

ADAPTING THE RECREATION OPPORTUNITY SPECTRUM (ROS) FOR STATES LANDS PLANNING

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Abstract: The huge population increases anticipated over the next century make the problem of identifying and conserving open space critical. While the Recreation Opportunity Spectrum is undoubtedly the most sophisticated recreation inventory system established to date, it was designed for, and is best suited to, the large tracts of public lands in the western U.S. In this paper, we detail the results of a task force that sought to extend the original ROS to include both federal and state lands planning in the Northeast, using Vermont as an example.

Introduction

The problem of conserving scarce open space and its associated recreational opportunities is about to become critical, as the U.S. population doubles by 2050 (U.S. Census Bureau, 2001). While a doubling of the population may sound abstract to some, its effects will be material indeed. Not only will more people need more houses, apartment buildings, subdivisions and the roads to connect them, but also more office buildings, convenience stores, movie theaters, doctors' offices, and other supporting infrastructure. Imagine Los Angeles or New York doubling! What will be left of, say, rural Ohio if Cleveland, Columbus, Cincinnati, Akron, Dayton, and Toledo all double? Even imagining this underscores the urgency of efforts to conserve open space. Unfortunately, the conservation effort may actually be impeded by the very multiplicity of federal, state, and local agencies involved as well as not-for-profits, each of which has its own mandates, goals and objectives, and system of operations. Clearly there is a need for a coordinated conservation effort that crosses agency and jurisdictional lines.

The first step in conserving recreational resources is undoubtedly an inventory of existing resources. Perhaps the most sophisticated recreation lands inventory tool developed to date is the recreation opportunity spectrum (ROS) developed by the USDA Forest Service in the late 1970s (Clark & Stankey, 1979). The ROS recognizes the need to maintain a spectrum of opportunities that support a wide variety of experiences. The key term is "experiences," and the crucial assumption is that different kinds of land (or landscapes) can support different kinds of experiences. The original ROS classified lands as primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, and urban (wilderness is a special, legally designated category that can cross classes). At the primitive end of the scale are landscapes that support wilderness-like experiences. However, such experiences are actually fragile fantasies easily intruded upon by human activity, so evidence of people became the key factor differentiating the classes. This was generally operationalized for mapping purposes as distance from different types of roads. Using this criterion, Forest Service recreation planners were able to develop maps of the different categories for inventory purposes (much like a timber-type map). These maps provided baseline information for professionals and the public alike to assess the implications of proposed management actions. For example, if a proposed management action required building a road in a particular location, the road's impact on the distribution of land across categories could be easily assessed.

In general, the ROS system proved to be very robust and was quickly adopted by other federal land management agencies. Over time, however, a number of problems emerged. Most importantly, the ROS was, understandably, primarily a western concept, well suited to applications on the vast public lands of the American West. It is not as well adapted to the East, with its smaller scale and more intimate landscapes. Consequently, in 1985, the Forest Service issued an Eastern Regional Supplement to facilitate ROS application on eastern national forests (USDA, Forest Service, n.d.).

Lynch and Nelson (1996) identified three major difficulties with the Eastern Regional Supplement:

1. Vague, poorly defined standards that are not specific, measurable parameters
2. Direct inconsistencies and contradictions
3. Selected recreation facilities lacking standards and guidelines.

These difficulties can lead to ambiguous opportunity settings that fail to meet user expectations, resulting in conflict between managers and the public.

A second, related problem is that the ROS system is well suited to the needs of the large federal land management agencies. It is less well adapted to the needs of states, counties, and municipalities where properties tend to be smaller and more diverse in function, and may be located close to, if not within, major metropolitan areas. Another

related difficulty is that the ROS is perhaps more finely differentiated at the primitive end than at the urban end. There is, we believe, greater diversity on a variety of dimensions at the urban end of the spectrum, and there is a need for more finite categories.

All these difficulties are understandable given the needs and interests of the Forest Service as the agency originating the concept. Unfortunately, however, despite its revisions, the present form of the ROS is still unsuited to multi-agency, cross-jurisdictional planning. Imagine standing at the very center of one of our major cities looking outward. What opportunities would you find available, ranging from the pocket park around the corner to the wilderness area on the distant horizon? How can we construct an inventory system that takes all these into account, that reveals deficits in particular categories, and that identifies potential opportunities that could be conserved? In this paper we address these questions indirectly by describing the results of an interagency effort to extend the existing recreation opportunity spectrum to include both federal and state lands planning in the Northeast. While our effort centered on Vermont state lands, the results may be useful to other northeastern states and, eventually (with further revision), to county and municipal-level planning as well.

