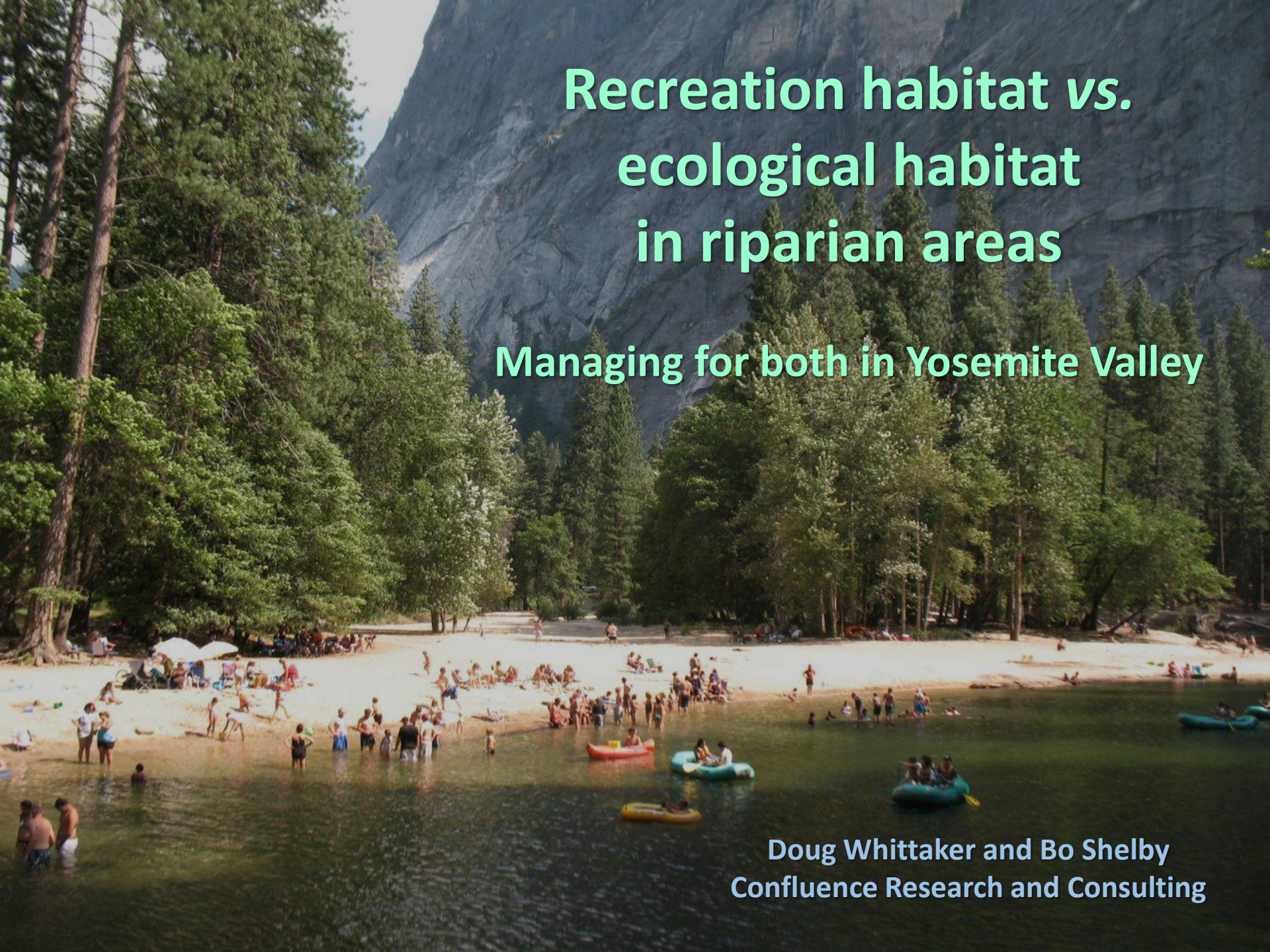


Recreation habitat vs. ecological habitat in riparian areas

Managing for both in Yosemite Valley

Doug Whittaker and Bo Shelby
Confluence Research and Consulting



Riparian

/rī-per-ē-ən/

adjective

Relating to or situated on the banks of a river.



