



Scenic Beauty

The Washington State Joint Legislative Audit and Review Committee (JLARC) conducted a review of the state's efforts to conserve habitat and expand outdoor recreation. This work included a review of existing or potential objective outcome measures that could be used to evaluate the success of 13 land acquisition and regulatory programs intended to protect and conserve habitat and expand outdoor recreation. Based on the effective outcome measures found in the peer-reviewed and gray literature, communications with managers from similar programs in the U.S., and the project team's professional opinion, it was found that there is very little literature that focuses specifically on outcome measures as they relate to land acquisition intended to protect and conserve species, habitats or to expand outdoor recreation; however a number of states and regions have implemented outcome measures for acquisition, and guidance is available from the extensive literature on restoration program and project effectiveness.

Introduction

Developing strategies to effectively measure ecological outcomes that are linked to specific programs and projects is an essential, but not simple, task that remains generally elusive in practice (Dale and Beyeler, 2001; Sawhill and Williamson, 2003; Niemi and McDonald, 2004; Doren et al., 2009; Margoluis et al., 2013). There are many examples of project-level effectiveness and projects that have laid out clear outcome measures linked to the project goals, such as Hartema et al. (2014). At the programmatic and regional levels, examples of these outcome measures are more difficult to find. For an example of a regional evaluation of the cumulative effectiveness of multiple projects see Diefenderfer et al. (2016). For a model-based evaluation of restoration project impacts at a watershed scale see Roni et al. (2010).

Some researchers note that the increased demand for outcome measurement, particularly ecological outcomes, does not imply that they are useful for decision making or that they are frequently used (Turnhout et al., 2007). Others argue that aligning outcome measures (indicators and metrics) with the mission and goals of an organization, program, or project can change it profoundly.

Margoluis et al. (2013) argue that to measure success in conservation three questions must be answered: (1) are we achieving our desired impact?; (2) have we selected the best interventions to achieve our desired impact?; and (3) are we executing our interventions in the best possible manner? Another question to add to this list is (4) who is the audience and who will care about the effectiveness of our program and our actions?

Outcome measurement processes are based on the selection of indicators and metrics, and the choice of indicators and metrics will directly impact the results of the process (Behan et al., 2017). To understand which indicators and metrics have been shown to effectively measure the performance of land acquisition and regulatory actions, we focused our efforts on peer-reviewed literature, agency publications, and on programs that would help provide information about 'best practices' for outcome measures that were not found in peer-reviewed or agency publications. By best practices we were looking for *outcome measures* (i.e., indicators and metrics) and programs that were effective, innovative, or promising.

Due to the complexity and nuances related to the range of outdoor recreation activities in Washington, this section is not intended to be a comprehensive compendium of the indicators and metrics used to create effective outcome measures. Rather it is a compilation of effective outcome measures and practices based on our literature search, conversations with program managers, and the opinions of the project team within the timeframe of the project. The complete report (Behan et al., 2018) provides many more details concerning the development of outcome-based indicators from the literature, along with information on all of the other related programs and subject areas evaluated in the JLARC study.

Background

The Washington Forest Practices Act includes a statutory goal of “protecting scenic beauty” on Washington’s public and private commercial, non-federal, and non-tribal state forestland. Because scenery contributes in key ways to high quality recreation experiences and quality of life in Washington, protection, maintenance and enhancement of scenic beauty is also implicit in goals for a number of other programs and agencies, including the State Parks and Recreation Commission and the Wildlife and Recreation Program.

Outputs

A short list of outputs identified in agency materials, or provided by JLARC, about the programs relevant to scenic beauty:

- Acres of land protected with high quality scenery
- Discrete scenic features protected
- Protection of physical and biological landscape features that contribute to scenic beauty
- Protection of scenic attributes of recreation settings

Outcome statements

The primary outcomes the project team identified from the objectives in the enabling legislation of the program:

- Higher quality recreation experiences
- Higher quality of life for Washingtonians
- Indirect benefits to local and regional economies (e.g., Scenic Byways)
- Protection of habitat for native plants and animals

Literature

Scenic quality is a fundamental element in all nature-based recreation experiences. Nationwide, viewing scenery is the single most popular outdoor recreation activity. Scenery is

a public resource that also contributes in key ways to sense of place and quality of life. Research shows that there is a high degree of public agreement regarding scenic preferences. In general, natural appearing landscapes are more valued. The more variety there is in line, form, color, texture (topography, vegetation, geology, water, etc.) the more attractive the landscape is perceived. Specific indicators of scenic quality include relative topographic scale and relief (more is better), proximity of surface water (lakes, rivers, coastlines - more visible is better), variety in vegetation and other scenic elements (more is better), slope diversity (more is better) and elevation (higher is better).

