

WILDERNESS

Key Points

- The Boundary Waters Canoe Area Wilderness (BWCAW) reached 75 percent of the wilderness stewardship level, which is up from 61percent during Fiscal Year (FY) 2007.
- ATV sound monitoring at five wilderness sites revealed that any All Terrain Vehicles (ATV's) heard outside the wilderness were less than 30 decibels (dBA). This level, according to the Minnesota Pollution Control Agency (MPCA) rating, is comparable to those expected within a secluded woods setting.
- The percentage of active user created trails has decreased since 2005 (44 percent of total visits in 2005 compared to 35 percent in 2008).
- Monitoring of vegetative treatments near the BWCAW in 2007 revealed that Non-Native Invasive Species (NNIS) populations did not expand into the wilderness.

A. MONITORING AND EVALUATION

Forest Plan Direction

This monitoring was conducted to address Forest Plan Desired Conditions and Locations (pp. 3-43 to 3-47). To achieve the objectives for management of the Boundary Waters Canoe Area Wilderness (BWCAW), the wilderness has been divided into four management areas: Pristine, Primitive, Semi-primitive Non-motorized, and Semi-primitive Motorized (Forest Plan, 2004, pp. 3-40 to 3-65). The desired future conditions of both the physical and the social aspects of the resources differ between management areas. This established framework for managers allows them to provide a range of wilderness opportunities for the public while maintaining the overall goals of preserving wilderness character, the natural ecosystem and protecting the integrity of the Wilderness for future generations. Monitoring information should be interpreted within the framework provided by these management areas.

Monitoring Conducted

Monitoring considerations for social conditions and land stewardship included visitor use, compliance with rules, regulations and reserving/issuing permits, the no show rate for overnight and day use motor permits and social encounters including levels of crowding and opportunities for solitude.

Monitoring for campsite conditions included shoreline disturbance, campsite area, non-vegetated area, exposed mineral soil, tree damage, root exposure, trails and erosion.

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Ten Year Wilderness Challenge

When the Forest Service evaluated the stewardship efforts for wilderness, it became apparent that in 2003, only 18 percent of its 406 (there are now 439) existing wilderness areas were managed to a minimum stewardship level. Due to this, the Forest Service Chief adopted the “10-Year Wilderness Stewardship Challenge” (10YWSC) recommended by the Chief’s Wilderness Advisory Group. By adopting the 10YWSC, the Forest Service is renewing its commitment to wilderness by pledging to bring all 439 of those wilderness areas up to a minimum level of stewardship within 10 years. This will be appropriate for the celebration of the fiftieth anniversary of the Wilderness Act in 2014. This is an ambitious goal that will require an interdisciplinary approach as wilderness encompasses a myriad of resources that are integral to its whole including recreation, heritage, air, water, soil, wildlife, fish, range and fire.

A wilderness is considered to be managed to a minimum stewardship level when achieving a cumulative accomplishment level score of 60 percent or greater on the following 10 elements: fire plans, Non-Native Invasive Plants (NNIP), air quality values, wilderness education plans, opportunities for solitude or primitive and unconfined recreation, recreation site inventory, outfitters and guides/cooperators, adequate plan standards, information management and baseline workforce.

Wilderness Character

The effects of non-wilderness management activities on wilderness character, particularly solitude, were monitored during 2006, 2007, and 2008. The measures of the monitoring included sound, non-native invasive species (NNIS) and motorized intrusions, particularly by Recreational Motor Vehicles (RMV’s). A more thorough discussion on wilderness character monitoring can be found in the Monitoring Project File.

Sound Monitoring

Sound generated from All Terrain Vehicles (ATV’s) was monitored at five BWCAW receptor sites during 2008. All ATV noise activity was created by Forest Service personnel on Forest Roads near the BWCAW. This monitoring was done to determine the potential of increased ATV noise within the BWCAW, if any, resulting from implementation of the pending Travel Management Project (TMR) decision. Sound was recorded with an Extech meter at selected wilderness locations to record the sound pressure levels (dBA) over a given set of time.

NNIS

During September 2007 the Superior National Forest (SNF) evaluated the effectiveness of salvage and fire management treatments within the Rusty Diamond Project Area. A variety of resources were documented including NNIS, particularly establishment and spread into the BWCAW, resulting from management activities.