Recreation habitat

/re-krē-ā-shən hab-ə-tat/
noun

The natural environment of a person
who enjoys outdoor leisure activities



Merced River in Yosemite Valley



Popular park





Development

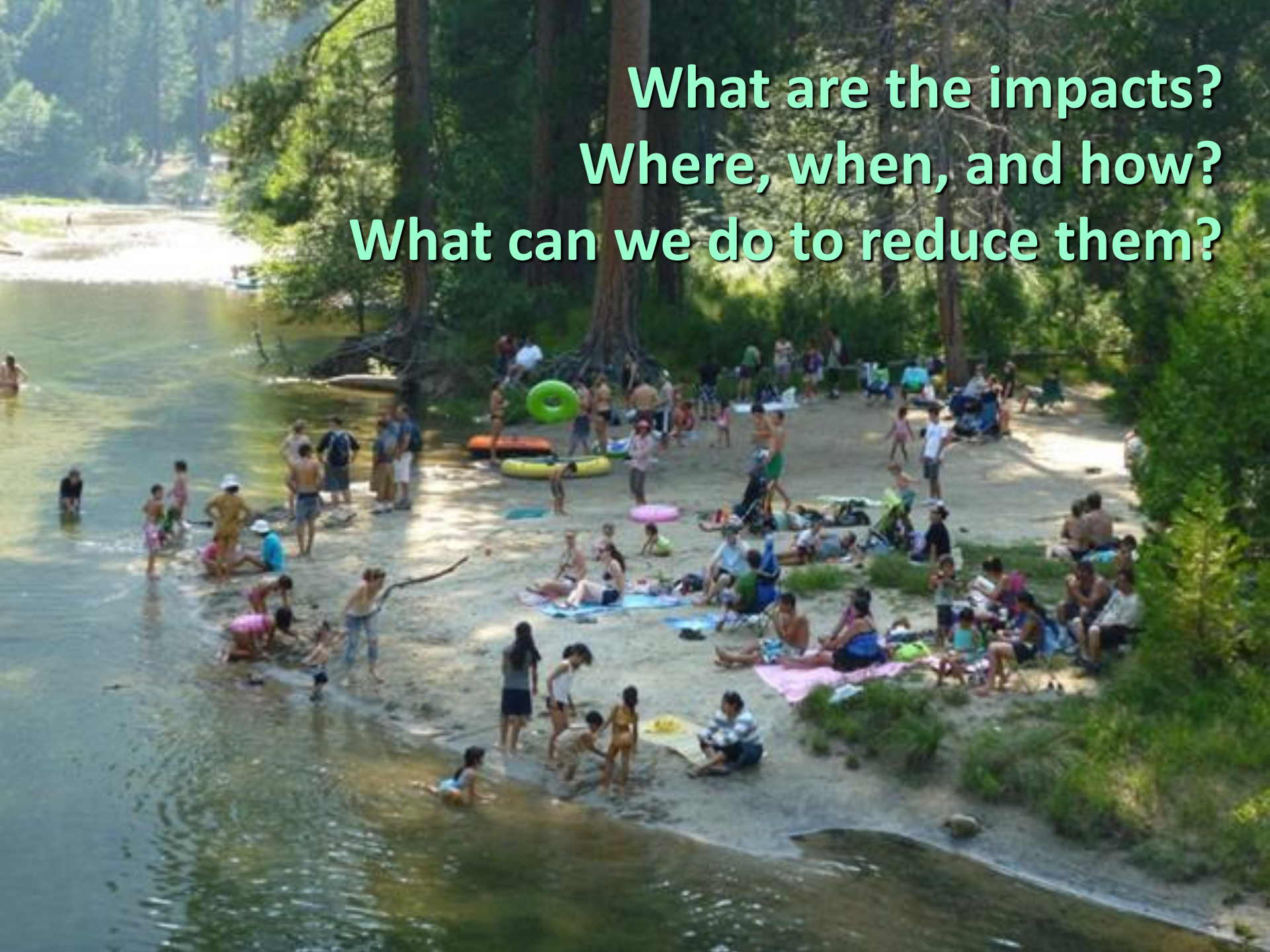


>1,000+ hotel units
>700 campsites
7,000 vehicles and 20,000 people per day

Many facilities within
quarter-mile of river



**What are the impacts?
Where, when, and how?
What can we do to reduce them?**





- **Buffer and landscape context**
- **Hydrology**
- **Physical structure**
- **Biotic structure**



**Assessed 81 alternating
bank areas in 9.9 segment**

**Summarized as
low-moderate-high**

Riparian health findings

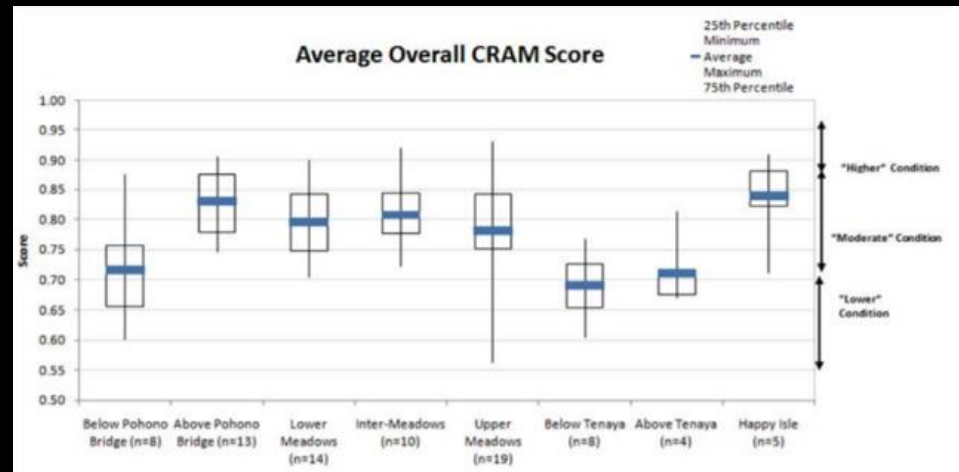
Most measures showed good conditions (range .56 to .93, median .77)

Most measures showed little variation by geography

But lowest scores were for reaches near more developed East Valley

Issues that lowered scores...

