in survey)
- 15 commercial limits + private capacities (not reached)
- 45 commercial limits only
- 30 limits on number of outfitters only

Lower Kern, California

Lower use examples

Groups / day

- Alsek – ½
- Selway – 1
- Forks of the Kern – 1 to 3
 - Salt, Arizona – 4
 - Hells Canyon – 6
 - Tuolumne – 6
- Desolation / Gray – 6
- Yampa / Green in Dinosaur – 6
 - San Juan, Utah – 6
 - Grand Canyon – 6
- Middle Fork Salmon – 7
 - Main Salmon – 8

Alsek River, Alaska

Higher use examples

Groups

- Westwater – 10 per day
- Rio Chama – 16 per weekend
- Taos Box, NM – 25 per day

People per day

- Rogue – 120
- Race Course, NM – 1,050
- Deschutes – 325 to 1,700
- Youghiogheny – 1,920
- Arkansas, CO – 600 boats/day
~ 3,600 people?

Arkansas River, Colorado

Other components

- Different opportunities (season, segment)
- Group size limits (16 private / 25 commercial)
- Number of outfitters: most rivers – 6 to 25
- Problems → freeze → reflection → “capacity”

Delta River, Alaska

How to establish a capacity...

Recreation opportunities

Which activities & where?
Upper Chattooga, NC / SC / GA

Frontcountry angling Other frontcountry recreation

Backcountry angling

Whitewater boating

Specify...social setting

- “High degree of solitude”

Alsek River

Social setting
(continued)

- Within activity differences okay
- The “art” of splitting / lumping
- Anticipate indicators / standards / actions
- Iterative

Niobrara River, Nebraska
Contrasting party scene + family tubing

Biophysical setting

Two time series photos of a campsite
Gulkana National Wild River, Alaska

NPS patrol at Deer Creek
in Grand Canyon

Management setting

How to establish a capacity...

Use measures

What use measures?

- Specify units, time, & location
- Groups or people per day at put-in
- Variations: per hour, per week, per season

Middle Fork
Salmon put-in

Hells Canyon launch, Oregon

Alternative use measures

“Pillows” at lodge

People on bear viewing
platform at one time

Flights per day

Brooks River, Katmai, Alaska

**People or
boats at one time
at an attraction site?**

Elves Chasm, Grand Canyon

How to establish a capacity...

Indicators

Indicators...

...measure important social conditions

Hells Canyon

Des chutes

Bear at Katmai National Park and campsite from Chattooga River

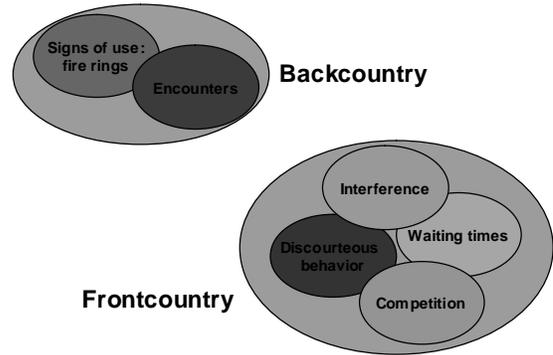
...and biophysical conditions

Criteria for Choosing Indicators

- Specific and measurable
- Correlated with management actions
- Integrates with other impacts
- Important

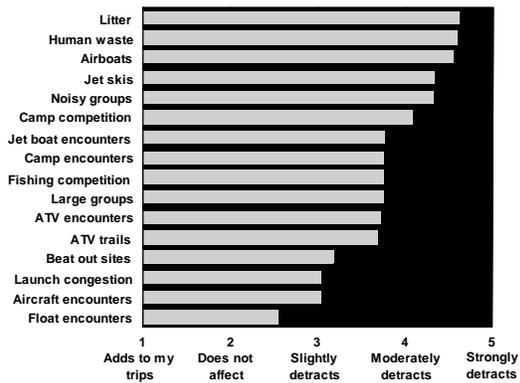
Upper Sheenjek River, Alaska

Which impacts matter?



