

Recreation Capacity Mapping

for Large Landscapes

Executive Summary

Recreation capacity mapping (RCM) is a managerially practical rapid appraisal technique used to inventory large landscapes based upon sound professional judgment. RCM results in a large-scale map that depicts four recreation situations: (a) areas where recreation use or demand is below capacity and of low concern, (b) areas where recreation use or demand is meeting or is at-capacity and is of moderate concern, (c) areas where recreation use or demand is exceeding capacity and of high concern, and (d) areas not suitable for the specific recreation use in question due to such factors as urban development, public safety, topography, water resources, or Congressional direction. The rating of below, meeting, or exceeding capacity is based upon seven decision criteria included in the enclosed *Decision Guide for RCM*.

The benefit of applying RCM across large landscapes (e.g., multiple forests, counties, or states) is to provide decision makers with the larger context of opportunities and constraints within which to make site-level decisions and to help ensure recreation diversity and efficiency among the numerous local, state, and federal providers of outdoor recreation. RCM, in and of itself, does not provide sufficient information for managers to make site-level decisions, but rather is intended to provide a landscape level inventory of the recreation capacity situation for due consideration in the planning and decision process.

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Introduction

The U. S. Forest Service was one of five agencies to participate in the Department of the Interior's Federal Interagency Task Force on Visitor Capacity from 2000 to 2002. The goal of the Task force was to help improve visitor capacity decision making (Haas 2002 and available on the FS INTRANET). The Task Force defined recreation capacity as:

The prescribed number of appropriate visitor opportunities that will be accommodated in an area.

Recreation Capacity Mapping (RCM) is a tool that builds upon the Task Force efforts. RCM is a rapid appraisal technique used to inventory the recreation capacity situation across large landscapes based upon sound professional judgment. The benefit of applying RCM across large landscapes (e.g., multiple forests, counties, or states) is to provide decision makers with the larger context of opportunities and constraints within which to make site-level decisions and to help ensure recreation diversity and efficiency among the numerous local, state, and federal providers of outdoor recreation.

RCM requires the use of a short decision guide and sound professional judgment. The decision guide is a question-based management tool, a structured thinking process, which will (a) help ensure that managers duly consider the key factors, (b) improve analysis and decision making, and (c) provide documentation for the administrative record. Sound professional judgment is the substantive standard recognized by the Task Force for making recreation capacity decisions.

What is the value of Recreation Capacity Mapping?

Regardless if one is planning for timber, wildlife, water, transportation, facility development, or recreation resources, project-level decision making should consider the larger surrounding landscape in order to ensure due consideration of the larger ecosystem. Recreation capacity mapping is a tool that enables a manager to inventory, map, and visually depict a large landscape in terms of where the current recreation use or demand is below, meeting, or exceeding capacity.

More specifically, recreation capacity mapping results in a map, perhaps a GIS overlay, that depicts four recreation situations: (a) areas where recreation use or demand is below capacity and of low concern, (b) areas where recreation use or demand is meeting or is at capacity and is of moderate concern, (c) areas where recreation use or demand is exceeding capacity and is of high concern, and (d) areas not suitable for the specific recreation use in question due to such

