Adopt A Beach

A program of rephotography by
Grand Canyon River Guides, Inc.

Results from 1996 - 2002 river season

What is Adopt A Beach?

- Originally founded in 1996 to observe the effects of the Beach Habitat Building Flow (test flood flow of 45,000 cfs) on popular camping beaches in Grand Canyon.
- Uses the volunteer efforts of river guides to document the condition of these beaches over time.
- Now is an annual program of repeat photography documented by river guides.

Why This Project?

- Guides build stewardship with the place
- Builds public awareness
- Stakeholder in the management process
- Easy and low cost monitoring

Goals of the Program

- Document changes to Grand Canyon camping beaches using repeat photography and recorded observations supplied by river guides.
- Draw conclusions about how beaches respond to regulated Colorado River flows, impacts from camping, and other environmental factors (wind, rain, debris flow).
- Archive photographs and data so they can be easily accessed by the public.
- Submit yearly results to resource managers, physical scientists, guides, and the Adaptive Management Workgroup.

Beaches Adopted and Analyzed for Year-2002

Marble Canyon
Soap Creek
Salt Water Wash
Hot Na Na
19 Mile
North Canyon
23 Mile
Silver Grotto
Nautiloid
Tatahatso
Bishop
Buck Farm

Upper Granite Gorge
Nevils
Hance
Grapevine
Clear Creek
Zoroaster
Trinity
Schist Camp
Boucher
Crystal
Lower Tuna
Ross Wheeler
Bass
110 Mile
Upper Garnet
Lower Garnet

Muav Gorge
Below Bedrock
Stone
Talking Heads
Race Track
Lower Tapeats
Owl Eyes
Back Eddy
Kanab
Olo
Matkat Hotel
Last Chance
Tuckup
Upper National
Lower National

