

## **PROCESSES USED TO DEVELOP THE MEASURES UNDER EACH OF THE FOUR QUALITIES OF WILDERNESS CHARACTER**

### **UNTRAMMELED**

The process used to develop indicators and measures for the untrammeled quality was to work within a small but geographically diverse group of wilderness specialists to gather and evaluate a representative range of activities that take place within wildernesses that manipulate or control ecological systems. Those activities were then combined into like categories using the structure defined by current Forest Service policy (Forest Service 2320 Manual). Measures were developed by defining a like quantifier (action) that could be aggregated to represent the untrammeled quality. Members of the technical team for the untrammeled quality included Liese Dean (Sawtooth National Forest) who served as sub-team leader, Al McPherson (George Washington and Jefferson National Forests), Rebecca Oreskes (White Mountain National Forest), David Rak (Tongass National Forest), Mike Rowan (Okanogan National Forest), and Diane Taliaferro (Gallatin National Forest). This same team also developed the measures for the mechanized and motorized indicator under the undeveloped quality.

### **NATURAL**

#### Air Quality

For the air quality and air-quality-related values question, a six-member air technical team was assembled, composed of: Tamara Blett (National Park Service, Air Resources Division) who served as the sub-team leader, Scott Copeland (Forest Service Washington Office and Colorado State University), Bill Jackson (North Carolina National Forests), Ann Mebane (Forest Service Intermountain Region), Andrea Stacy (Monongahela National Forest), and Trent Procter (Forest Service Pacific Southwest Region). The group held two conference calls in May and June 2004 to brainstorm potential indicators and measures, then held a face-to-face meeting in July to refine the indicators for wet deposition, ozone, and visibility and to refine the measures to best reflect changes in wilderness character. A conference call was held between the air technical team leader and the Forest Service regional and national air program managers to explain the wilderness character project and the air team role. Three air technical team members then developed draft technical guidance for the indicators. The air technical team reviewed and edited the air technical guidance, which was then circulated to the Forest Service Air Program regional and national leaders for review and comment.

#### Aquatic Systems

A number of aquatic specialists were contacted, often repeatedly, regarding the development of aquatic indicators and measures. These individuals provided support, suggestions, and critical review of the research and information found in this document. The aquatics technical team was composed of Terry Carlson (Bitterroot National Forest) who served as sub-team leader, Steve Glasser (Forest Service Washington Office), Chris Knopp (Forest Service Washington Office), Russ Lafayette (Forest Service Northeast Regional Office), Mark Laker (USDI Fish and Wildlife Service-Alaska), and David Spildie (Forest Service, Aldo Leopold Wilderness Research Institute). Individuals from

the EPA and USGS were also contacted regarding nationwide aquatic data sets that may be available from other agencies.

### Vegetation

A seven-member team of agency and university ecologists and botanists evaluated the vegetation quality. Team members came from widely divergent geographic areas and provided broad ecological knowledge of the various wilderness ecosystems within the U.S. and Alaska. The team developed their indicators and measures through a series of conference calls in May and June 2004. By the sixth and final conference call, the group had developed an extensive list of ecological indicators and had identified data sources for the indicators. Early on, the team broadly organized the indicators and measures by vegetative composition, structure, and processes. Under these categories, the team recognized the importance of monitoring ecosystem process and function, yet they recognized that these indicators would be difficult to assess and that surrogates would have to be used as measures. Further into the project, the vegetation indicators were refined by “threats” to the natural quality and by “biophysical components being threatened”. From there, the vegetation indicators and measures that were finally chosen were based on extent and availability of data.

The vegetation subteam included Susan Rinehart (Forest Service Northern Region) who served at the sub-team leader, Paul Alaback (The University of Montana), Bruce D. Anderson (Superior National Forest), Steve Croy (George Washington and Jefferson National Forests), Karen Dillman (Tongass National Forest), Mark Jensen (Forest Service Northern Region), and Peter Landres.

### Wildlife

A team of wildlife and fisheries specialists was assembled to work on the indicators and measures for wildlife (including both terrestrial and aquatic species) under the natural quality. This technical team consisted of Carol Hardy (George Washington and Jefferson National Forests) who served as sub-team leader, Deborah Bumpus (Sitgreaves National Forests), Peter Landres (Forest Service, Aldo Leopold Wilderness Research Institute), (Lance Lerum (Tongass National Forest), Kathleen Mathews (Forest Service, Pacific Southwest Range and Experiment Station), Jennifer Molesworth (Okanogan and Wenatchee National Forests), and Amy Unthank (Forest Service Southwestern Region). Started in May 2004, this group met via conference call eight times and participated in several email reviews of draft documents.

### **UNDEVELOPED**

Both of the indicators under this quality were approached in a similar fashion. The resource subject matter experts on the technical guide development team took the initial listing of indicators and measures from the Wilderness Monitoring Committee and worked through a number of iterations of the table, relying on their respective “tech teams,” which consisted of subject matter experts from across the country.

The “physical developments” tech team consisted of Steve Boutcher (Forest Service Washington Office) who served as sub-team leader, Chris Barns (USDI Bureau of Land

Management and Arthur Carhart National Wilderness Training Center), David Cole (Forest Service, Aldo Leopold Wilderness Research Institute), Dave Rak (Tongass National Forest), and Susan Sater (Forest Service Pacific Northwest Region). A number of subject matter experts were also contacted to learn more about specific data sets, including James Demby (Infra-Dams), Bill Hamele (Infra-Buildings), Carol Russell (Infra-Roads), Jaime Schmidt (Infra-Trails), and Bev Thackeray (retired – Infra-SUDS).

#### **OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR A PRIMITIVE AND UNCONFINED TYPE OF RECREATION**

Historical and philosophical literature was consulted to determine how the dimensions of solitude, primitiveness, and lack of confinement should be defined. Interviews with 200 wilderness visitors conducted in 2002 were also important in this effort (Johnson and others 2004). Social science research was used to identify how various conditions affect visitor experiences of each dimension. Following this review, a 3-day workshop was convened of scholars from around the country who specialize in understanding the wilderness experience. These scholars were charged with describing and defining the outstanding opportunity quality, identifying the full range of possible indicators, and prioritizing recommended indicators. The outcome of that workshop was published as a special issue of the *International Journal of Wilderness* (Volume 10(3), December 2004).

The workshop led to a large list of potential indicators, at that point unconstrained by considerations such as data availability. Subsequently, discussions with the Wilderness Monitoring Committee, a small informal group of specialists, and review of available data led to the refinement of the indicators to a list of six. Protocols for monitoring were developed by the sub-team leader, with review from field specialists. The team included Troy Hall (University of Idaho) who served as sub-team leader, Chris Barns (USDI Bureau of Land Management, Arthur Carhart National Wilderness Training Center), David Cole (Forest Service, Aldo Leopold Wilderness Research Institute), Denis Davis (USDI National Park Service), Brad Hunter (Tongass National Forest), Al McPherson (George Washington and Jefferson National Forests), and Mike Rowan (Okanogan National Forest).