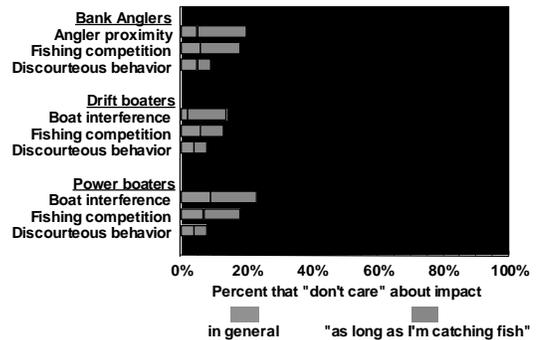
Choosing indicators: Science can help

Which impacts detract more on Gulkana River?



Choosing indicators

Percent "don't care" – Kenai River



Crowding

Did you feel crowded by other visitors today?
1 2 3 4 5 6 7 8 9

Not at all Crowded	Slightly Crowded	Moderately Crowded	Extremely Crowded
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Percent feeling crowded: 3 or higher

Rules of thumb:

Under 35%	No crowding
35 to 50%	"Low normal"
50 to 65%	"High normal"
65 to 80%	"Over capacity"
Over 80%	"Greatly over"

Perceived Crowding

- Simple question
- Intuitive but coarse
- Compare to other resources, "rules of thumb"
- Compare sub-areas; identify "problems"

Main Salmon, Idaho

How to establish a capacity...

Standards

Standards
...define how much is acceptable
for a high quality opportunity

Selway River, Idaho

Example backcountry standards

(several Alaskan rivers)

- River encounters: low (< 3 to 5 per day)
- Camp sharing: none in primitive
- Camp encounters: 0 to 10% of nights
- Camp competition: 10 to 20% of sites
- Fishing competition: 10 to 30% of stops

Talkeetna River, Alaska

Kenai River standards

“Boat interference”
25% of the time

“Angler proximity”
One rod length

Brooks River standards

Different by season
Different by platform
15-20 regardless of size

Sources for establishing standards

- Legal or policy mandates
- Professional judgments
- Science (biophysical, social)
- Public involvement

Selway River, Idaho

How to establish a capacity...

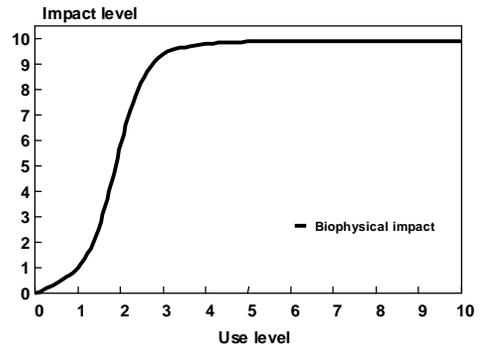
Use-impact relationships

“We don’t know much about these”

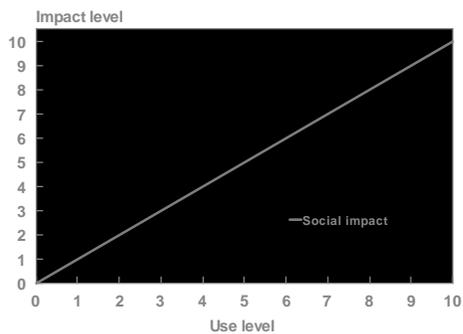
“You know more than you think”

“If you don’t, get busy”