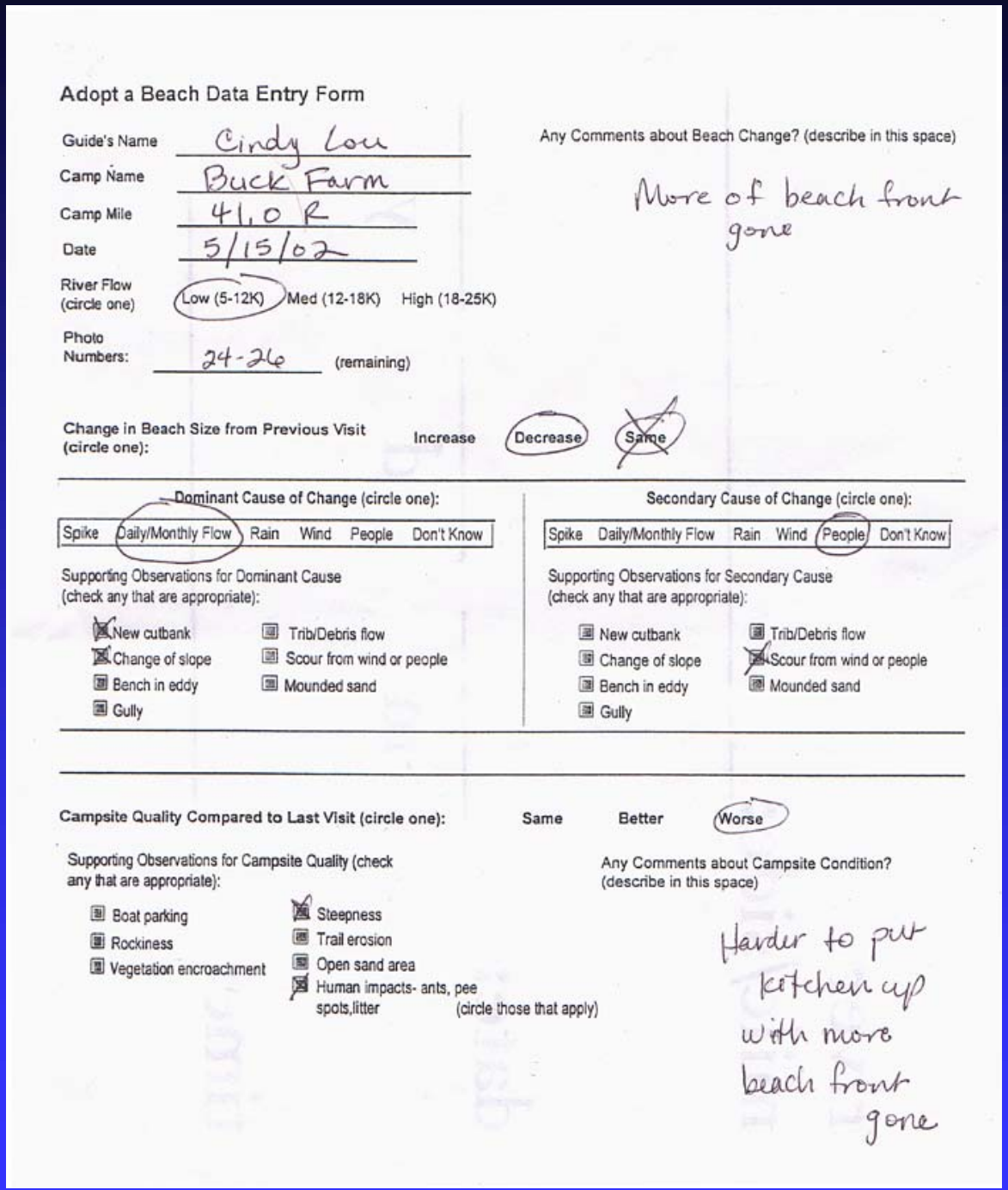
newly added reaches

Glen Canyon
-14 Mile
-8 Mile

Lower Granite Gorge*
Travertine Falls
Gneiss Camp

Methods

- Guides take a repeat photo of their adopted beach every time they are in Grand Canyon. They document noticeable relative changes and processes at work.
- Results of any change are determined by photo comparisons and guide comments; these are organized into a database for analysis.
- Conclusions are drawn from analysis of change of adopted beaches, where trends are depicted within the river season and from year to year.



Adopt a Beach Data Entry Form

Guide's Name: Cindy Lou

Camp Name: Buck Farm

Camp Mile: 41.0 R

Date: 5/15/02

River Flow (circle one): (Low (5-12K)) Med (12-18K) High (18-25K)

Photo Numbers: 24-26 (remaining)

Any Comments about Beach Change? (describe in this space)

More of beach front gone

Change in Beach Size from Previous Visit (circle one): Increase (Decrease) (Same)

Dominant Cause of Change (circle one):

Spike (Daily/Monthly Flow) Rain Wind People Don't Know

Supporting Observations for Dominant Cause (check any that are appropriate):

- [X] New cutbank
- [X] Change of slope
- [ ] Bench in eddy
- [ ] Gully
- [ ] Trib/Debris flow
- [ ] Scour from wind or people
- [ ] Mounded sand

Secondary Cause of Change (circle one):

Spike Daily/Monthly Flow Rain Wind (People) Don't Know

Supporting Observations for Secondary Cause (check any that are appropriate):

- [ ] New cutbank
- [ ] Change of slope
- [ ] Bench in eddy
- [ ] Gully
- [ ] Trib/Debris flow
- [X] Scour from wind or people
- [ ] Mounded sand

Campsite Quality Compared to Last Visit (circle one): Same Better (Worse)

Supporting Observations for Campsite Quality (check any that are appropriate):

- [ ] Boat parking
- [ ] Rockiness
- [ ] Vegetation encroachment
- [X] Steepness
- [ ] Trail erosion
- [ ] Open sand area
- [X] Human impacts- ants, pee spots,litter (circle those that apply)

Any Comments about Campsite Condition? (describe in this space)

