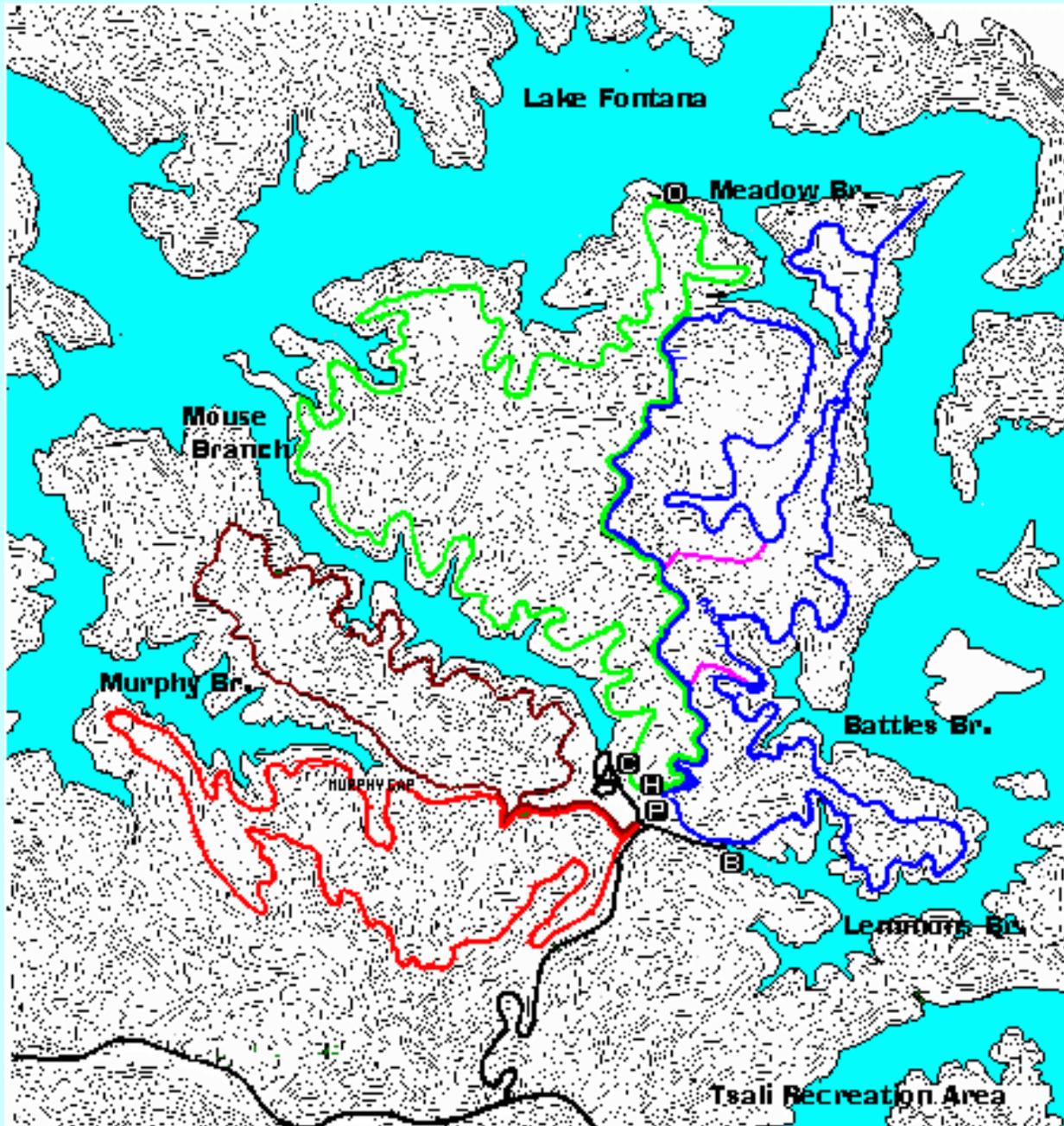
A background image showing two mountain bikers in a parking area. One person is standing next to a dark SUV with its rear door open, and another person is standing next to a red motorcycle. The scene is outdoors with trees in the background.