- Bank protection (rip rap) near meander bends, development, and bridges
- Thin buffers along campgrounds in East Valley
- Bank erosion at launches and trail spurs from road turn-outs



Riparian-connected meadows

Meadow fragmentation indicator





Stoneman meadow 1978



Stoneman meadow 2011

Stoneman meadow

Fragmentation index 1978 vs. 2011

Use increase in park visitation over same period: 54%



Trail Symbol

Total length
of trails

LPI-5 Value

1978

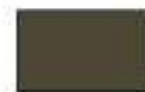
3170 meters

40.40

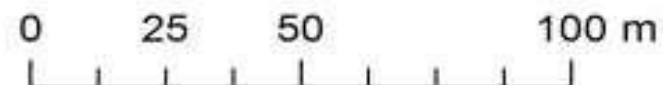
2011

327 meters

99.12



Current
Boardwalk





Recreation issues

Who?

Boaters vs. shore users

Effects of trails & facilities

Use-impact relationships

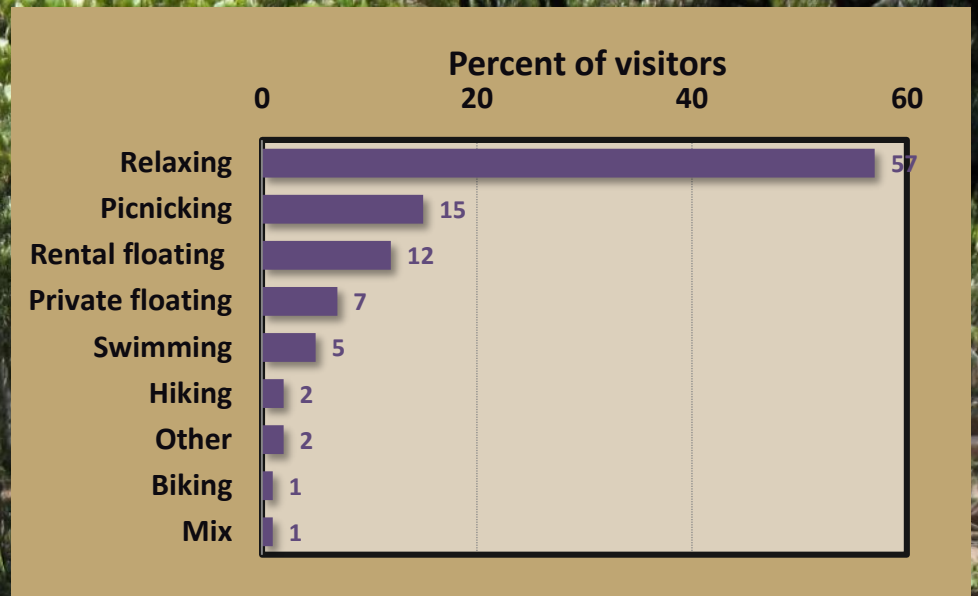
Bank structure overlay

Methods

- On-site survey n = 806 (92% response rate)
- Roving stratified sampling
- Integrated with NPS use monitoring