Management of scenic resources typically begins with defining and mapping variations in scenic attractiveness, integrity and visibility, especially scenery that is highly valued. Federal land agency frameworks for analyzing scenery include the USFS Scenery Management System (USDA Forest Service, 1995b), a uniform methodology to inventory scenery resources, assess scenery impacts and maintain landscape characteristics that help define "Sense of Place". Many parks and protected areas have adopted this system or variants of it. Broad physiographic landscape patterns and mosaics serve as the analysis area. The SMS combines biological, physical and sociocultural factors to define Scenic Character - written text and photos describing the landscape’s inherent positive scenic identity (physical appearance) as expressed through its unique composition of existing socially valued, positive scenery attributes (such as valued landform, vegetation, water form, wildlife, cultural and historic features). The Scenic Character definition forms the basis for assessing other attributes of parcels or zones within it, such as inherent scenic attractiveness (distinctive/common/minimal) and scenic integrity (degree of disturbance to existing landscape character).

Positive combinations of scenic variety, vividness, mystery, intactness, coherence, harmony, uniqueness, pattern and balance have the greatest potential for high scenic attractiveness. A landscape with very minimal visual disruption is considered to have high scenic integrity. Landscapes having increasingly discordant relationships among scenic attributes have diminished scenic integrity. Visual absorption capability refers to the fact that different landscapes have differing abilities to absorb human alterations without reduction in scenic condition. Human-built structures generally reduce scenic quality in natural

landscapes but this is not always the case, e.g., a rustic barn may enhance variety and scenic quality in a pastoral farmland scene. Guidelines for human infrastructure in areas used for nature-based recreation specify use of natural forms, materials and colors in order to maintain scenic integrity.

Landscape Visibility in the SMS incorporates elements (concern level, distance zones) that influence the relative importance and sensitivity of scenery. Concern Level is a measure of viewer concern for scenic quality. Level 1: Areas and travel routes with large numbers of viewers; settings in which scenic quality is critical to the desired experience. Level 2: Areas where visitors express a moderate concern for scenic quality; landscapes of moderate importance associated with local types of recreation, e.g., well-known by local residents but not of regional or national significance. Level 3: Areas where visitation is not dependent on scenic quality, that have been utilized mainly for extractive activities, or where people typically do not go to recreate. Distance zones address the degree of discernable detail in a landscape based on distance from an observer - foreground is defined as 0-.5 mile, midground = .5 – 4 miles, background = 4 miles to the horizon.

The SMS uses information for scenic attractiveness, scenic integrity and landscape visibility to assign a Scenic Class rating (1-7) to each parcel being considered. These ratings indicate the relative scenic importance, or value, of discrete landscape areas. Scenic Class ratings are often incorporated into Recreation Opportunity Spectrum (ROS; USDA Forest Service, 1990) maps, and used during planning to compare the value of scenery with other resources. The SMS was significantly revised in 2007 with publication of [Appendix J](#), which updated definitions and procedures. Appendix J recommended the use of two key indicators to measure, communicate and monitor scenery: *scenic integrity*- the degree to which a landscape is free from visible disturbances that detract from the natural or socially valued appearance, and *scenic stability*- a new indicator intended to provide ecological sustainability information necessary to conserve valued scenery for future generations.

The USDI Bureau of Land Management (BLM) Visual Resource Management (VRM) system (USDI Bureau of Land Management, 2017) is similar to the USFS Scenery Management System in that it is based on inventorying and mapping differences in scenic quality. Landscape parcels are given a rating (A,B,C) based on seven factors: landform,

vegetation, water, color, adjacent scenery, scarcity, and cultural modifications, each ranked on a comparative basis with similar features within the physiographic province. In general, areas with the most variety and most harmonious composition have the greatest scenic value.

Scenic quality is also affected by air quality. When discussing air quality, the term “visibility” usually refers to the distance viewers can see under different conditions of air clarity; different from how the term is used in the SMS. The most common indicator for visibility in this sense is *visual range* – the number of miles or kilometers the naked eye can see. The [IMPROVE](#) program (Interagency Monitoring of Protected Visual Environments) was initiated in 1985. This program implemented long-term monitoring to establish current visibility conditions, track changes in visibility and determine causal mechanisms for visibility impairment in national parks and wilderness areas. The program uses an algorithm to estimate light extinction, which is then converted to the deciview haze index, an indicator of visibility.

The US Environmental Protection Agency (EPA) maintains a [regional haze reduction monitoring](#) and reduction program. The [Western Regional Air Partnership](#) (WRAP) is a voluntary organization working on air quality issues in the western region, including haze and visibility issues. Airnow maintains and monitors visibility cameras in all 50 states, including nine in Washington.

The Tahoe Regional Planning Association (TRPA, 2016) rates and tracks changes in scenic conditions using two indicator systems that are conceptually consistent with the SMS. Travel Route Ratings evaluate the entire travel experience, including the view from the road or lake. Scenic roadway units are divided into three visual environments: urban, transition, and natural (similar to and compatible with the ROS). Scenic Resource Ratings focus on the relative scenic quality of individual scenic resources that are seen from the travel routes and changes in scenic quality resulting from small-scale human use. Ratings for scenic resources use indicators of unity, vividness, variety and intactness to produce a composite rating. Annual monitoring by qualified scenic experts provides a cumulative view of impacts along a section of a given roadway or shoreline travel unit, and for individual scenic resources.