The ROS: Old and New

The original ROS (and the one that is currently in place for federal land management agencies) is an inventory system that embodies six classes of lands: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. Each of the six classes is described by a "typical" setting based upon factors such as sizes, naturalness, and the presence or absence of motorized vehicles and other sights and sounds of humans. The different settings prompt particular experiences that range from a sense of isolation, self-reliance, and closeness to nature at the primitive end of the scale to social experiences in highly structured environments at the urban end. A complete description of both the setting and experience scales associated with each ROS class is provided in the ROS Users Guide (USDA, Forest Service, n.d.).

Operationally, the ROS produces a set of inventory maps based upon multiple criteria including remoteness, area size, evidence of humans, and the social and managerial settings. With the remoteness criterion, for example, primitive lands must be at least 3 miles from all roads, railroads, etc.; roaded natural lands are within one-half mile of roads that are better than primitive; and there is no distance criterion for rural or urban lands. Similarly, for the size criterion, primitive lands must generally exceed 5,000 acres; semi-primitive motorized lands must be greater than 2,500 acres, and there is no size criterion for roaded natural, rural, or urban lands. As before, each of these criteria is fully described in the ROS Users Guide.

As noted, these criteria are combined in the production of inventory maps. The maps provide a useful tool in the forest planning process by organizing baseline information which can be used to assess the potential effects of future management and policy alternatives.

This, then, is a brief description of the system we wanted to adapt to state lands planning in Vermont. Inevitably, adapting any technique to a new situation engenders changes. Initially, the USDA Forest Service participants in the process were concerned about retaining the integrity of the original ROS system so that existing federal inventories would remain valid. At the same time, when different people with different needs view a tool like the ROS, questions and problems arise that necessitate modification.

The changes we made fell into five general categories. First, we tried to clarify the language of the existing ROS, fixing any of the contradictions we found in order to make the guidelines easier to understand and implement. For example, the experience character of the rural class in the original ROS states that the "probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities." This was reworked to: "Encounters with other individuals and groups are common. Site and activity access is convenient." With such changes, our goal was to simplify and clarify the intent.

Second, we also added language to clarify some of the more general or vague guidelines. We have called these management or implementation guidelines. We hope these will increase the consistency of interpretations by answering some of the basic questions managers will have when trying to interpret the guidelines. For example, the primitive setting guidelines state that the area appears to be an essentially unmodified natural environment relatively large in size. Because we anticipated that managers would have difficulty interpreting which management actions were consistent with an area that is an "essentially unmodified natural setting," we added a clarification that simply states: "Timber harvesting is not compatible with this class."

Along these same lines, we attempted to include uses that were not mentioned in the original ROS such as mechanized uses including mountain bikes (cf., Lynch & Nelson, 1996). Instead of leaving it up to managers to attempt to interpret where these uses are appropriate, we added language to clarify when and where mechanized uses are appropriate within the spectrum.

Third, the original ROS allows for modifications to some guidelines (like remoteness and size criteria) during implementation based on site-specific features. For example, while remoteness criteria states that a primitive area is at least 3 miles from all roads, railroads, and trails with motorized use, it allows for modification to conform to natural barriers, screening, topography, and vegetative cover. While we did not change the original remoteness criteria, we added language to clarify how conditions in New England could be accounted for in modifications. For example, in the case of primitive remoteness, we added the statement: "In New England, a 2-mile distance may be appropriate due to the nature of topography and other features."

Fourth, the most obvious change came in the renaming of some of the classes. As we discussed the various

categories, we got stuck on conundrums like: "Can there be rural areas in a city?" Eventually we realized that what we were dealing with was actually a continuum of development or a range of naturalness, so we renamed the classes accordingly:

- Roaded natural became semi-developed natural
- Rural became developed natural
- Urban became highly developed

Note, however, that the basic content of each class remained unaltered.

