Using Science to Manage Subsistence Off Road Vehicle Use in Denali National Park and Preserve

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Abstract

In July 2005, the NPS made a final determination that the community of Cantwell had used off road vehicles (ORVs) for successive generations for subsistence purposes in portions of the Denali Park additions (traditional use area) before the establishment of the Denali National Monument in 1978. During the subsequent year, the NPS began preparing an environmental assessment that presented several alternatives for managing this use to minimize adverse impacts to park resources while also providing reasonable access for subsistence purposes.

The law and our own NPS Management Policies tell us we need to use good science to support our planning decisions. This paper reviews the extent to which scientific data were used to develop management alternatives for the environmental assessment and predict impacts on park resources and on subsistence users. It also discusses how, in spite of these existing data, a lack of data remained a concern. Finally, it presents recommendations for what can be done differently to improve how we collect and use data to support park planning, management, and environmental impact analysis.

National Park Service photo

Figure 1. Driving over soft wet soil can damage vegetation and scar the landscape.

Introduction

In July 2005, the NPS made a final determination that the community of Cantwell had used off road vehicles (ORVs) for successive generations for subsistence purposes in portions of the Denali National Park additions (traditional use area) before the establishment of the Denali National Monument in 1978. The traditional use area was temporarily closed to ORV use during the 2005 and 2006 hunting seasons with the exception of three trails, which are shown in Figure 2. The closure allowed reasonable access to subsistence resources for the residents of Cantwell while protecting park resources and also giving the NPS time to complete the necessary field work and environmental documentation evaluating ORV effects on park resources and values. The NPS now is in the process of completing an environmental assessment to determine how best to manage subsistence ORV use in the Cantwell traditional use area of the park. The NPS is taking this current action to ensure that subsistence ORV use in this area is managed to minimize adverse impacts to park resource values while also providing reasonable access for subsistence purposes.

During the scoping phase of the planning process, a number of resources were identified that could be affected by this project. ORV use causes soil rutting, displacement, and compaction. ORVs can directly affect vegetation, including wetlands, by crushing plants, scarring trees, and exposing roots. The construction of ORV trails could cause the loss of vegetation, and ORV use could displace and

disturb wildlife. Such use could also affect natural sounds and opportunities for viewing wildlife. It could indirectly affect adjacent designated park wilderness and directly affect lands considered suitable for wilderness designation. Decisions made in this environmental assessment could also affect subsistence opportunities in the traditional use area. The environmental assessment analyzes impacts from each alternative on these park resources.

The law and our own NPS Management Policies tell us we need to use good science to support our planning decisions. In this case study we address the following two questions:

- What do we mean by using science to manage a park use?
- How can scientific studies and long term monitoring better support the NEPA process?