Harder to put kitchen up with more beach front gone

Disposable 35 mm camera

Instruction Sheet

Data Sheets

Return Mailer

12.2L 3/3/96 Pre

12.2L 5/11/96 Post

Types of Analysis

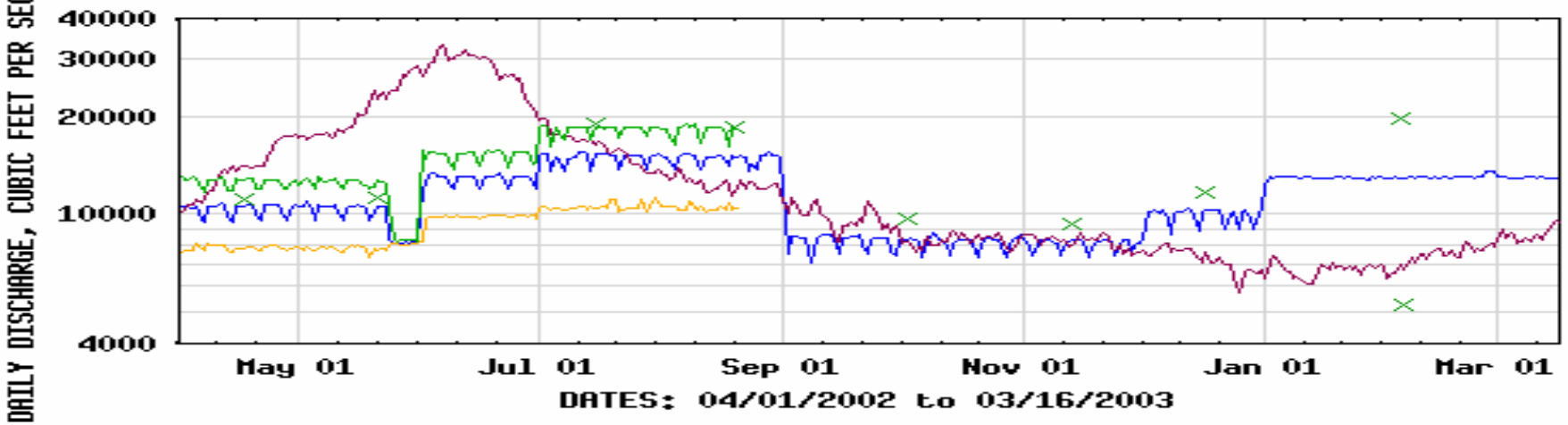
- *Seasonal change.* We look at beach change over the previous river season, April-October 2002.
- *Longevity of the 1996* Beach Habitat Building Flow sand deposits from year to year.
- *Quality of Camping.* Is camp access and boat parking becoming better or worse with beach change throughout the season.
- *Other research questions.* Are the smaller spike deposits of year 2000 still present? Are the camps used in 1996 still in good shape for recreation?

Adopt A Beach

Summary of Results

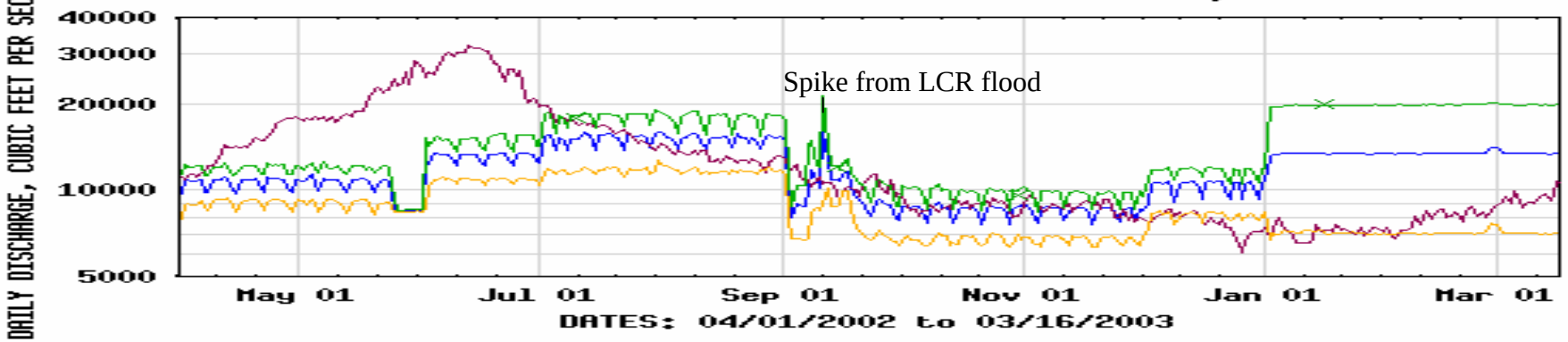
USGS

USGS 09380000 COLORADO R AT LEES FERRY, AZ.



USGS

USGS 09402500 COLORADO R. NEAR GRAND CANYON, ARIZ.