Fifth, the most exciting change is the addition of characterizations and guidelines for what was the urban class and is now called the highly developed class. Since ROS was designed for large blocks of forestland such as those managed by the USDA Forest Service, the urban end of the spectrum was not given much attention initially. One of our primary goals in starting this project was to make ROS useful in classifying all lands in Vermont and, potentially, in New England. To do so, we had to accurately capture the experience characteristics for people using highly developed areas for recreation. Highly developed recreation experiences are as wide-ranging as the settings in which they occur. For example, we discussed the variety of experiences supported by a large park like New York City's Central Park as compared to small "pocket" parks or athletic fields devoted to facilities like ball fields or tennis courts. Each of these entailed obvious differences in settings, user motivations, and the nature of the experience provided. For example, it is much easier to experience a limited sense of solitude in a large park where the street is out of view than in a small park where the surrounding city is constantly in evidence. Clearly there are obvious differences in setting, and we identified differences in user motivation and experience as well. We captured these differences by subdividing the urban classification into two main categories.

- Settings in which the facilities are dominant and exist to support the activity. Here the experience is about the activity.
- Settings that are naturalistic and are not developed to meet the needs of a particular activity. The experience here is about escaping an urban landscape to participate in unstructured activities. The naturalistic category was divided into two subcategories--large (greater than 15 acres) and small--since we anticipated that each category would sustain different kinds of experiences.

These changes led us to retain a 6-class ROS, with the "Highly Developed" category containing three subclasses. In this way, we were able to preserve the content of the original ROS so that existing inventories would not be compromised, while offering finer differentiation at the urban end of the spectrum. The setting characteristics of each class are described in Table 1.

Applying the ROS to State Lands Management Planning in Vermont

Although Vermont is a relatively small state, more than 20% (nearly 1.2 million acres) of its land base is conserved. Of this total, 7.2% is federally owned, mostly in the Green Mountain National Forest (396,000 acres) concentrated in southern Vermont along the spine of the Green Mountains. Another 7.8% (469,589 fee and non-fee acres) is in state ownership, while municipal lands account for 0.6% (36,000 acres), and there are 290,000 acres (4.9%) of privately conserved lands. The state lands are scattered throughout the state and range in size from very small areas to the largest parcel, Mt. Mansfield State Forest (41,092 acres). Obviously, there is great diversity to these lands and this diversity represents the key challenge we faced in adapting the ROS to state lands management planning.

Recreation planners at both the state and federal levels have long recognized the interconnected role that each plays in the delivery of recreation services, as well as the fact that, in Vermont, both federal and state facilities draw from the same market areas (other New England and Mid-Atlantic states). Additionally, many of the issues and problems the agencies face are similar, ranging from uneven use distribution to the protection of rare and endangered species. However, the state and federal agencies often have differing management goals, policies, directives, etc. to deal with these issues. These differences can frustrate the public, which frequently fails to recognize the difference between state and federal land; people simply understand that they are on public land and expect the same rules and regulations to apply.

Both the State of Vermont and the USDA Forest Service are deeply committed to the land management planning process, but the planning processes differ, each having its own mandates and constraints. While the Green Mountain National Forest has a single management plan, most of the State's 320 separate units have their own plans. State lands are divided into five districts, with each district responsible for planning and managing its lands. State forests, state parks, and wildlife management areas are purchased and funded from different sources and, in some cases, operate under different policies and missions. Historically, land management plans have been developed by Vermont Agency of Natural Resource employees trained in traditional forestry, with little formal training in recreation resource planning and management. Consequently, the focus of the recreation sections of the land management plans was on existing recreational uses, facilities, and activities. When requests for additional or new recreational activities and uses came before district staff, most were accommodated as long as there were no conflicts with other resources.

Over the past decade, the state has acquired a significant amount of additional public land without a concomitant addition of staff. These and other challenges make it increasingly difficult for state land managers to determine where land uses may best occur.