A Socioeconomic Evaluation of Sustainable Recreation Development in the Southern Appalachians: The Case of Mountain Biking at Tsali

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Map of Tsali



- P** = Parking
- B** = Boat Ramp
- C** = Campground
- H** = Horse Trailer Parking
- O** = Overlook
- Blue Line** = Right Loop
- Green Line** = Left Loop
- Brown Line** = Mouse Branch Loop Trail
- Red Line** = Thompson Loop Trail
- Pink Line** = Connector Trails
- Black Line** = Roads

Maintained by USDA
Forest Service,
Nantahala National
Forest, Cheoah
Ranger District

Major Objectives for this Study

- Describing mountain biking participants, and identifying market segments
- Giving managers at Tsali feedback about their customers' perceptions of the area's current attributes, facilities, and management policies
- Giving managers at Tsali feedback about customers' preferences for future management policies and facility development
- Assisting local communities' efforts in rural economic development through tourism, by providing information about the spending patterns, use patterns, and sources of information pertaining to mountain biking tourists
- Developing estimates of the economic benefits and regional economic impacts generated by mountain bike recreation at Tsali

Research Design

- ❖ 129 days of surveying at Tsali from 8-98 thru 8-99
- ❖ Days sampled within each season based on estimated season's share of annual use
- ❖ Trained volunteer interviewers randomly surveyed visitors over age 12 at the end of their day's ride
- ❖ 1,359 on-site contacts were made - less than 1% refused
- ❖ Questionnaire "team-designed" and pre-tested
- ❖ On-site questions included person's number of annual mountain biking trips (general & Tsali), household demographics, preferences & satisfactions with Tsali facilities, & information about their current trip to Tsali
- ❖ Two different surveys were used - due to the large number of questions

Research Design Continued

- ❖ Expenditure mail-back questionnaire per trip spending in general and in two-county area
- ❖ Questionnaires designed for CONTINGENT TRIP and CONTINGENT EXPENDITURE modeling
- ❖ CONTINGENT TRIP - stated preference stepchild of travel cost method
- ❖ CONTINGENT EXPENDITURE - hybrid of IMPLAN and contingent trip

Management Alternatives

- A. ✓ Continue with present trail and rotation system
✓ Maintaining current fees - \$2/day or \$15/year

- B. ✓ Add a new 6-8 mile trail loop at Tsali
✓ Fees would increase - \$3/day or \$20/year

- C. ✓ Construct a 6-8 mile section of a long (60-80 mile) point-to-point trail originating at Tsali and ending in the Graham/Swain area
✓ Fees would increase - \$3/day or \$20/year

- D. ✓ Construct a loop trail system at a new location within the Graham/Swain area
✓ Fees would increase - \$3/day or \$20/year

- E. ✓ Improve non-trail facilities at Tsali - add 4 showers (2/male & 2/female); 2 bathrooms; & 2 new dispersed camping areas.
✓ Fees would increase - \$3/day or \$20/year

Contingent Trip

- Past year's trips
- Future year's trips
- Change in trips per alternative
- Socioeconomic variables
- Count data demand model
- Stacked w/binaries for alternatives

Contingent Trip Model Results

Negative Binomial N=955

Dep. Var.= HTRPNX

Variable	Coefficient	t-val	Mean x
Constant	1.62	14.6	1
MILE2CAP	-0.13 E-2	-9.7	321.6
YEARS MB	0.36 E-1	5.1	5.5
GO ELSE	-0.61 E-1	-0.9	0.78
HHI NC	-0.69 E-5	-5.7	56.2
LOCAL	-0.79	-4.9	0.04
ALTB	0.175	2.1	0.20
ALTC	0.155	1.9	0.20
ALTD	0.167	2.0	0.20
ALTE	0.079	0.9	0.20
Alpha	0.362	10.95	--

Economic Measures

- Consumer surplus/trip= \$91.46
- Own-price elasticity = -0.41
- Predicted mean trips:
- ALTA=2.749
- ALTB=3.278 +19%
- ALTC=3.212 +17%
- ALTD=3.250 +18%
- ALTE=2.974 +8%