Observed primary activity





Boaters

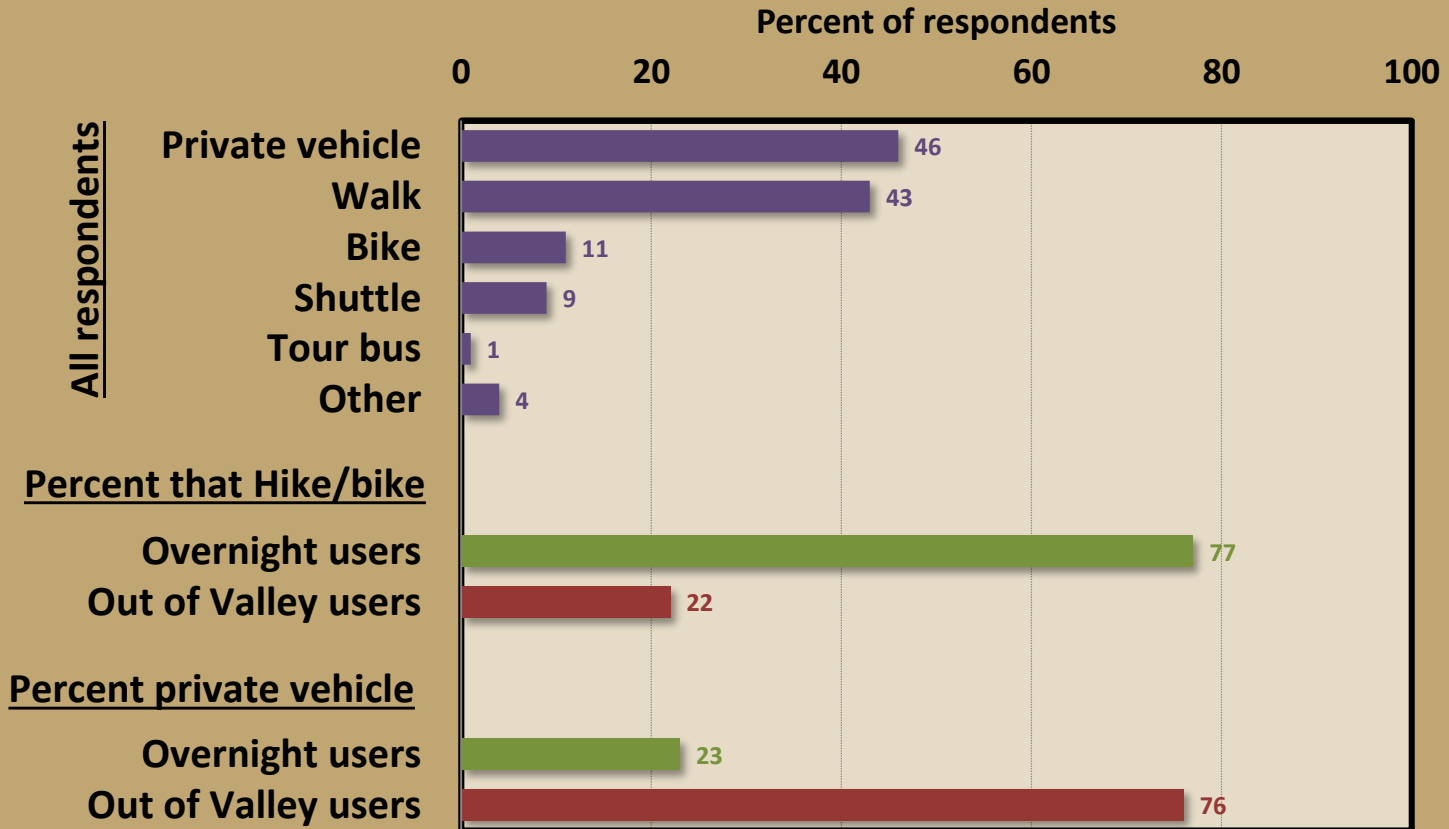


60% rentals

Renters had fewer rafts, more people per raft

26% of all “boats” were water toys

How do visitors get to the river?



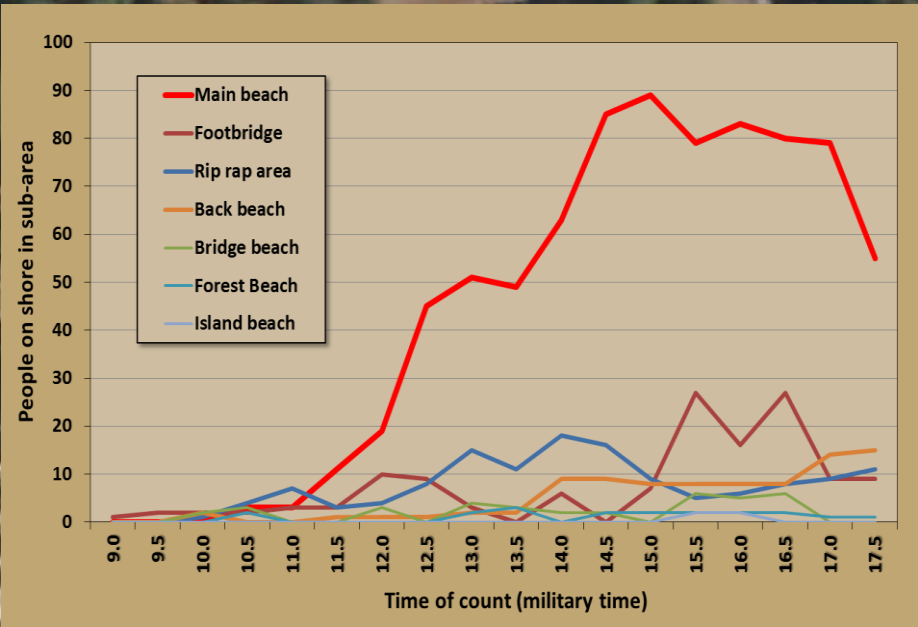
Housekeeping East

Footbridge

Bridge beach

Rip rap area

Main Beach
180 feet in photo
340 feet from trees to point



Forest Beach

Back Beach

Island Beach
Dorm employee use





Swinging Bridge

Highest use area on river



**What did visitors think about
riparian conditions?**



Evaluating riparian impacts



. The “river bank” photo shows an area used by park visitors along the Merced. National Park Service scientists evaluate river banks from an ecological perspective, but we are interested in how visitors perceive them. Please rate the acceptability of this river bank from your perspective.