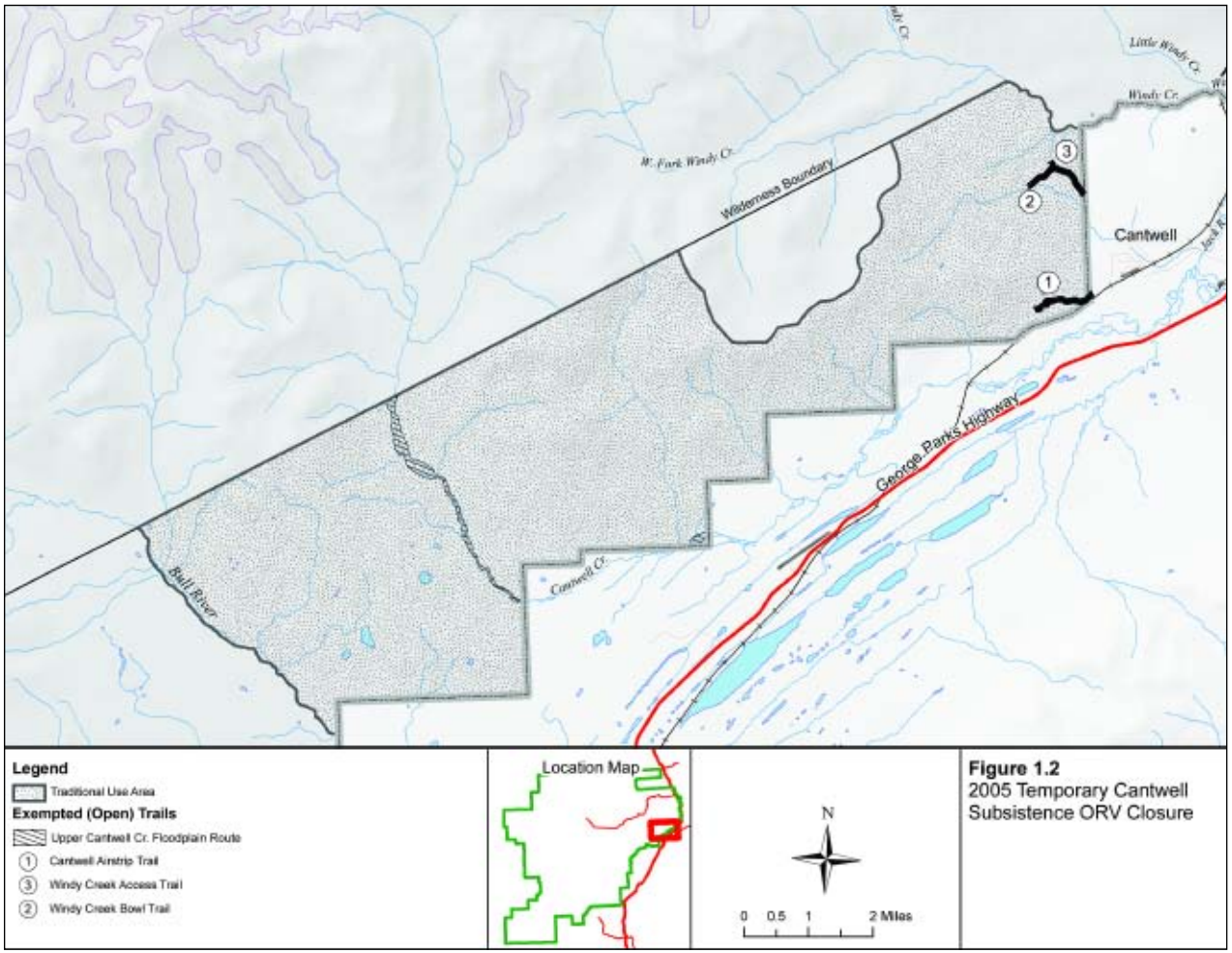

Figure 2. The traditional use area near Cantwell is the focus of the Environmental Assessment that addresses long-term management of ORV use for subsistence purposes.

Using Science to Manage ORV Use

The importance of scientific information to park management decisions has long been recognized. The 1963 Leopold et al. report on wildlife management concluded that: "The need for management, the feasibility of management methods, and evaluation of results must be based upon current and continuing scientific research. Both the research and the management itself should be undertaken only by qualified personnel."

And that: "Management based on scientific research is, therefore, not only desirable but often essential…" *(Leopold et al. 1963)*

Effective use of scientific information for management decision-making receives even greater emphasis today. However, it continues to be a challenge, especially with application of the National Environmental Policy Act.

The National Environmental Policy Act states that: "The Congress authorizes and directs that, to the fullest extent possible: (2) all agencies of the Federal Government shall—utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment." NEPA Sec. 102 [42 USC § 4332] *(US Public Law 1970)*

In preparation for the Cantwell ORV environmental assessment, park scientists did an extensive inventory of the project area in 2005 to document existing ORV trails and impacts. Thorough soils and vegetation mapping also provided background information for the environmental assessment.

All of this information was very useful in developing management alternatives to consider in the environmental assessment. The vegetation mapping was particularly thorough and detailed. However, while the data provided baseline conditions, they did not make it possible to conclude how many ORVs or what type of ORVs created those conditions and therefore were of limited value for predicting future impacts.

Similarly, interviews with a number of subsistence users in the Cantwell area were conducted in the 1990s and more recently in 2004-2005. These interviews provided some general information on which parts of the traditional use area are used for subsistence purposes, as did data collected by the State of Alaska Department of Fish and Game, but the information did not allow conclusions on how many animals were harvested for subsistence each year in the project area, or where and when this use specifically occurred and by what means, such as on foot or on an ORV.

The National Environmental Policy Act also requires documentation of incomplete or unavailable information, which has been done for the Cantwell ORV environmental assessment. In several cases, lack of information required making assumptions in order to analyze the potential future impacts of each management alternative. As new information became available during the process, assumptions affecting predictions about impacts changed, resulting in frustration for authors of the environmental assessment, challenges in making consistent conclusions across various impact topics, and delays in the overall process.