Contingent Expenditure

- Current trip spending per visitor
- Adjust for percent locals
- IMPLAN multipliers
- Change in trips per alternative
- Change in expenditures per alternative
- Combine with multipliers

Effect of Management Options on Annual Visitation

Management Option	Mean increase in annual trips to Tsali	Mean annual increase above baseline
A. No change from current management (baseline scenario)	0.266 trips	-----
B. Build new 6-8 mile loop at Tsali	0.801 trips	0.529 trips
C. Each year, build 6-8 mile section of 60-mile point-to-point trail	0.730 trips	0.463 trips
D. Build a new loop trail system, at a site near to Tsali	0.777 trips	0.501 trips
E. Improve non-trail facilities at Tsali	0.471 trips	0.225 trips

Summary of Visitation Impacts of Management Changes

	Current	Management Option				
		A	B	C	D	E
Visits/year to Tsali	2.724	2.990	3.525	3.454	3.501	3.195
% increase	--	9.76	29.4	26.8	28.5	17.3
# non-local visits (thousands)	23.33	25.61	30.19	29.59	29.98	27.37

Effect of Management Options on Visit Characteristics

Management Option	Avg. change in trip length (in days)	Avg. change in per person per trip spending in Swain/Graham Counties			
		Lodging	Food	Mountain Biking	Other
B. Build new 6-8 mile loop at Tsali	0.55	\$13.57	\$14.74	\$2.78	\$8.08
C. Each year, build 6-8 mile section of 70-mile point-to-point trail	0.86	\$16.22	\$16.24	\$6.14	\$14.00
D. Build new loop trail system, at a site nearby to Tsali	0.99	\$22.97	\$17.73	\$5.90	\$11.73
E. Improve non-trail facilities at Tsali	0.46	\$4.43	\$5.76	\$3.68	\$2.49

Summary of Per Person Spending for Nonlocals Per Trip to the Tsali Area

Avg. spending in local area	Management Option				
	Current	B	C	D	E
Lodging	53.73	67.30	69.95	76.70	58.16
Food	44.31	59.04	60.54	62.04	50.07
Mountain Biking	17.22	19.99	23.36	23.13	20.90
Other activities	10.17	14.23	17.70	15.97	11.99
All other	34.66	38.57	41.03	40.48	35.34
TOTAL	159.99	199.13	212.58	218.32	176.36

Estimates of Economic Impact of Management Alternatives

	Management Options				
	A	B	C	D	E
# non-local visits (thousands)	25.61	30.19	29.59	29.98	27.37
Spending per visit in the local area	159.99	199.13	212.58	218.32	176.36
Total nonlocal visitor spending (\$millions)	4.097	6.011	6.290	6.545	4.827
Output multiplier	1.22	1.22	1.22	1.22	1.22
Output impact	4.998	7.333	7.674	7.869	5.889
Increase in output (Millions)	0.445	2.780	3.121	3.316	1.336
% increase from current	9.7	61.1	68.5	72.8	29.3

Aggregated Results

	TRIPS (k)	CS (\$m)	Nonlocal Exp (\$m)	Total Impact (\$m)
ALTA	27.4	2.50	4.10	5.00
ALTB	32.0	2.93	6.01	7.33
ALTC	32.7	2.99	6.29	7.67
ALTD	32.4	2.96	6.55	7.87
ALTE	29.6	2.71	4.83	5.89

Conclusions

- Alternatives A (status quo) and E (improve non-trail facilities) are the **least desirable** per consumer surplus and local area economic impacts
- Alternatives B (new Tsali loop), C (new linear section beginning at Tsali), D (new Graham County loop) are similar across economic measures
- Alternative D generates the **most local economic impact**
- Alternative C generates the **most net economic benefit**
- Alternative B generates economic impacts and benefits on par with D and C and is probably the **least costly** of the preferred alternatives
- Study demonstrates that management alternatives generating the most consumer surplus (economic efficiency) may not be optimal if the goal is to stimulate the local economy

To see the draft report

Go to

www.srs.fs.fed.us/trends