

Topics

- Tourism and Ecotourism Development in China
- Methods of Monitoring and Managing Recreation – Limits of Acceptable Change (LAC)
- Introduction to Tiger Leaping Gorge
- Methods
- Results
- Discussion
- Conclusions
- Future Research
- Acknowledgements
- Literature Cited

Tourism Development in China

- 1978 – China declares an ‘open door policy’ allowing greater access to the international (and domestic) community
- From 1978-1993, tourist arrivals increased from 1.8 ma to 41.5 ma – an annual increase of 25% (Guangrui 1995)
- Tourism as mechanism to decrease the coast-inland economic disparity

Ecotourism Defined

- “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (The International Ecotourism Society).
- Promoted as a means to improve the economic livelihood of native peoples while conserving biodiversity and natural resources

Ecotourism in China

- 1999 –declared the “Year of China’s Eco-tour” by the State Tourism Administration (STA)
 - the theme was “Touching Nature, Understanding Nature, and Protecting Nature.”
- Problems with inadequate planning for large numbers (lack of facilities, trained personnel)
- Encouraged following the 1998 flooding of the Yangtze River and the subsequent restrictions on the timber industry



Recreation Monitoring and Management Frameworks

- Developed to assist managers in making decisions and to resolve conflicting interests
- Recreation Opportunity Spectrum (ROS)
- Carrying Capacity (CC)
 - Limits of Acceptable Change (LAC), Visitor Experience and Resource Protection (VERP) process, Visitor Impact Management (VIM)
- Benefits-Based Management (BBM)

Carrying Capacity

- Originally used for wildlife and range management
- Applied to recreation by Lowell Sumner and called “recreation saturation point”
 - Definition concerned ecological CC
- Wagner added a social dimension to the term – “must be augmented by human values” (aka crowding)

Recreation Opportunity Spectrum (ROS)

- Six Opportunities:
 - primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban
 - defined by biological, physical, managerial, and social relationships

Limits of Acceptable Change (LAC)

- Developed by the USDA Forest Service to deal with impacts of recreation, especially in Wilderness Areas
- Incorporates ROS and Carrying Capacity
- Framework to decide what the acceptable levels of change are to an area and what the opportunities for recreation are in an area

Limits of Acceptable Change (LAC)

- Four Major Components (Hendee & Dawson, 2002)
 1. Specify achievable and acceptable resource and social conditions (defined by measurable parameters)
 2. Analyze relationship between desired standards and current conditions
 3. Identify management actions necessary to obtain desired conditions
 4. Establish a program to monitor and evaluate the effectiveness of management

LAC Measurements

- Measure biophysical and social impacts
 - Campsites, Trail Erosion, Litter, Social Encounters
- Each measurement should be standardized and replicable for future monitoring

Tiger Leaping Gorge



Tiger Leaping Gorge

- Called *Hutiaoxia* in Chinese – legend has it that a tiger once leapt across the narrowest part of the gorge to escape a hunter
- Included in the Three Parallel Rivers Park – a UNESCO World Heritage Area (managed as a Class IV area – Managed Resource Protected Area)
- *Jinshajiang* (“Golden Sands River”), head waters of the Yangtze River, flows through it
- Roughly 20 km long; the river averages 30-60 meters wide and there is a vertical descent of 200 meters
- It is split between Lijiang Prefecture and Diqing Tibetan Autonomous Prefecture