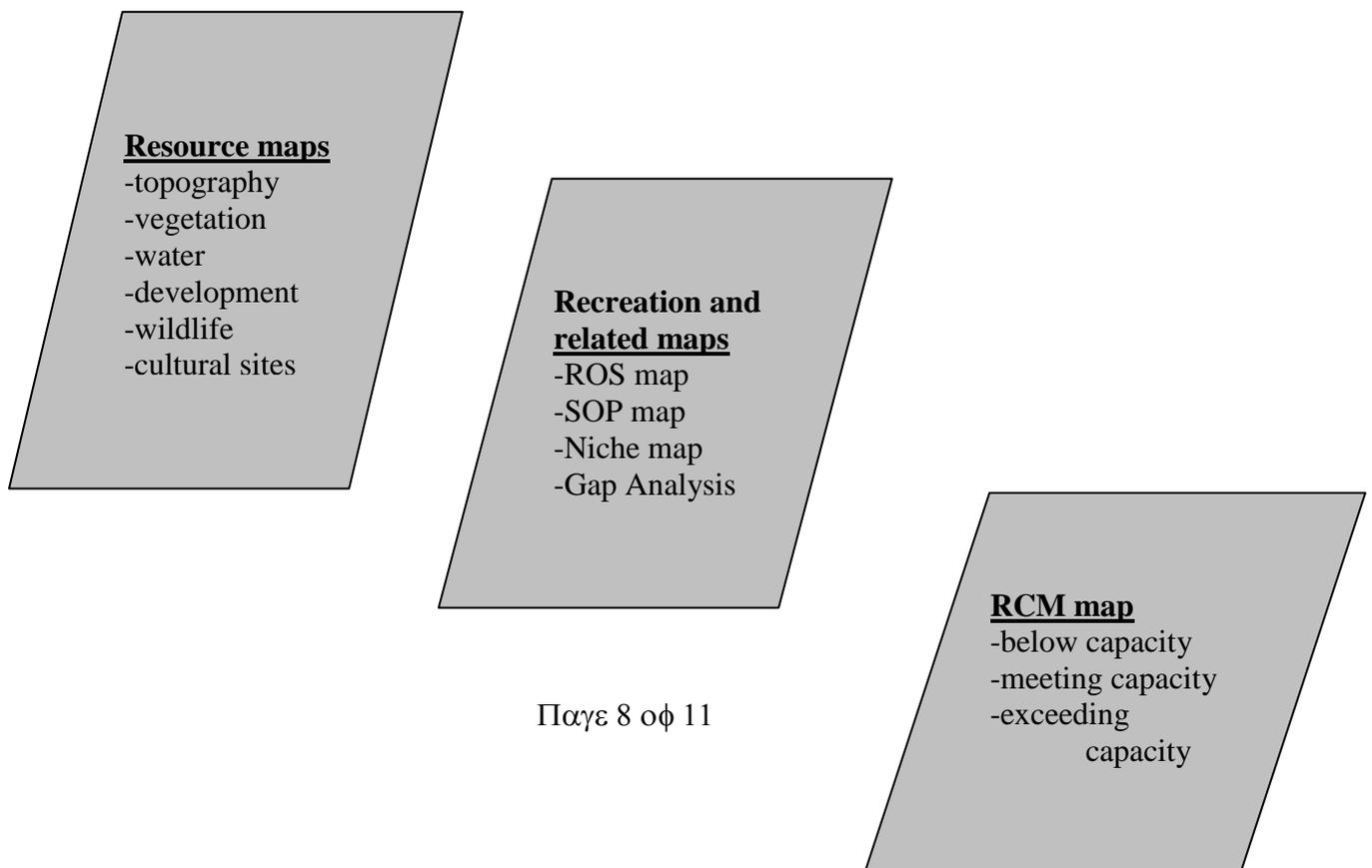
factors as urban or transportation development, vegetation, topography, water resources, or Congressional direction.

RCM has many uses and values as a planning and recreation management tool. For example, RCM can help to:

- identify the location and intensity of recreation use opportunities and conflicts
- identify the distribution and spatial relationship of recreational use or demand
- develop innovative recreation management alternatives
- evaluate the fairness proposed alternatives on different recreating publics
- define agency's recreation niche and priorities
- increase public understanding for issues of recreation resource scarcity and allocation
- increase public awareness of alternative locations for their recreation participation
- voluntarily shift recreation use from settings where recreation use is exceeding capacity
- ensure interagency coordination and complementary management
- ensure the conservation of recreation diversity across large landscapes
- mitigate the negative effects of recreation management decisions
- strengthen the reasonableness and defensibility of decision making.

Linkage to Other Resource Mapping?

Recreation capacity mapping complements and adds value to other resource mapping. It is a natural extension and provides supplemental information. These maps together provide a comprehensive view of resource availability and suitability, public values associated with certain locales, the type and location of recreation opportunities being provided to the public, and the locations where current recreation use or demand is below, meeting, or exceeding capacity.



What is Involved in Recreation Capacity Mapping?

An important advancement from the Federal Interagency Task Force on Visitor Capacity was a sliding-scale of analysis to address recreation capacity. The premise of a sliding-scale of analysis is that the level of analysis should be commensurate with the significance of the potential impact of the decision under consideration. The sliding-scale gives managers flexibility to employ one of three levels of analysis which vary by scientific precision and accuracy, time, money, type and amount of data, purpose or intended use of the information, and the significance of the decision to be made. Level 1 is the least intensive level of analysis and Level 3 is the most intensive level of analysis. Appendix A includes a table that further explains the sliding scale, and the Task Force report provides additional details.