Collecting data concurrent with the NEPA process allowed planners to develop an informed range of alternatives but fell short when it came to analyzing impacts to park resources. Ideally park planners and managers would use science to inform the NEPA process, both in the development of alternatives and in the impacts analysis. To do this would require anticipating conflicts and collecting data before a planning process is initiated to resolve a particular conflict.

How Science and Long Term Monitoring Can Support the NEPA Process

Denali National Park and Preserve has made considerable progress in recent years in its capacity to complete scientific studies and monitor resources that provide critical information for management decisions. However, there are still improvements that can be made in how scientific studies can better support the National Environmental Policy Act process. Most important is improving the ability to predict impacts resulting from human-caused changes.

National Park Service photo

Figure 3. Some of the most severe resource damage has occurred west of Cantwell Creek, where there is a predominance of wetlands on organic soils.

The National Environmental Policy Act requires that an environmental assessment or environmental impact statement make conclusions on the significance of impacts based on context, intensity, and duration. Summaries about the overall impacts on the resource synthesize information about context, intensity, and duration, which are weighed against each other to produce a final assessment. While each summary reflects a judgment call about the relative importance of the various factors involved, the following descriptors provide a general guide for how summaries are reached.

- **Negligible:** Impacts are generally low intensity, temporary, and do not affect unique resources.
- **Minor:** Impacts tend to be low intensity or of short duration, although common resources may have more intense, longer-term impacts.
- **Moderate:** Impacts can be of any intensity or duration, although common resources are affected by higher intensity, longer impacts while unique resources are affected by medium or low intensity, shorter-duration impacts.
- **Major:** Impacts are generally medium or high intensity, long term, or permanent, and affect important or unique resources.
- **Impairment:** A resource would no longer fulfill the specific purposes identified in the park's establishing legislation or its role in maintaining the natural integrity of the park.

A greater understanding of impact significance would help inform scientific investigations aimed at improving management decisions. Science should be used to explain the context, intensity, and duration of impacts for all park resources identified during scoping.

The lessons learned in completing the Cantwell ORV environmental assessment provide three specific ideas for

improving how scientific investigation and resource monitoring can support the National Environmental Policy Act process and management decision-making.

Investigate causes of baseline conditions:

Baseline conditions were clearly defined for this environmental assessment. However, the lack of information on specific causes of these baseline conditions made it difficult to predict similar impacts in the future, especially the number of ORV passes at a given location that would result in unacceptable changes. In hindsight, it would have been helpful to have worked with the State of Alaska and with the Denali Subsistence Resource Commission to gather the kind of data that would have allowed conclusions on cause and effect in terms of ORVs and their impacts on resources and subsistence harvests (e.g., number of ORV users, types of ORVs used, and the specific places ORVs were used in the project area for subsistence hunting).

Broaden long-term monitoring programs, especially those which help address critical issues:

National Park Service resource managers are limited in many ways, particularly in funding, for long-term monitoring programs. However, ORV use in the Cantwell area has been an important management issue for at least the past 10 years. Recognizing that, it would have been very helpful to monitor some basic components such as the amount of ORV use each hunting season.

Conduct scientific investigations geared toward evaluating significance of impacts:

Understanding that significance of impacts must be described in terms of context, intensity, and duration should make it possible to develop scientific investigations that facilitate such conclusions. Incorporating this need into study design would help considerably with applicability of the conclusions to environmental impact analysis.

National Park Service photo

Figure 4. A track-adapted ORV approaches a damaged slope on the Cantwell Creek floodplain.

Management Implications

In reviewing the two questions raised in this case study, we find the collection and use of scientific information to be increasingly important to making management decisions in Denali National Park and Preserve. While there will always be limited information, it is important to make the best use of the data that are available and to capitalize on resource monitoring programs already underway. More information helps especially in cases of user conflicts and when legal challenges are likely. Scientific studies can better support the National Environmental Policy Act process by ensuring that impact significance (context, intensity, and duration) has been incorporated into the study design. Finally, long-term resource monitoring and scientific investigation must be informed by long-term management planning that anticipates the critical issues. In reviewing the administrative history of Denali and examples from other parks and protected areas, we find that critical issues most often arise from conflicts among competing uses or values *(Tranel and Hall 2003)*. Anticipating these potential conflicts in the future must be integral to any resource stewardship and science programs in the unique national park areas of Alaska.

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