Very unacceptable

Marginal

Very acceptable

- 4

- 3

- 2

- 1

0

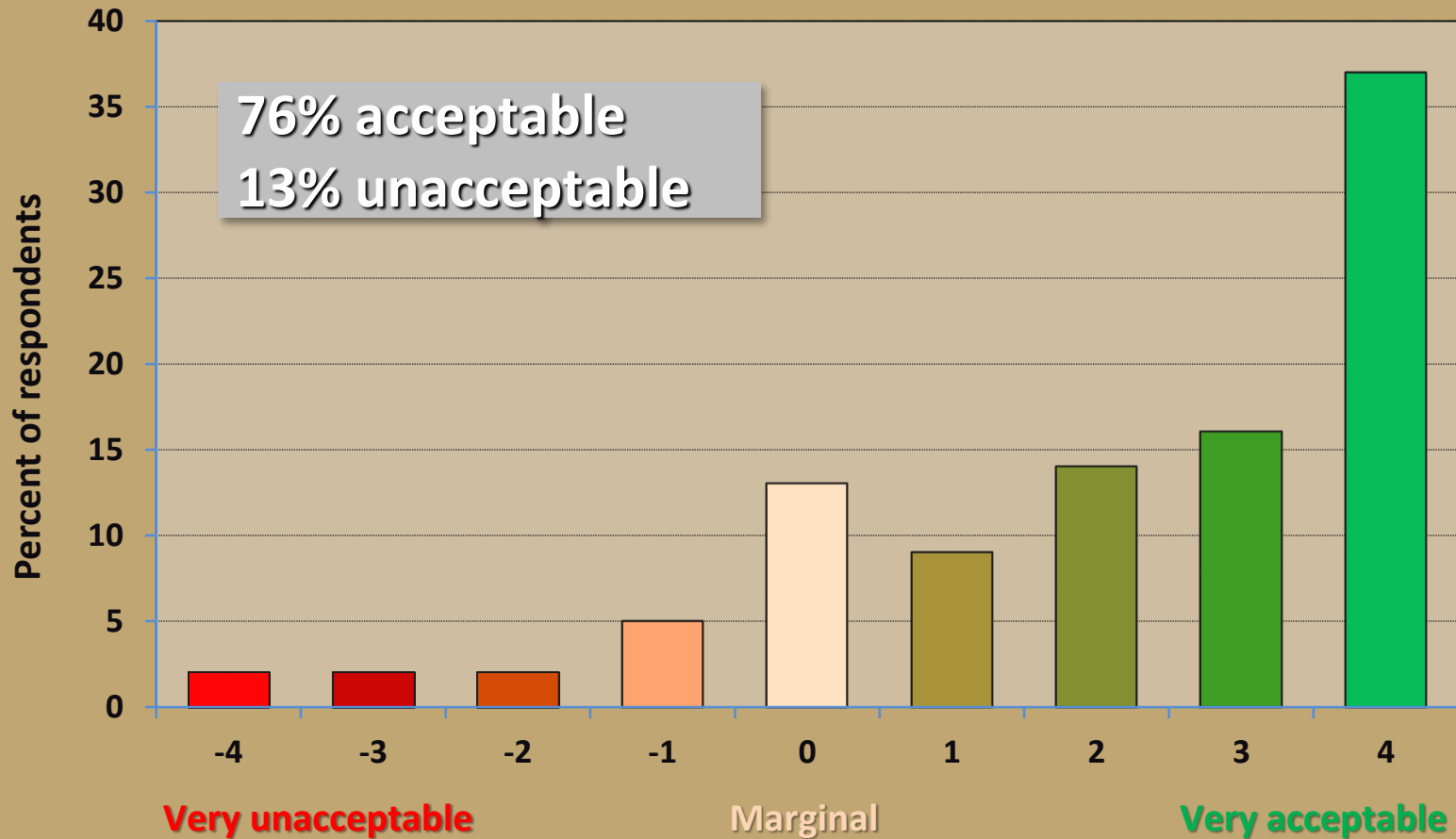
+ 1

+ 2

+ 3

+ 4

Evaluating riparian impacts





What did they
think about
possible solutions?