Recreation capacity mapping is considered a Level 1 tool on the sliding-scale of analysis. It is a rapid appraisal tool that provides a coarse or macro view of a large land or water area, much like the view from an airplane across several forests or counties at one time. RCM, in and of itself, does not provide sufficient information for managers to make site-level recreation management decisions, but rather is intended to provide the larger ecosystem perspective important to resource planning and decision making.

What is the Decision Guide for RCM? RCM utilizes a decision guide and sound professional judgment. The decision guide is a question-based management tool, a structured thinking process, that will help to (a) ensure that managers duly consider key capacity-related factors, (b) improve analysis and decision making, and (c) provide documentation for the administrative record. The decision guide is presented and formatted on the following page.

How is Below, Meeting, or Exceeding Capacity Defined? The rating of an area as below, meeting, or exceeding capacity is a summary judgment based upon the due consideration of seven decision criteria. The Decision Guide on the following page has the seven criteria listed. These criteria are professionally understood to be key drivers in defining the recreation capacity situation for an area.

Thus, an area judged to be below capacity would have the preponderance of the criteria rated as “yes.” An area judged to be meeting or at-capacity would have the preponderance of the criteria rated as “partially.” An area judged to be exceeding capacity would have the preponderance of the criteria rated as “no.”

In order for a manager to respond to the question of “how are you defining that an area is exceeding capacity,” he/she would refer back to the completed decision guide in the administrative record to elaborate on each criterion, its rating, and the use of sound professional judgment.

Who does the mapping? Recreation capacity mapping is based on the expert experience and judgment of forest and district-level experts; that is, those people most experienced and knowledgeable with the past and current recreation situation. There may also be advantage to including experienced and knowledgeable people from the community, other agencies, permittees, local residents, and concessionaires.

What gets mapped? The expert team is charged with identifying and mapping those geographic locations that reflect one of four situations. A “red” shaded area depicts an area where current recreation use or demand is judged to be exceeding capacity. A “yellow” shaded area depicts an area where current recreation use or demand is judged to be meeting or is at-capacity. A “green” coded area depicts an area where current recreation use or demand is judged to be below capacity. Areas without any color shading depict areas not suitable or compatible with recreational uses because of such factors as urban or transportation development, topography, private lands, administrative or security closures, or riparian corridors.

What is the practical size of an area for RCM? Recreation capacity mapping is a large-scale tool and results in a generalization across a large landscape no different than large-scale inventories of timber types, insect infestations, soil types, habitat types, or air quality. It can be used at a regional, sub-regional, or forest scale. It is not appropriate, reasonable, nor the intent of RCM for its generalization of below, meeting, or exceeding capacity to accurately describe each and every acre.

The size of overall area for applying RCM and the level of resolution (i.e., the minimum size of each mapping unit with the large geographic area) needs to be managerially practical and commensurate with the significance of the decisions to be made. For example, if a district ranger is trying to decide when to open and close a popular developed campground, they may apply RCM across the adjacent national forests and use a minimum level of resolution of 3,200 acres for each mapping unit (i.e., 5 square miles). If a forest supervisor is dealing with a forest-wide motorized recreation transportation situation, they may apply RCM across the entire state or FS region and use a minimum level of resolution of 32,000 acres (i.e., 50 square miles).

What is a practical time period for RCM? Recreation capacity mapping is also intended to be a generalization across whatever time period is chosen for analysis. Depending on the recreation activity to be examined, it would be reasonable to choose the high use season such as summer for wilderness overnight use, fall for hunting, and winter for snowmobiling. It is not appropriate, reasonable, nor the intent of RCM for its generalization of below, meeting, or exceeding capacity to accurately describe each and every day or weekend of the time period.

Decision Guide for Recreation Capacity Mapping

Recreation capacity mapping is a rapid appraisal technique used to map large landscapes based upon sound professional judgment. The purpose of mapping large landscape (e.g., multiple forests, counties, or states) is to provide decision makers with a larger context of the opportunities and constraints within which to make site level decisions and to help ensure recreation diversity.

RCM, in and of itself, does not provide sufficient information for managers to make site-level decisions, but rather is intended to provide a landscape level inventory of the recreation capacity situation for due consideration in the planning and decision process.