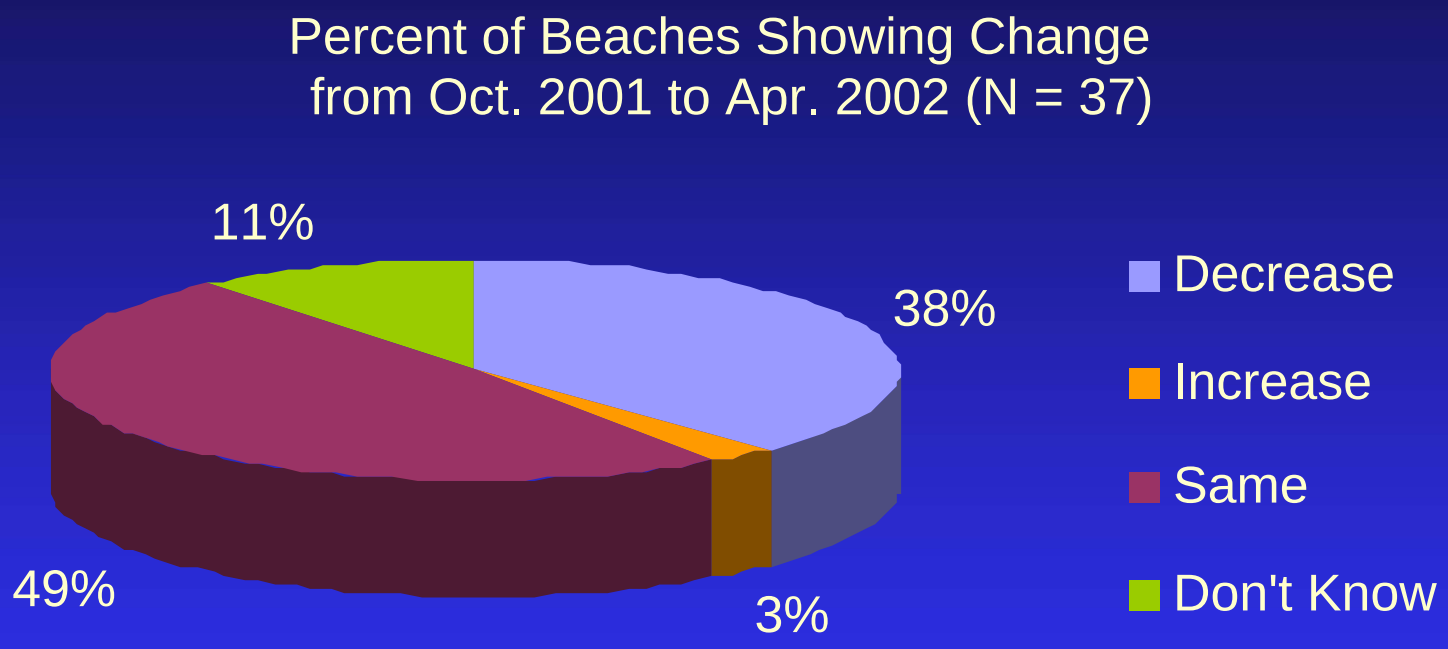


EXPLANATION

- DAILY MEAN DISCHARGE
- MEDIAN DAILY STREAMFLOW BASED ON 79 YEARS OF RECORD
- MEASURED DISCHARGE
- DAILY MAXIMUM DISCHARGE
- DAILY MINIMUM DISCHARGE