Motorized Intrusions

During the fall of 2008, RMV use at fourteen different sites was monitored. These surveys were primarily follow-up actions to more extensive RMV monitoring conducted in 2006. A primary objective of this monitoring was to identify and document illegal motorized intrusions into the BWCAW.

Evaluation and Conclusions

Social conditions and land stewardship

Table 15.1 summarizes public contacts and Table 15.2 summarizes the projects completed to meet land stewardship goals. This demonstrates how the SNF reached out internally and externally to communicate messages that foster favorable land stewardship within the BWCAW. It also contributes to the 10 YWSC goals. Table 15.3 outlines visitor use patterns that help the SNF develop strategies to effectively communicate to the public. These data do not evaluate how 2008 accomplishments specifically achieved objectives for the first decade of the Forest Plan or projected conditions. However, they do address how well management has complied with the current Wilderness Management Plan which was affirmed through the Revised Forest Plan.

Campsite conditions

Table 15.4 displays campsite conditions for Fiscal Year (FY) 2008 determined by campsite inspections and corrective actions or mitigations implemented to enhance visitor travel and restore or maintain resource conditions. These actions promote desired settings and behaviors necessary to promote land stewardship.

Ten Year Wilderness Challenge

Each wilderness shall be measured against the accomplishment levels for all 10 primary output elements. A minimum cumulative score of 60 percent out of 100 percent must be achieved for a wilderness to be considered to be meeting the “minimum stewardship level.” Currently, the SNF has a score of 75 percent.

- Element 1: Fire plans
 - 10 points = Implementation of the Forest Plan fire management direction is evaluated for effectiveness and modifications are made as needed.
 - 2008 highlight: The Fire Plan was updated (annual).
- Element 2 :Non-Native Invasive Plants (NNIS)
 - 5 Points = Management actions have been implemented (i.e., treatments, regulations, education, etc.) in highest priority areas.
 - 2008 highlight: A high priority/high risk map was used for treatments, public education and to declare the BWCAW a “weed-free zone”.
- Element 3: Air quality values
 - 10 Points = Monitor priority sensitive receptors for trends from the baseline (not including the IMPROVE air and precipitation chemistry monitoring station).

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- Element 4: Wilderness education plans
 - 6 Points = Implement priorities identified in the wilderness education plan.
- Element 5: Opportunities for solitude
 - 6 Points = The Forest Plan contains the needed components to provide adequate direction on management of opportunities for solitude or primitive and unconfined recreation specific to this wilderness. Conditions are monitored on the ground and evaluated for compliance with Forest Plan direction. If monitoring shows unacceptable levels of degradation exist, appropriate management actions are taken. If conditions are stable or improving, no further actions are needed.
 - 2008 highlight: The SNF has improved mandatory permit system reports, created a new solitude sampling and monitoring plan and evaluated areas with crowding issues.
- Element 6: Recreation site inventory
 - 6 Points = A recreation site inventory has been completed for this wilderness using the monitoring protocol which follows the national protocol at a minimum.
 - 2008 highlight: The SNF has created a rapid assessment campsite inventory protocol to compare with previous Limits of Acceptable Change (LAC) designations and national standards.
- Element 7: Outfitter and guides/cooperators
 - 8 Points = Monitoring is conducted on at least 25 percent of outfitter and guides permittees to evaluate if they are implementing conditions related to wilderness values identified in their operating plans.
 - 2008 highlight: The SNF moved remaining towboat operators/permittees under special use permits and monitored all outfitter guide/cooperator websites for accurate and appropriate information for visitors per their special use permits and cooperator agreements.
- Element 8: Adequate plan standards
 - 6 Points = Adequate direction exists in the Forest Plan or individual wilderness plan that has been formally incorporated into the Forest Plan.
 - 2008 highlight: The SNF began the evaluation of Forest Plan direction relevancy concerning the opportunities for solitude, travel model, permit reservation system and campsite conditions.
- Element 9: Information management
 - 6 Points = Information generated from the analysis of field collected data are routinely used to support local decision making.
 - 2008 highlight: The SNF successfully entered data into a recreation data base (I-web/Infrawild) for its self-issue permits, efficiently tracking motorized and mechanized use authorizations, mandatory permits and allowing for better informed local decisions.
 - Extra 2 Points = Mandatory reporting data entered by due date.
- Element 10: Baseline workforce