Map of Tiger Leaping Gorge and Yunnan Great Rivers National Park System

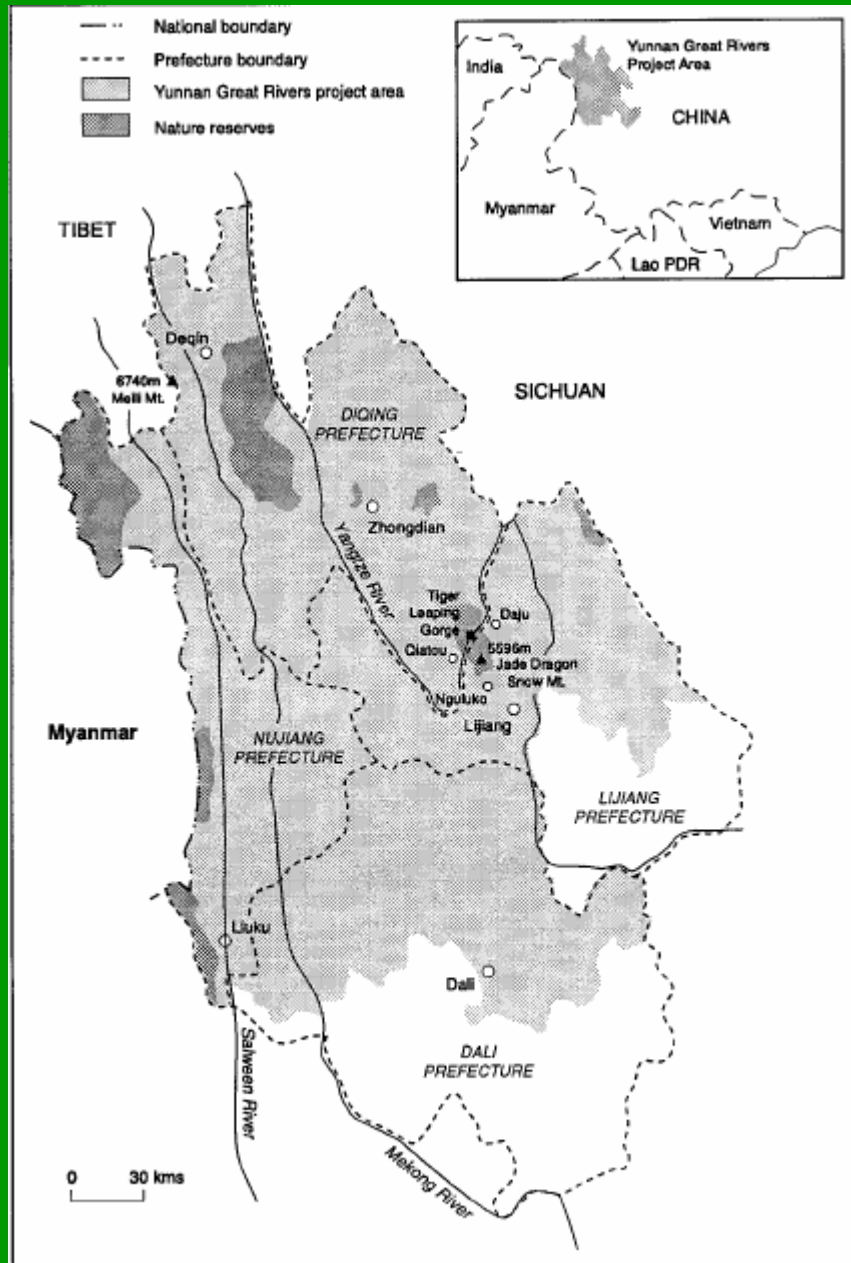


Figure 1 Location map of the Yunnan Great Rivers National Parks System Project area.

Adopted from Cater, 2000

Tiger Leaping Gorge:

Physical Characteristics

- Surrounded by Haba Snow Mountain (5396m) and Jade Dragon Snow Mountain (5596m)
- Average elevation difference=3600m, making it one of the deepest gorges in the world
- Climate is subtropical plateau monsoon and there are two distinct seasons (wet and dry)

Tiger Leaping Gorge: Cultural History

- Part of the Tea Horse Ancient Trail – transported tea and other goods to Tibet and other areas of China, Burma, and Laos
- Inhabited in 1850's by a variety of minority groups who still live in the area
 - Includes Naxi, Lisu, Bai, Tibetan, and Yi

Tiger Leaping Gorge and Tourism

- There is an entrance fee of 50 yuan (increased last year from 30 yuan)
- Two main “trails” – high trail is for hikers and the non-motorized users; the low trail is a paved/cobbled road for mass tourists and buses
- There are three villages along the trail and six guest houses
- There is discussion of a cable car and hydropower dam

Objectives

- To use the LAC framework to develop a standardized method for monitoring and measuring the impacts of tourists to the high trail of Tiger Leaping Gorge
- To establish a baseline survey of the impacts to the area
- To develop different management suggestions for the area

Methods

- The trail was divided into 200m segments by pacing
 - at the end of each segment, trail width and depth were measured, and total social and trash encounters were recorded
- Interviews were conducted with local trail users, shop owners, hostel owners, and other trail users, as well as the Chief of Tourism for Diqing Tibetan Autonomous Region

Measurements



Interviews



Methods – Developing Impact Parameters

- Measured impact and social data were used to develop parameters for different classes
- The indicators chosen were trash and social encounters
 - trail erosion was significant but the trail has a long history so it is assumed that most erosion has already occurred (many parts are bed rock)
- Class standards divided into four groups – ranging from Class I (most pristine) to Class IV (most developed)