Provisional Data Subject to Revision

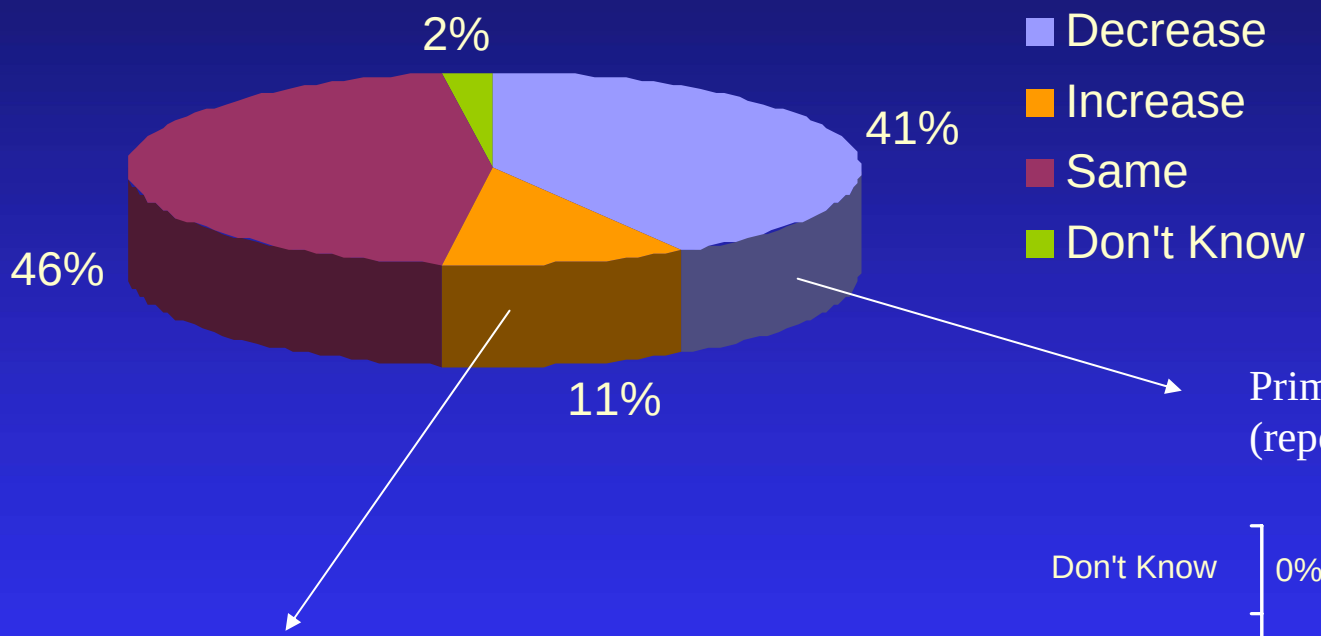
Winter-Season Change to Beaches



(Change assessed from photographs only; cause of change not reported by guides.)

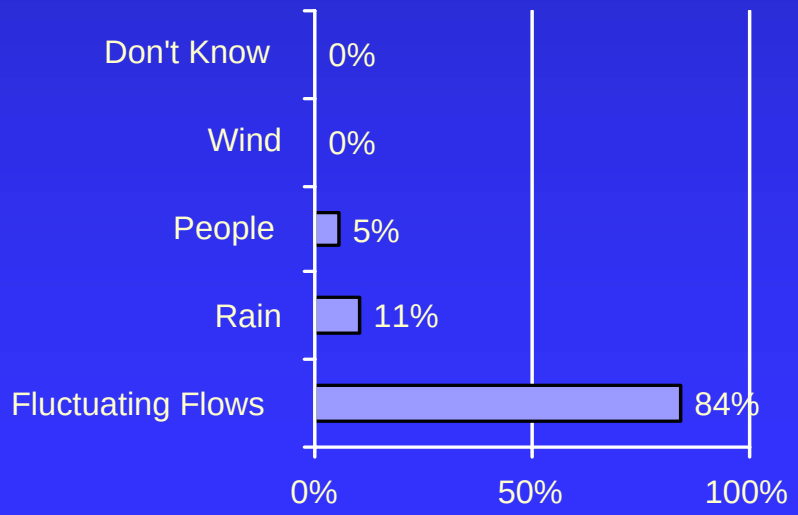
Summer Season Change to Beaches

Percent of Beaches Showing Cumulative Change from April to November 2002 (N = 47)

