Limits of Acceptable Change

Cons481

Approaches to management

Outline:

- Carrying capacity as a concept in recreation management
- Putting carrying capacity into practice: the LAC model
- Managing recreational use of wild lands

Tragedy of the Commons

The tragedy of the commons...

"Each man is locked into a system that compels him to increase his [use of the commons] without limit - in a world that is limited. Ruin is the destination to which all men rush, each pursuing his own best interests in a society that believes in the freedom of the commons. Freedom of the commons brings ruin to all." (Hardin, 1968)

Ecological Carrying Capacity

- the population of a given species that be supported indefinitely in a defined habitat without permanently damaging the ecosystem upon which it is dependent
- Hardin's Third Law of Human Ecology:
 - (Total human impact on the ecosphere) = (Population) x (Per capita impact).



Carrying Capacity in a Recreation Context

Definition of carrying capacity:

"the amount, kind and distribution of use that can occur without leading to unacceptable impacts on either the physical-biological resource or the available recreation experience." (Stankey et al., 1990)

Principles of recreation management:

- manage under a non-degradation condition
- set carrying capacities to prevent unnatural change
- Biophysical and socio-psychological components

Carrying capacity

- Biophysical carrying capacity:
 - the amount and type of use an ecosystem can sustain without undue evidence of unnatural impact
 - e.g. soil erosion and disturbance of wildlife
- Socio-psychological carrying capacity:
 - the level of human use an area can accommodate before solitude and other experiential values are diminished
 - e.g. concentration of visitors

- Limits of Acceptable Change (LAC)
- Recognises that change is inevitable
- Provides framework for planning regarding:
 - what changes are acceptable
 - what changes will be permitted to occur
- Closely related to carrying capacity concept
 - change is typically limited to that WITHIN biophysical carrying capacity

- LAC requires managers to:
 - identify where impacts occur
 - identify the levels of impact that are acceptable
 - (i.e. identify limits to acceptable change)
 - ensure impacts remain within these bounds

- LAC consists of 4 major components:
 - specification of acceptable and achievable conditions
 - analysis of existing conditions and acceptable change
 - identification of management actions to achieve desired conditions
 - a programme of monitoring to evaluate management effectiveness

9 steps to LAC process:

- 1. Identify area issues and concerns
- 2. Define and describe opportunity class
- 3. Select indicators of resource and social conditions
- 4. Inventory of existing resource and social conditions
- 5. Specify standards for resource and social indicators for each opportunity class
- 6. Identify alternative opportunity class allocations reflecting area issues and concerns and existing resource and social conditions
- 7. Identify management actions for each alternative
- 8. Evaluate and select a preferred alternative
- 9. Implement actions and monitor conditions



Fig. 9.3. The LAC process provides a framework for prescribing and maintaining acceptable wilderness conditions.

- 4 basic considerations:
 - determining impacts and possible implications is dependent on natural resource, socio-political and managerial factors
 - recognition that recreational use inevitably leads to change
 - determining acceptable level of change involves value judgement
 - impacts related to factors other than amount of use
 - i.e. type of use, timing, location, visitor behaviour, etc.

Basic aims of recreation management:

- manage to provide visitors with opportunity for quality recreational experience
- manage to limit impact of recreation on the environment/resource
- Dual Mandate

- Typical management paradox:
 - impacts affect visitor experience
 - reducing these would improve experience
 - management of impacts restricts visitors
 - adversely affects visitor experience
- Quandry of management: can't keep everyone happy
 - i.e. solutions rarely work without affecting something else and/or creating problems elsewhere

- Types of recreational problems:
 - illegal actions
 - careless/thoughtless violation of regulations
 - unskilled actions
 - uninformed behaviour
 - unavoidable minimum impacts

- Illegal actions:
 - direct contravention of regulations
 - examples:
 - motorised transport
 - graffiti and vandalism
 - effects of motorised transport:
 - disruption of wildlife
 - disturbance of other visitors
 - excessive erosion and noise pollution
 - appropriate management response is law enforcement

- Careless/thoughtless violation of recreation regulations:
 - due to irresponsible actions
 - examples:
 - littering
 - short-cutting of trail switchbacks
 - building wood fires in prohibited areas
 - manager must try to alter behaviour:
 - persuasion
 - making it easier to do the right thing
 - discouraging the wrong thing

- Unskilled actions:
 - many once recommended practices are now considered inappropriate
 - examples:
 - burying rubbish
 - ditching around tents
 - building bivouac shelters
 - most are unnecessary with modern gear
 - management response:
 - educate users in new ways
 - enforce rules where necessary

- Uniformed behaviour:
 - can intensify impacts
 - examples:
 - use of popular trails and access points leading to concentration of use
 - pursuit of certain activities in sensitive areas
 - managers can:
 - inform users of alternative areas to disperse use
 - set entry quotas at key access points
 - inform users of sensitive areas

- Unavoidable minimum impacts:
 - every visitor causes unavoidable impact
 - examples:
 - trampling vegetation
 - disturbing/attracting wildlife
 - managers can:
 - encourage minimum impact practices
 - move use to less sensitive areas
 - If all other options have failed and impact remains unacceptable then manager must regulate to reduce/eliminate use

- Management parameters (aspects of use that can be controlled or influenced):
 - amount of use
 - distribution of use
 - timing of use
 - method of travel
 - party size
 - length of stay
 - behaviour
 - effect on environment
 - effect on other visitor's experience

- General management approaches:
 - direct management
 - indirect management
- Direct management emphasises regulation
 - loss of experiential value
 - requires extra resources
 - set behavioural standards
 - prevent over use
- Indirect management emphasises influencing or modifying visitor behaviour through education, etc.

- Guidelines for regulatory practices are:
 - use non-regulatory alternatives if possible
 - explain regulations
 - regulate at minimum level needed
 - regulate at entry rather than activity level
 - monitor problem and effects of regulation
 - remember resources exists partly for visitor use

- Managing the impacts of people is the main focus of most management
- Main areas of management include:
 - managing campsite impacts
 - managing trail impacts

- Managing campsite related impacts:
 - more time spent on campsite than anywhere else
 - impacts include:
 - changes in vegetation and soil characteristics
 - due to trampling, collecting fire wood, etc.
 - factors influencing impact include:
 - amount and frequency of use
 - type and behaviour of users
 - environmental characteristics of site itself

- management strategies include:
 - limiting use
 - changing type and behaviour of users
 - shifting use to more durable sites
- encouraging minimum impact camping:
 - use of proper equipment
 - keeping party sizes small
 - selecting resistant and appropriate sites
 - being careful with fire
 - avoiding 'site improvement'
 - minimising pollution (rubbish and human waste)
 - limiting length of stay

- Managing trail impacts
 - Iocalised impacts but very visible
 - costly to repair
 - common problems:
 - excessive erosion
 - boggy areas in saturated soils
 - proliferation of unplanned or impromptu trails
 - management options include:
 - rehabilitation of badly eroded/multiple trails
 - relocation of trails to more durable routes
 - trail engineering

Summary

- Carrying capacity as a key concept in recreation management
 - builds on Harding's ideas re: the tragedy of the commons
 - practical application through LAC model
- General principles and approaches in managing recreation
- Types of recreational problems
- Examples of recreation management