A) Area Name and Location ID Number: _____

B) Description of Recreation Situation: OHV/Access, Rec. Riparian Interface, Dispersed Rec. Management

C) Describe Major Public Values (e.g. Activities, Settings, Experiences, Benefits) Associated with Area

D) This Recreation Situation is Applicable to the Area? Yes, No (based on Laws, Physical Limitations)
If no, DO NOT CONTINUE ON

Decision Criteria (if applicable) (Circle the best answer below)

1.	Is the recreation situation compatible with major public values associated with the area?	YES	PARTIALLY	NO
2.	Is the recreation situation compatible with current forest management objectives and desired future conditions?	YES	PARTIALLY	NO
3.	Is the recreation situation providing safe and healthy recreation opportunities?	YES	PARTIALLY	NO
4.	Are the management resources adequate (e.g., personnel, budget, equipment, programs) to protect the resource and to ensure quality recreation opportunities?	YES	PARTIALLY	NO
5.	Are the natural and cultural resources, and their current condition, able to accommodate the current recreation situation without unacceptable impact?	YES	PARTIALLY	NO
6.	Is the level of risk and uncertainty about the likely impact of the current recreation use low (versus moderate or high)?	YES	PARTIALLY	NO
7.	Does the recreation opportunity provide high visitor satisfaction with few conflicts and complaints?	YES	PARTIALLY	NO

Summary Judgment: *Based upon sound professional judgment, and due consideration of the decision criteria, the level of concern for the recreation capacity of this area is judged to be:*

LEVEL OF CONCERN

LOW MODERATE HIGH

Signature of Responsible Official: _____ Date: _____

RCM Process

RCM is generally initiated during the pre-planning or inventory stage of a planning process. There is no fixed or right process for applying RCM. Variations to fit the situation are encouraged. What is important is that the process be logical, reasoned, transparent, trackable, and well documented. The judicial litmus test is that the RCM process should be reasonable for the specific circumstances and based upon sound professional judgment.

Thus, one option for the RCM process might be a series of iterative decision steps such as:

1. Identify the large geographic area to apply RCM and outline the boundaries on a large working base map. For example, the geographic area might be defined as the market area from which 80% of current visitors reside (e.g., within 200 miles), or it might be a multi-county or state area in order to meet the data needs for a number of forests with plan revisions underway or anticipated in the near future, or it may be defined in collaboration with other state and federal agencies. Mapping an entire state or FS region is reasonable.
2. Identify the significant recreation activities to be mapped (e.g., OHV recreation, wilderness camping, river rafting) and the period of year that the RCM should focus on (e.g. summer months). Closely associated activities may be bundled together. Initially, it is recommended that only one or two activities be chosen to demonstrate the utility of RCM.
3. Convene a team of agency experts familiar with the past and current recreation situation. Outside agency experts may also be invited to participate. Depending upon the location of the geographic unit to be mapped, agency experts may be assembled from a number of administrative offices.
4. Identify for each key recreation activity the locations where the activity is not suitable or, for some compelling reason, is not compatible. Factors that may define areas as not suitable would include urban and commercial development, highways and roads, non-compatible land uses such as mining, steep topography, riparian areas, private lands, cultural and historic sites, special habitat areas, and administrative closures or security areas. The fact that there is very low current recreation use is not a reason to define an area as not suitable or compatible.
5. The unsuitable acres can be lightly shaded in a gray to signify that no further RCM steps is necessary. The remaining unshaded area on the base map is the area to receive the remaining steps.
6. Decide upon the size of each mapping unit; that is, what size of an area to generalize to that would be practical and useful. For example, a minimum level of resolution for each individual mapping unit may be 3,200 acres (5 square miles) or 32,000 acres (50 square miles). A mapping unit is a subunit of the larger geographic area that can accommodate recreation use (i.e., the unshaded area). Each mapping unit will be examined by the RCM team and judged to be below, meeting, or exceeding capacity for the specific activity (ies) in question.

If the unshaded area is large and approaching the size of an entire State, it may be more practical and efficient to start with a 32,000 or 50 square mile level of resolution for each mapping unit. If time and planning needs permit, the 50 square mile mapping unit can be further subdivided later.