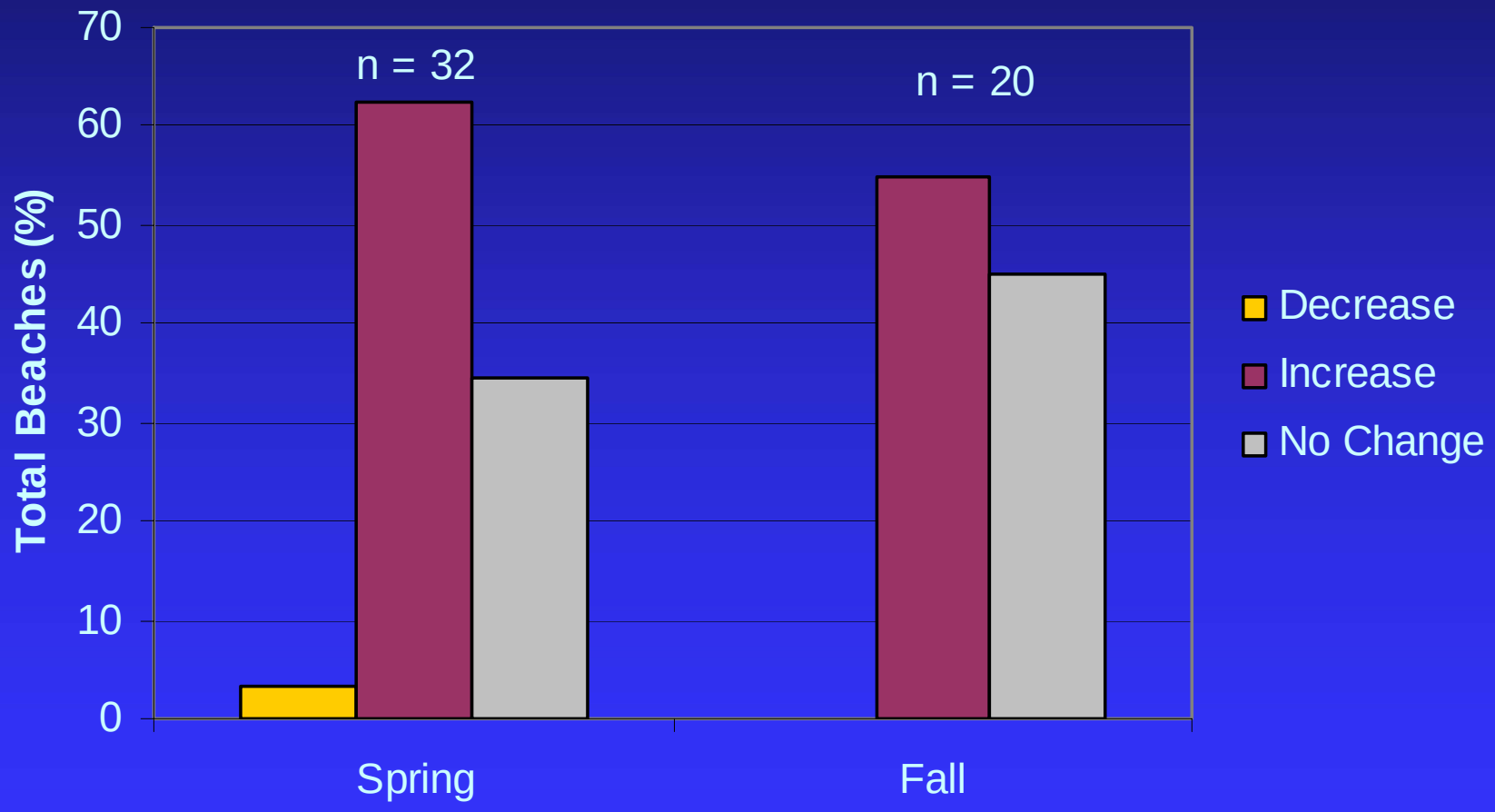


All increases (reported by guides) due to spike in mainstem from Little Colorado River flood

Primary Cause of Decrease (reported by guides)