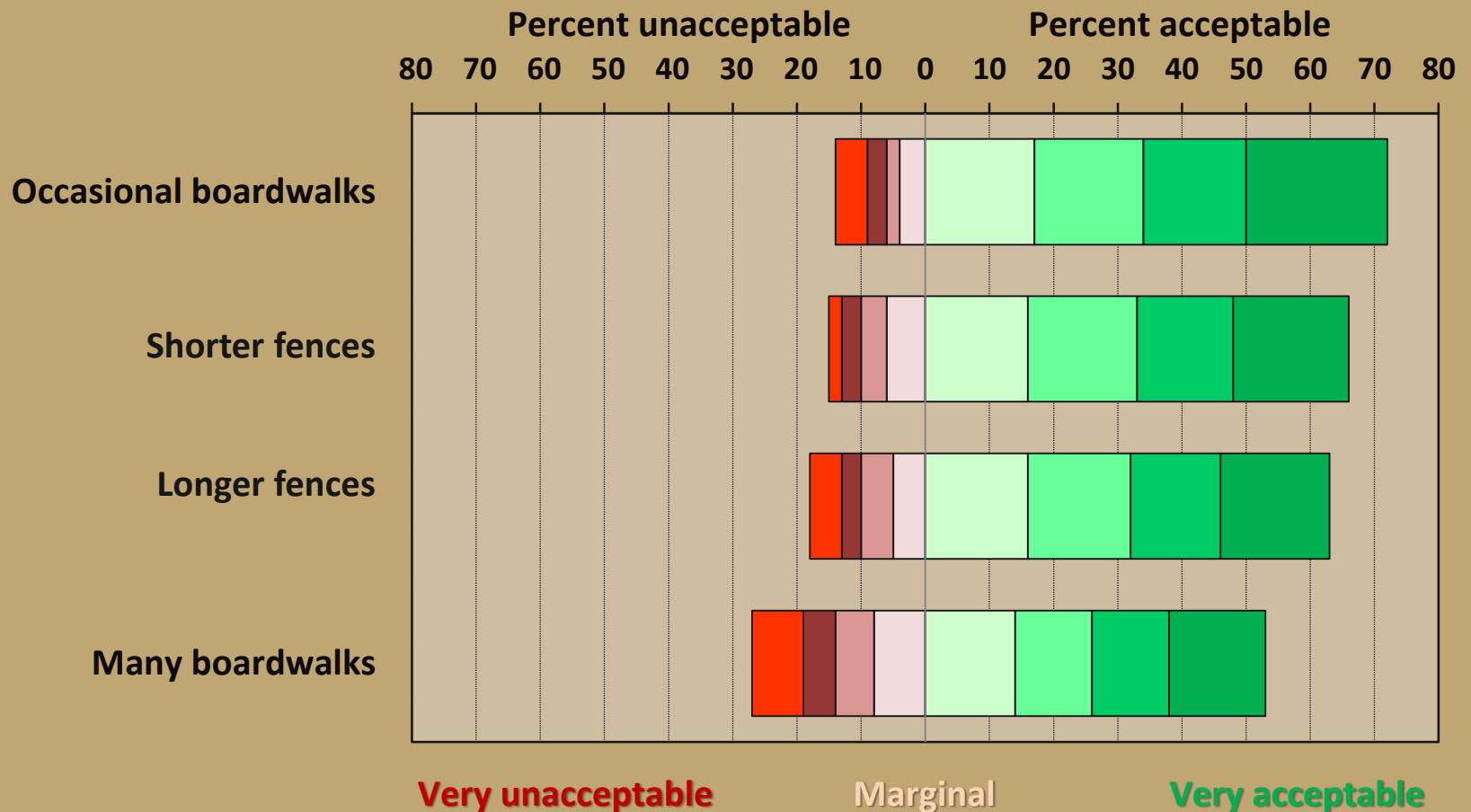
Evaluating fences and boardwalks



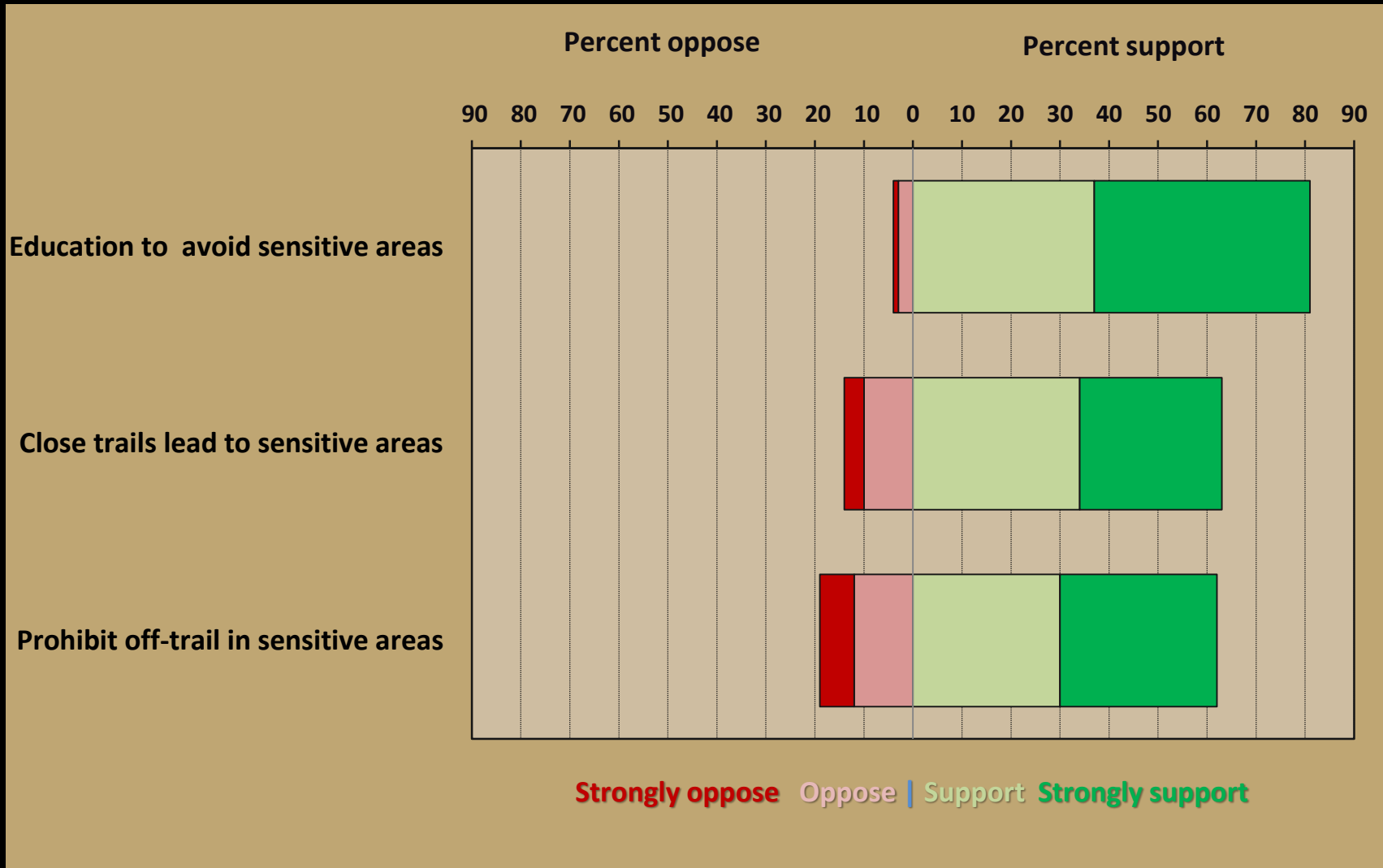
18. To reduce bank and meadow trampling along the river, the Park Service could close sensitive areas (see “split rail fencing” photo) and direct people toward areas that can withstand use (see “boardwalk and stairs” photo). However, these actions may decrease “naturalness,” prevent access to some areas, or lead to congestion in other areas. Please rate the acceptability of the following actions.

	Very unacceptable				Marginal			Very acceptable	
Longer split rail fences (over 200 feet) to protect large areas from trampling, with short openings for river access.	- 4	- 3	- 2	- 1	0	+ 1	+ 2	+ 3	+ 4
Shorter split rail fences (under 50 feet) to restore small sites with heavy trampling.	- 4	- 3	- 2	- 1	0	+ 1	+ 2	+ 3	+ 4
Occasional boardwalks and stairs through meadows and sensitive areas to provide access to areas like beaches.	- 4	- 3	- 2	- 1	0	+ 1	+ 2	+ 3	+ 4
Trail networks with many boardwalks & stairs directing use to less sensitive areas and discouraging off-trail use.	- 4	- 3	- 2	- 1	0	+ 1	+ 2	+ 3	+ 4