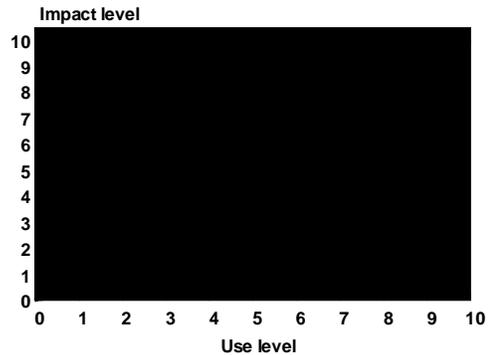
Use vs. biophysical impacts

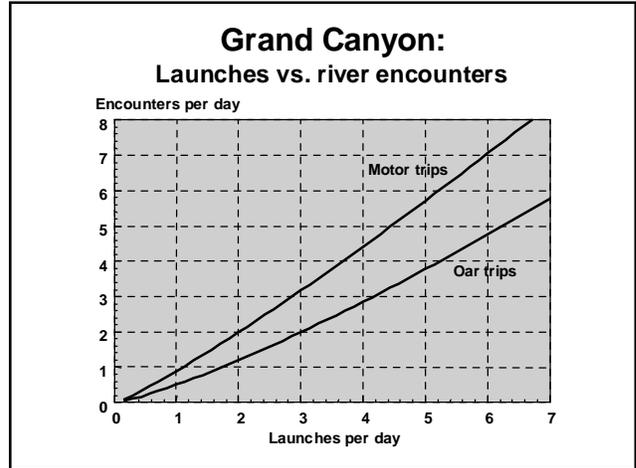
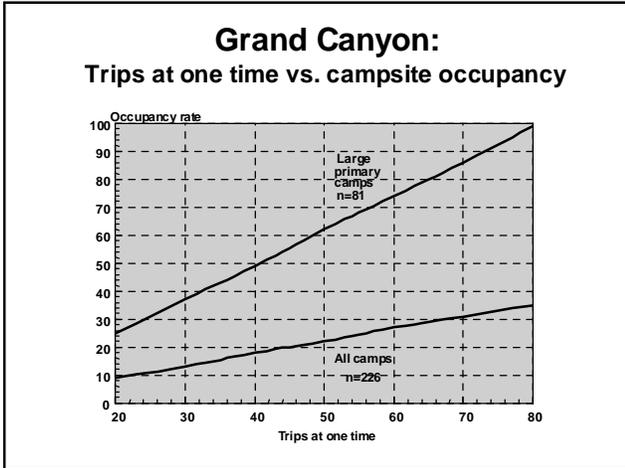


Use vs. social impacts



Choosing a use limit





How to establish a capacity...
Management actions

- ### Categories of management actions
- Develop & harden
 - Restore & clean-up
 - Educate & regulate behavior
 - Use limits
- Chattooga River, South Carolina / Georgia

Develop & harden
"Technical" – appropriate?

Rehab projects and
fencing to redirect use

Upper Kenai, Alaska

Steel grate boardwalks

Lower Kenai, Alaska

Restore & clean-up

- Biophysical impacts
- Costs

Delta River, Alaska

Educate & regulate
Type of use, not amount of use

Carry out human
waste systems

Stoves only;
tarp under table

Fire pans

Dishwater and hygiene

Education

Persuasion is complex
Change attitudes or behavior?

Use limits

- Powerful tool – some impacts
- Implementation important
- Public support?

Capacity on the Youghiogeny

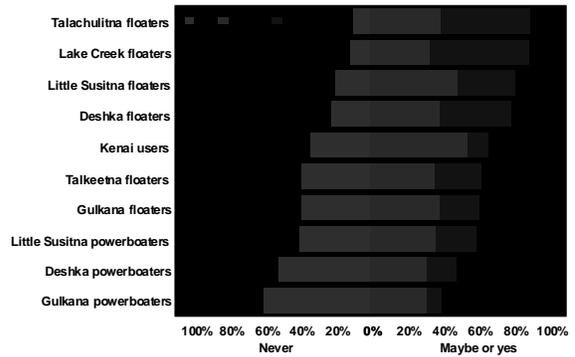
- People per half hour at put-in on weekends
- Theoretical daily limit – rarely exceeded
- Distributes peak use

Capacity on the McCloud

- 10 anglers at one time
- Self-regulating
- “Centerpiece” of management

McCloud River, California

Public support for use limits Several Alaska rivers



Indirect use limits

- Parking lot size
- Ticket illegal vehicles

State Parks on Kenai

Pit River, California

Group size limits

- Camp expansion
- Attraction site crowding

Middle Fork Salmon, Idaho

Delta River, Alaska

Capacity at Boundary Waters

- Multiple-access points
- Trailhead + group size limits
- Spread out use

Boundary Waters Canoe Area, MN

Final thoughts

- Populations continue to grow
- “They aren’t making any more [special places]”
- Capacities are important tool
- If capacities...the sooner, the easier
- Don’t save as a “last resort” – use up flexibility
- Hard to turn back clock
- A “good” capacity is a “line in the sand”...
- ...public will rally / defend the line

Main Salmon River, Idaho

Questions & Comments