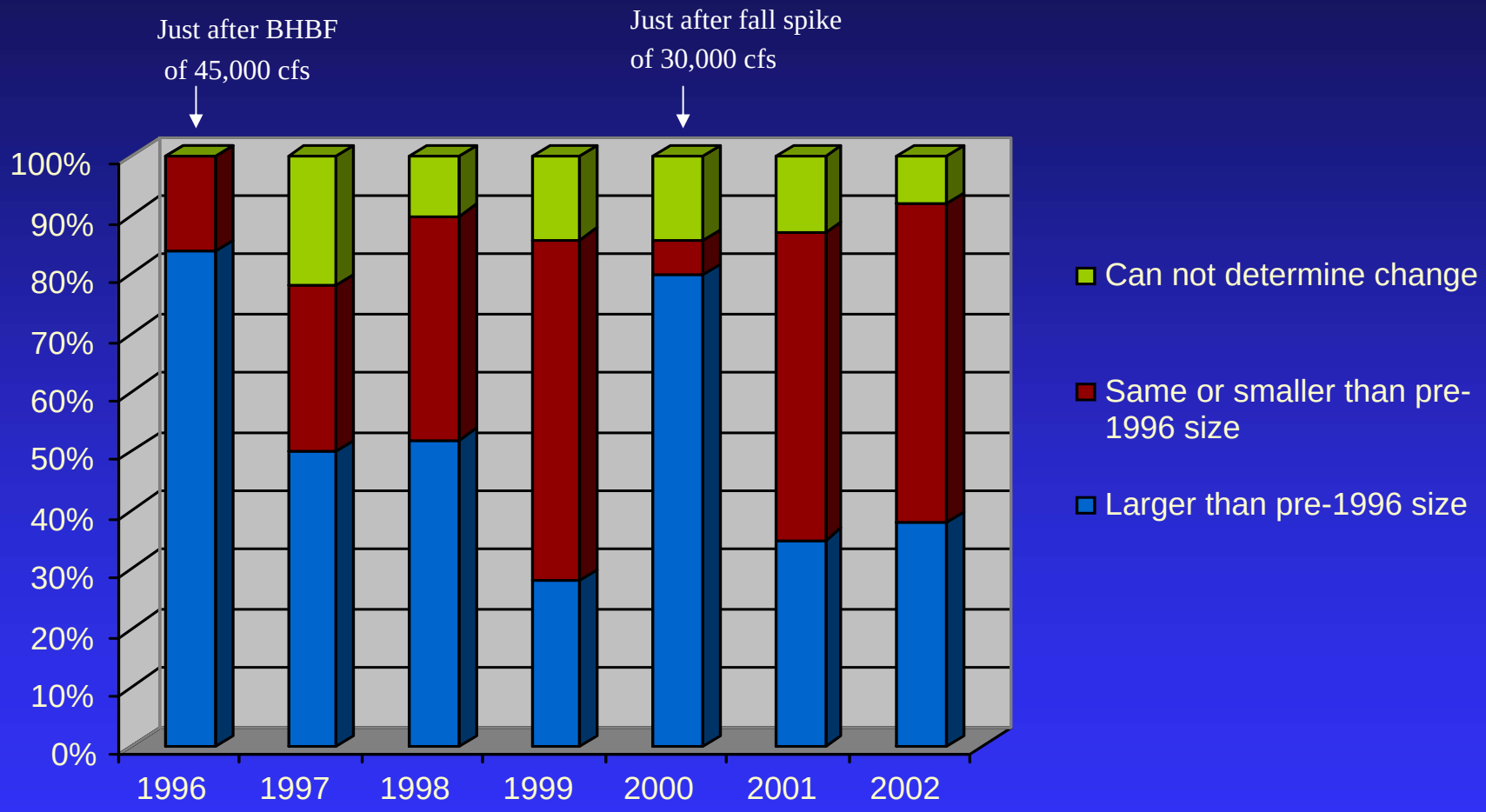


Change to Beaches Caused by Spike Flows in Year 2000



Analysis from 15K zone to 45K zone

Longevity of Beaches Since 1996 Beach Habitat Building Flow (BHBF)*



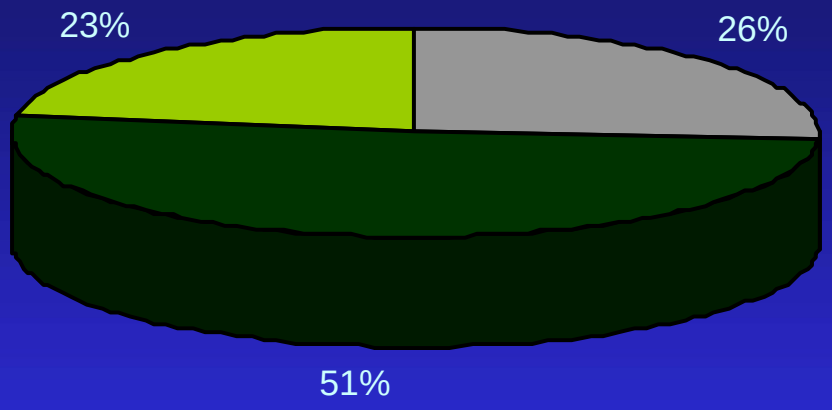
*BHBF equivalent to 45,000 cfs release from Glen Canyon Dam

(Analysis based on end-of-season photo per beach per year)

Comparison of Camp Quality during LSSF* of Year 2000 and during Year 2001

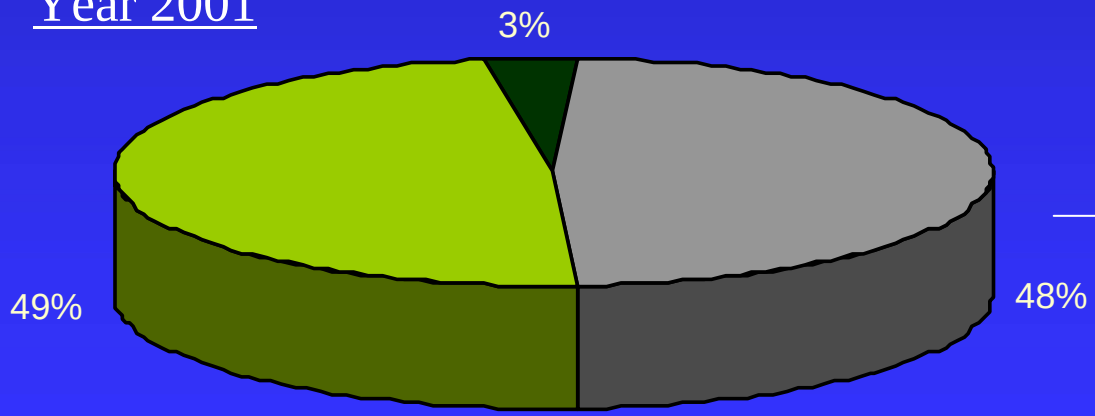
(guide responses in percent)