Table 1. Modified ROS Setting Classes for New England

Recreation Opportunity Spectrum (ROS) Classes for New England							
Primitive			Developed				
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Semi-Developed Natural	Developed Natural	Highly Developed		
				Large Natural	Small Natural	Facilities	
Area appears to be an essentially unmodified natural environment of relatively large size. It may contain evidence of past human activities and historical-cultural sites, but these are subordinate to its natural state.	Area appears to be predominantly natural or natural-appearing environment of relatively medium to large size.	Area appears to be predominantly medium to large sized natural or natural-appearing environment.	Area is a natural-appearing environment. Evidences of the sights and sounds of people are moderate. Such evidences usually harmonize with the natural environment.	Area is substantially modified natural environment. Resource modification and utilization practices enhance specific recreation activities and maintain vegetative cover and soil. Sights and sounds of people are readily evident.	The setting contrasts with the surrounding cityscape, but urban elements are common and readily apparent. Vegetation is often exotic and manicured. The design enables users to choose among solitude and social experiences in a naturalistic setting. E.g., there may be footpaths, benches, and social focal points.	The setting contrasts with the surrounding cityscape, but urban elements are common and readily apparent. Sights and sounds of people are expected and desired.	Area is characterized by a substantially developed environment. The setting is highly structured to fit the activity being provided.
Interaction between users is very low, and evidence of other users is minimal.	Interaction between users is low, but there is often evidence of other users.	Interaction between users may be low to moderate, but evidence of other users is prevalent.	Interaction between users is moderate to high.	Large numbers of users can be expected, both on-site and in nearby areas.		Social encounters are expected and often programmed.	
The area is essentially free from evidence of management restrictions and controls.	The area is managed so that minimum on-site controls and restrictions, if needed, are subtle.	The area is managed so that minimum on-site controls and restrictions, if needed, are subtle.					
Motorized or mechanized use is not permitted.	Non-mechanized uses predominate. Mechanized uses may be permitted. Motorized use is not permitted.	Mechanized uses may be permitted.	Resource modification and utilization practices are evident, but harmonize with the natural environment. Construction standards and facility design accommodate conventional motorized and mechanized uses.	Many facilities are designed for use by a large number of people. Density levels decline with increasing distance from developed sites. Facilities are often provided for special activities. Facilities for intensified motorized and mechanized uses and parking are available.	The design facilitates social encounters in a naturalistic setting.	Design is dictated by the requirements of the particular activities involved. Facilities are designed for large groups typical of sports and special events.	

The ROS will assist state lands managers in the following ways:

- The ROS is a holistic approach that examines the recreational experience based on the evidence of humans and their impact to the natural environment without just focusing on activities.
- The ROS provides a rational and consistent basis for land management decisions, whether it is for timber management, wildlife enhancements, or development of a recreational facility. It identifies where appropriate locations for certain uses could be allowed without degrading the type of recreational experience for that area.
- Implementing the ROS can bring recreation inventory information up to the same level of other natural communities/resources inventories in the land management planning and decision making process.
- The ROS enables individual areas (i.e., state land units) to be put into a broader, regional perspective and can help to protect rare primitive lands in the larger region (i.e., Northeast).
- The ROS helps to identify supply shortfalls and excesses in various categories that can be useful in setting acquisition priorities, or changing management directions on a certain area of public lands.
- The ROS can help determine "niche" opportunities in relation to what others provide, facilitating interagency cooperation. For example, Vermont state lands do not provide many opportunities for primitive recreation experiences due to the size of each land unit (usually smaller in size) and distances from roads, while the Green Mountain National Forest is a larger land mass that provides primitive opportunities. Looking outside the state, the northern part of New Hampshire, Maine, and the Adirondack Park in New York may provide more opportunities for primitive experiences and opportunities.

Conclusion

If the U.S. population doubles by 2050 as expected, substantially increasing public demand will necessitate interagency and cross-jurisdictional planning to preserve increasingly scarce recreation opportunities. The inventory process is basic to such planning and the ROS represents one of the most powerful recreation inventory tools ever devised. As presently formulated, it is best applied on the large tract public lands of the West; to apply it to state lands in the East necessitated a number of modifications. These included language clarification, the addition of management/implementation guidelines, special adaptations to fit the New England landscape, renaming some of the classes, and developing the urban category more completely. We anticipate publishing our revised version

of the ROS later in 2001. In the meantime, we hope other states will be interested in adopting the ROS for inventory and planning on their lands. The problems we encountered are hardly unique to Vermont, and the goal of broad-based, integrated planning is in the general public interest.

The ROS also must be considered as a work in progress. Our extension of the application to state lands planning necessitated a number of changes, but we do not doubt that more changes will be required as we delve further into the urban end of the spectrum. Moreover, there are questions about the public's ability to discriminate across classes at the primitive end of the spectrum (Dawson et al., 2001) as well as questions about the experiential basis of the technique. Those questions aside, however, the ROS represents the best available inventory technology for planning a very problematic future. It is increasingly important to apply it across the full spectrum of governmental levels.

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