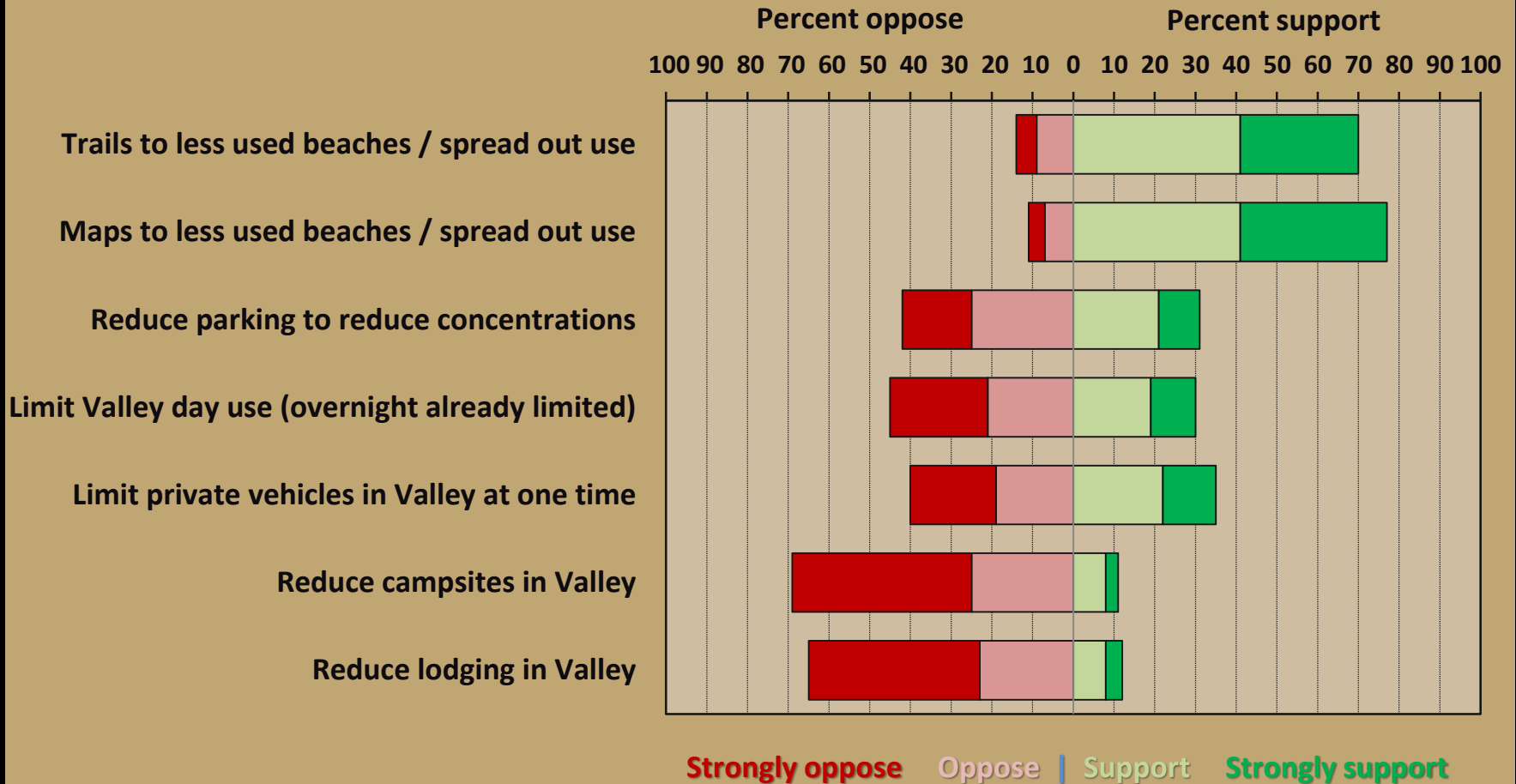
Evaluating fences and boardwalks



Managing use in sensitive areas



Support for other shore-use actions





Managing boating

Redesigned launches
Limited reaches and use levels
Landing on beaches only
Minimize large wood removal

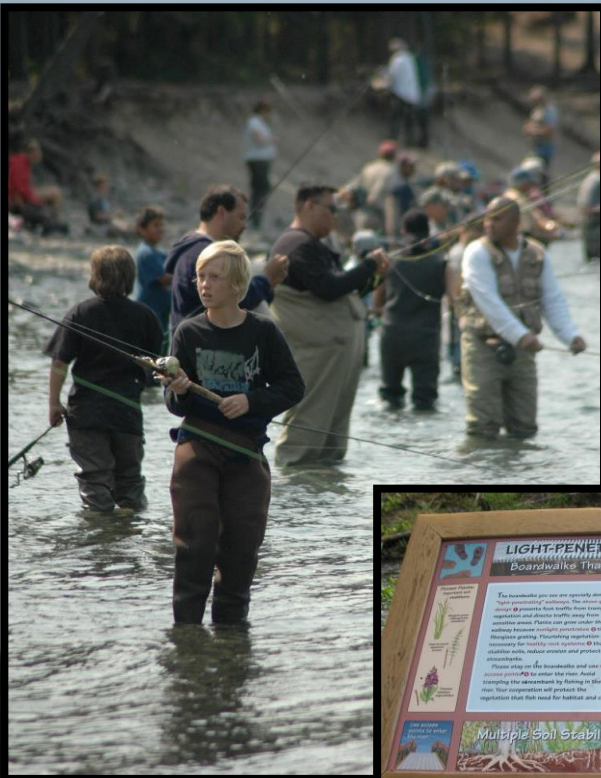


Managing shore use

Redesign trails in riparian zone

Hardened facilities to direct use away from sensitive areas





Shore use success

Kenai River, Alaska



Light-penetrating walkways and stairs into the river
Effective at reducing impacts from “combat fishing”

Questions and comments?

For more information...

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Traffic gages

VAOT

V/Day

6,000

7,000

5,000

5,800

4,000

4,600

3,000

3,500



Large wood



Increasing attention
Ecological benefits
Potential hazard?
Removal?





**Parallel parking for 79 vehicles
~1,900 feet of viewscape impacts**

**Multiple
social trails**

Shuttle stop