Results

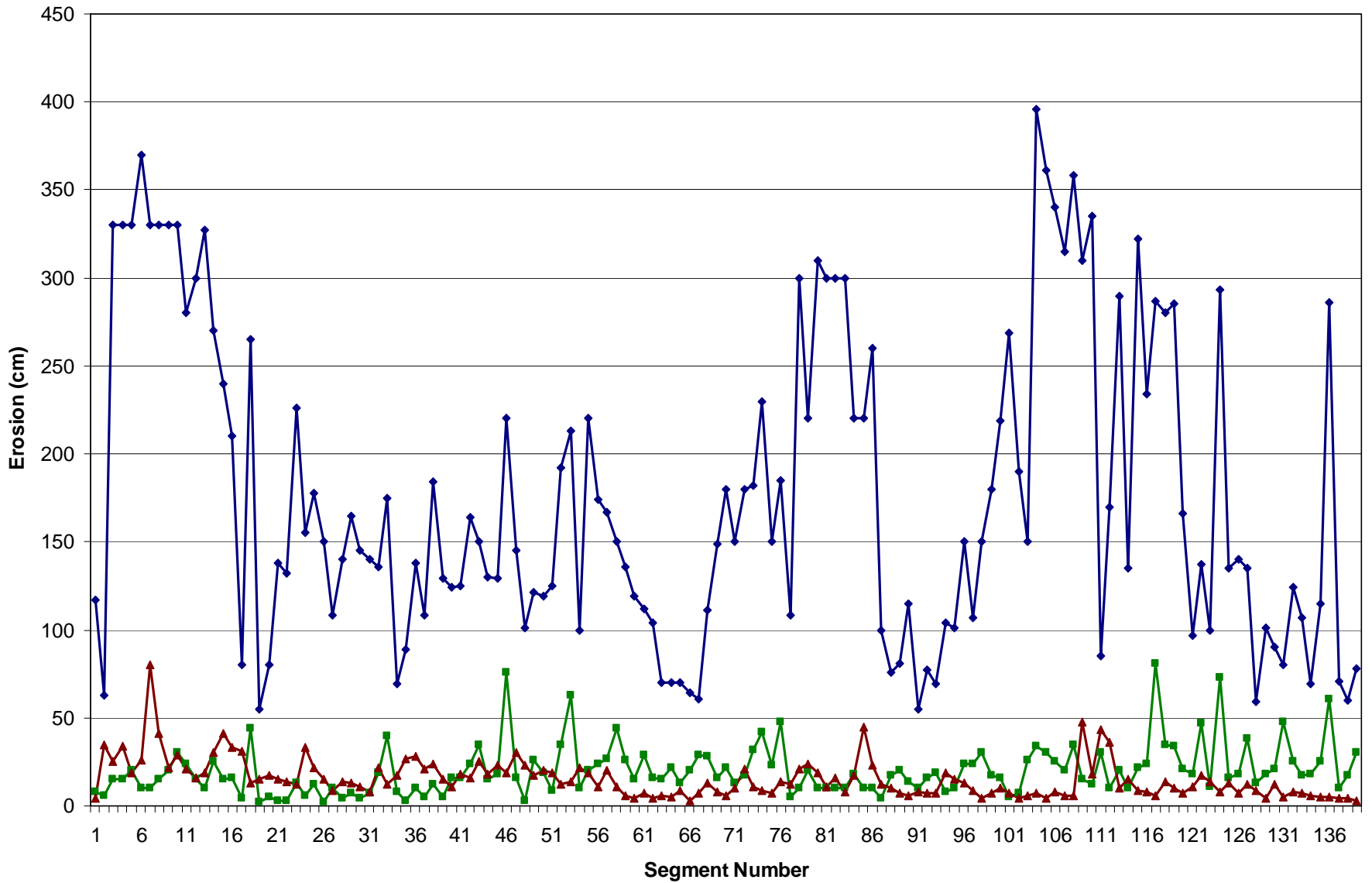
Table 1. Measurements of trail erosion and trash encounters for

Tiger Leaping Gorge, Yunnan Province, PRC.