In practice

General guidance

- Practitioners suggest treating the entire landscape in question as intermediate in scenic quality, then decide which areas merit designation as distinctive.
- Areas of outstanding scenic quality are generally well-known and thus the easiest to identify and map; also usually of the most interest to stakeholders. When resources are limited, inventorying and tracking of scenery resources should focus on these areas.
- Coordinate and integrate mapping of scenery resources with mapping of recreation opportunities using Recreation Opportunity Spectrum (ROS) concepts.
- When examining economic outcomes, look to USFS research and monitoring for assessment tools and estimators, e.g., the National Visitor Use Monitoring (NVUM) program and spending profiles, and the U.S. Forest Service Recreation Use Values Database.

Outcome measures

Some of the indicators and metrics found in the literature or from identified effective practices are listed in Table 1 (below).

Conclusions

Methods for developing meaningful outcome-based indicators are clearly identified in the literature. They are being put into practice successfully in a few states, but generally very sparsely across the country, and rarely for outdoor recreation acquisition programs. When evaluating program success, most agencies tend to focus on gathering information they need for adaptive management – either data needed to determine if their actions are achieving their goals, or the information needed to develop plans or strategies. These focus on their need to understand the effectiveness of their actions to restore habitats or to address threats to species and habitats on property they manage – both important issues for agencies wanting to understand the priorities for their work. However, understanding priorities for action or the effectiveness of actions may not inform if the overall program is achieving the desired outcomes.

Because the protection of scenic beauty is often a secondary program goal, it is a bit more difficult to understand if the programs designed to protect scenic beauty are achieving the desired outcomes.

Table 1. Indicators and metrics for scenic beauty outcomes identified in the literature or in effective practices

Outcome Measurement Category	Indicators and Metrics (units of measurement)	Source(s)
<p>Scenic Attractiveness <i>(What scenery is most highly valued, and why?)</i></p>	<ul style="list-style-type: none"> • Relative topographic relief, size or scale of physical landscape features (bigger is better) • Proximity to surface water- lakes, rivers, waterfalls, wetlands, coastlines • Slope diversity (more is better) • Variety in line, form, color, texture (topography, geology, plant communities, water) • Diversity in vegetation – structure, species • Vividness - related to variety and contrast, adding clearly defined visual interest and memorability • Mystery - arouses curiosity and adds interest to a landscape • Intactness - is related to unity and also indicates wholeness, few or no missing parts in a landscape • Coherence - describes the ability of a landscape to be seen as intelligible, not chaotic • Unity - provides a sense of order that translates into a feeling of well-being • Harmony - is related to unity. A pleasant arrangement of landscape attributes • Uniqueness - arouses curiosity; often signifies scarcity, rarity, and greater value • Pattern - includes pleasing repetitions and configurations of line, form, color, or textures • Balance – in some ways reflects unity and harmony but is more a state of equilibrium that creates a sense of well-being and permanence • Naturalness – proportion of natural vegetation/natural succession • Skyline disturbance (by human infrastructure, less is better) 	<p>USDA Forest Service, 1995a & 2007</p>
<p>Landscape Visibility <i>(the relative importance and sensitivity of scenery or degree of visibility)</i></p>	<ul style="list-style-type: none"> • Concern Level - measure of viewer concern for scenic quality: Level 1: Areas and travel routes with large numbers of viewers; settings in which scenic quality is critical to the desired experience. Level 2: Areas where visitors express moderate concern for scenic quality; landscapes well-known by local residents but not of regional or national significance. Level 3: Areas where visitation is not dependent on scenic quality, utilized mainly for extractive activities, or where people typically don't go to recreate. • Distance Zone - degree of discernable detail in a landscape based on distance from an observer. Foreground: Zero to ½-mile. Midground: ½ – 4 miles. Background = 4 miles to the horizon. • Visual range – the number of miles or kilometers the naked eye can see • IMPROVE algorithm (Interagency Monitoring of Protected Visual Environments) to estimate light extinction, which is then converted to the deciview haze index 	<p>USDA Forest Service, 1995a & 2007; Uhl and Moore, 2017</p>
<p>Indicators for Tracking Scenic Resources <i>How can we assess outcomes or changes in scenery we know is valuable?</i></p>	<ul style="list-style-type: none"> • Scenic integrity - the degree to which a landscape is free from visible disturbances that detract from the natural or socially valued appearance, including any visible disturbances due to human activities or extreme natural events outside of HRV. Six levels: 'Very High Integrity' to 'No Integrity.' • Scenic stability - the degree to which the valued scenic character and its scenery attributes can be sustained through time and ecological progression. Focuses on dominant attributes, e.g., large tree character, vegetative cover and diversity, water clarity. Six levels: 'Very High Stability' (all attributes sustainable) to 'No Stability'. • %of public who perceive scenic resources to be in good condition or better according to both: a) residents and b) visitors. • % of seen area, as viewed from public vantage points, containing development that highly contrasts with its surrounding landscape: a) within ¼ mile; b) between ¼ mile and 3 miles; and c) beyond 3 miles. (Variant of SMS scenic integrity.) 	<p>USDA Forest Service, 1995a & 2007</p>

Citations

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