Year 2000



Initial responses with onset of LSSF (N=31)

Year 2001



Cumulative response by end of 2001 season (N=31)

Harder

Easier

Same

*LSSF – Low Steady Summer Flow of 8,000 cfs

Conclusions

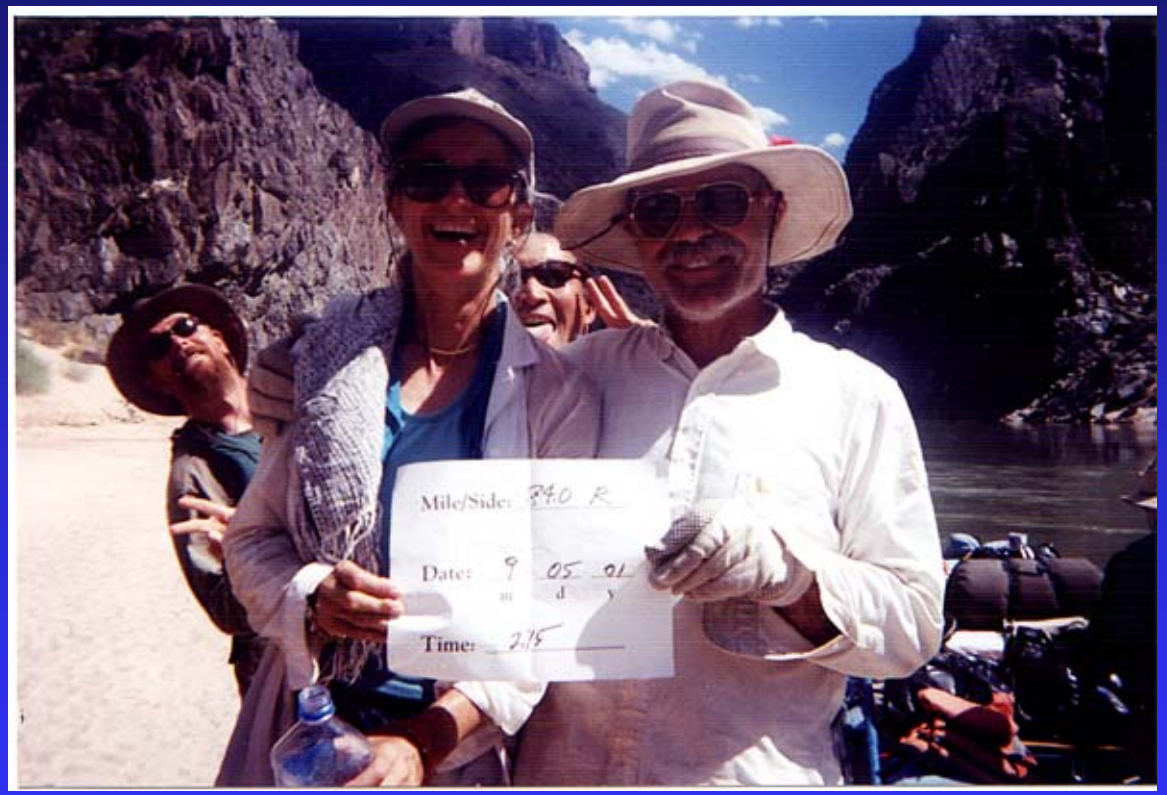
- Need periodic beach building flows > 40,000 cfs (provided sediment available)
- Need annual beach maintenance flows (about 30,000 cfs)
- LSSF great for camping access and camping availability and should follow a high flow event

What Next?

- Keep the monitoring going
- Make flip booklets showing change over time
- Digitize remaining photo archive
- Help develop AAB in other river systems

Acknowledgments

Special thanks go to all the guides who make this program and its results possible…



…And to our contributors, the Grand Canyon Conservation Association and the Grand Canyon Monitoring and Research Center (GCMRC).