	Average	Average without Roads
Trail Width (cm)	176.55	141.81
Trail Depth (cm)	19.9	20.57
Average Trash Encounters	15.37	13.21
Total Trash Encounters	2140	1453

Trail Measurements

Trail Width (cm) Trail Depth (cm) Trash Encounters



Probability Tables

- Probabilities derived from measured data

Table 1. Probabilities for Trash Encounters along the high trail in Tiger Leaping Gorge, Yunnan Province, PRC

Opportunity Class	Probability
I.	$p(\text{mean trash encounter} < 5) = 60\%$
II.	$p(\text{mean trash encounter } 5-10) = 60\%$
III.	$p(\text{mean trash encounter } 10-15) = 60\%$
IV.	$p(\text{mean trash encounter} > 15) = 60\%$

Table 2. Probabilities for Social Encounters in the low (rainy) season along the high trail in Tiger Leaping Gorge, Yunnan Province, PRC

Opportunity Class	Probability
I.	$p(\text{mean social encounter} < 10) = 80\%$
II.	$p(\text{mean social encounter } 10-20) = 80\%$
III.	$p(\text{mean social encounter } 20-30) = 80\%$
IV.	$p(\text{mean social encounter} > 30) = 80\%$

Defining Opportunity Classes

- Used a modified version of ROS
 - Class 1: Most pristine, chance for solitude, minimal human impact (other than locals)
 - Class 2: Evidence of human impact (other than local livelihoods), occasional interparty contact
 - Class 3: Noticeable human impacts (other than locals), interparty contact common
 - Class 4: Highly noticeable human impacts (other than locals), very frequent interparty contacts

Discussion

- Determined current condition of area is Class III
- More impacts closer to villages and roads
- Most of trash was either cigarettes or plastics
- The majority of hikers were international tourists (35 of 37) whose biggest concern was amount of trash

Discussion

- Owner of Halfway House said most trash is from domestic hikers or locals (“they need education”)
- Owner of Sunrise House said trash is from domestic tourists
- Director of Tourism for Diqing Prefecture said mass tourists throw trash everywhere
- General trend – there is a trash problem that needs to be addressed

Trash



Discussion

- Locals involved in tourism noticed a decline in the number of tourists to the high trail following the increase in the entrance fee
 - Decline in domestic but relative increase in international tourists
 - Entrance fee collected by private company, who is not responsible to local government, only provincial government
 - The money from the entrance fee is used to “develop scenic areas” (A Wa)
 - No money goes to locals
- There was a program to flatten and widen the trail; locals were promised money for help but no one received anything

Interview with Director of Tourism in Diqin Prefecture

- Interesting Information/Perspectives
 - Tourism is developing too fast (30% increase in 2006), need to slow down, establish capacity
 - His biggest concern is the safety of tourists; there is no infrastructure to deal with emergencies
 - Ecotourists are good for farmers – bring in money, encourage conservation, and help to raise level of education (key component to raising education for the region is tourism)
 - Ecotourists better than mass tourists – do not have package deal, so more money goes directly to locals; stay longer; do not throw trash on trail

Interview with Director of Tourism in Diqin Prefecture

- More information
 - Proposed dam – nothing final, will take at least 30-40 years to decide (according to news reports, the dam is included in the 11th 5 year plan)
 - Several NGO's are forbidden in the area because of previous misdeeds (collected samples without permission) – implications for outside help
 - Believes that Tibetan culture will be preserved through tourism development because it encourages them to put on traditional clothing

Discussion

- Many locals do not use biogas because the land is not suitable for it – too prone to rock slides, or else too hard to find parts
- Biogas not suitable for guesthouses – all use fuelwood (either gathered directly from mountain or bought from farmers)
- There is a tungsten mine – many males work here until rainy season then are porters on the trail

Management Suggestions

- Use the money for the entrance fee to hire locals to perform trail maintenance, including trash pick up.
- Do not charge an entrance fee to increase visitation
- Develop comprehensive management plan
- If dam is going to occur, work with it to have least amount of impact on tourist resource.

Conclusions

- According to tourists, ecotourism is occurring along the high trail
- Tourists are causing impacts to the area, especially concerning trash
- Tiger Leaping Gorge is endangered of more development, which could threaten its scenic beauty
- Locals are not involved in any aspect of planning process and never have been

Limitations of Research

- Limited amount of interviews because of limited amount of time
- Lack of information on rest of trail – only hiked portion of it
- More standardized interviews – maybe stay at a hostel for several days and interview users
- Implications of use on low trail – information on those users

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Questions?

Jake "the trash counter"

Zeldae "the translator"

Daniel "the measurer"



The Three Tigers Leaping the Gorge!!

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