7. The team proceeds to identify the RCM mapping units depending on the planning needs of the forests and other cooperating agencies. These identification of mapping units are not fixed absolute decisions, and adjustments to the boundaries can be made as desired.

8. For each mapping unit, a decision guide is completed by the team, or a portion of the team with knowledge of the area. Each decision criterion should be discussed openly with justification being provided by those knowledgeable members. The result is that each decision criterion is answered or judged by either yes, partially, or no.

One option would be for each team member to answer for each criterion and then to compile the data mathematically (e.g., yes = 3, partially =2, no=1). Another option would be to strive for consensus through discussion and have the team agree on a single collective answer for each criterion. A third option would be for the responsible official (or team leader) to rate each criteria on the basis of the information provided by the team members. There are advantages and disadvantages to each approach, with the latter being favored because of efficiency and consistency.

9. After each criterion is considered and responded to, the responsible official (or team leader) would make a Summary Judgment at the bottom of the Decision Guide by considering the preceding seven responses to the criteria. Based upon the judicial rule of “preponderance of the evidence,” the responsible official would conclude that the current recreation use or demand in the mapping unit in question is either below, meeting, or exceeding capacity. The Summary Judgment may be concluded during the team meeting, or in some cases, it may be more efficient for the Summary Judgment to be concluded later.

10. This process would be repeated for each key activity and each mapping unit.

11. After the Summary Judgment is made for each mapping unit, the red, yellow, and green color shades would be applied to the base map. The color-coded base map can then be forwarded and reviewed again by the team members to validate if the map is “reasonable.”

12. An optional step would be to ask the public outdoor recreation community for their comments and suggested revisions. This could be accommodated by public feedback through newsletters, web- sites, or open houses. Caution is necessary in this step in that the public likely does not have the information or professional expertise to duly consider the decision criteria that were used by the RCM team in arriving at the Summary Judgment for each mapping unit. Rather than changing the RCM team map in response to public feedback, it is recommended to retain the RCM team map while generating a separate public response map for due consideration in the planning process.

Reference

Haas, G. E. 2002. *Visitor Capacity on Public Lands and Waters: Making Better Decisions*. A Report of the Federal Interagency Task Force on Visitor Capacity on Public Lands. Submitted to the Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior, Washington, D.C. May 1, 2002. Published by the National Recreation and Park Association, Ashburn, Virginia. (ISBN 0-929581-66-0)

Copies of the Task Force report are posted on the USFS INTRANET website.

The actual published copies are available through the NRPA website at www.nrpa.org or by calling 1-800-626-NRPA. .

Appendix A

The Generalized Purposes for a Sliding-Scale of Analysis

LEVEL 1: To measure recreation supply for planning and routine administrative functions

- general recreation supply inventory and mapping
- build administrative and historic record
- regional recreation demand and supply analysis
- concept design and planning for facilities and infrastructure
- assist in prioritizing budget, personnel, activities, and monitoring efforts
- proactively set capacity triggers to activate future mgmt. activities or resources
- development of visitor information and marketing materials and strategy
- provide macro level predictability to private sector and local community
- minor and non-controversial allocations among recreation and non-recreation uses
- justify emergency restrictions due to public health and safety concerns
- develop environmental assessment

LEVEL 2: To proactively address moderate-level (non-significant) land use allocation and visitor management decisions

- includes Level 1, plus
- assist in moderate level allocation decisions
- assist in the expansion, closure, or alteration of moderate-scale recreation facilities or permittees
- unit or site-level community and private sector predictability
- assist to mitigate moderate-level risks to resources or recreation opportunities
- site and facility design and planning for small scale projects
- proactively address anticipated safety issues
- increase stakeholder awareness and support for likely future management actions
- assess small and non-significant proposed land use changes
- help voluntary redistribution of visitor use via visitor information, marketing, and trip planning materials and strategies
- adapt or reset capacity triggers to activate future mgmt. activities or resources

LEVEL 3: To assess decisions of significant consequence (e.g., safety, visitation limits, major allocations, land use development)

- includes Levels 2, plus
- to assess significant land use change proposals
- risk management tool for significant public safety concerns
- assist in the expansion, closure, or alteration of large-scale recreation facilities or special use permittees
- site design and planning for major developments
- mitigation of existing or imminent threats to resources or other users
- allocation of significant uses/users across time or space
- to establish significant visitor limitations or area closures deemed necessary
- development of environmental impact statement