- 8 Points = Unit meets 125 percent of the baseline workforce target.
- Note: The BWCAW is at 78 percent of baseline workforce and have 11 full time recreation employees (FTE's) (allotted 14.1 by the national complexity table). With Recreation Enhancement Act funds and other funding such as trails, another 18.9 FTEs (in terms of days funded) are employed for a combined total of 29.9 FTEs. The SNF is over double the allotted workforce target days combing all codes, but is still in need of more work in the BWCAW.
- Extra 2 Points = Volunteers were used effectively to accomplish significant work.

By placing additional emphasis on elements two, five, six, four, and nine in the next FY, the SNF intends to elevate its 10YWSC score.

Sound Monitoring

The average background or baseline sound pressure level was 40 dBA, the minimum recorded was 31.5 dBA and the maximum level recorded was 63 dBA (wind gust).

During 2008 ATV activity (drive by) monitoring showed an average of 41 dBA, with the minimum recorded at the receptor sites being 31.5 dBA and the maximum being 59 dBA (wind gusts). Of the six sites monitored, ATV's were clearly heard at two sites and faintly heard at two sites. However none of the ATV's heard were detected by the data logger which only detects sounds at 30dBA or greater. None of the ATV activity heard measurably increased the dBA levels of the data logger for these samples.

Readings did not differ between baseline and ATV activity recordings. The average baseline sound pressure level was 40 dBA compared to 41dBA documented during the activity. The minimum level recorded for both baseline and activity was 31.5 dBA. The maximum baseline level recorded was 63 dBA compared to 59 dBA for the activity recording period. In both cases the maximum sounds were wind gusts.

All ATV's heard were less than 30 dBA. This level, according to the Minnesota Pollution Control Agency (MPCA) rating, is comparable to those expected within a secluded woods setting. Table 15.5 outlines the various common noise levels. In addition, none of the ATV sounds heard exceeded a sound ranking of 2 which is "faint yet specific noise source is distinct, masked occasionally by the existing ambient soundscape (wind, leaves, water, animals, human sounds)".

Limited sound monitoring of one timber sale (Nickel Sale) was completed during the fall. Mechanical noise was not heard by the observer or detected by the sound meter during the October visit, however harvesting activity was minimal during a visit prior to going to the wilderness receptor site that day. During the November visit, noise generated by harvesting equipment (saws, vehicles) was heard by the observer and decibel readings on the sound meter did rise by two to six decibels when harvest noise was heard.

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For comparison, a transport aircraft flying overhead during a baseline recording clearly registered on the sound meter above the baseline average of 32.5 dBA for 90 seconds, reaching a maximum of 59.1 dBA. This equates to a sound intensity rank of 4.

NNIS

During 2007, NNIS were observed within four of 14 units within the Griddle vegetation treatment portion of the Dunka project area. Canada thistle and common tansy were the most abundant species observed. It is unknown if harvest or road building activities within any of the units contributed to establishment of any of the NNIS populations. None of the infestations had expanded into the BWCAW.

Motorized Intrusions

Monitoring visits were focused within five miles of the BWCAW boundary across the SNF. Even though the number of roads visited represents a small sample of all SNF system roads, this report provides sufficient information to determine success in meeting Forest TMR objectives.

Two user created trails with recent or ongoing motorized use into the BWCAW were found. The percentage of active user created trails has decreased since 2005 (44 percent of total visits in 2005 compared to 35 percent in 2008). Of particular interest were observations made in the Parent Lake area of the BWCAW. During 2006 illegal ATV use into the BWCAW at Parent Lake was documented on several occasions and relayed to the District Ranger and law enforcement personnel (Figure 15.1). During 2007 and 2008 the trail at the wilderness boundary was posted and signed (Figure 15.2). Monitoring of this user created trail during the fall of 2008 revealed that ATV use had ceased, indicating that these management actions were effective.

In addition, 2007 monitoring of RMV use associated with vegetative treatments within the Dunka project area found only 14 percent of the units (two units visited) had RMV activity following treatment. RMV use did not occur within the BWCAW. More detailed information can be found in the Monitoring Project File.

Research

The SNF initiated, assisted or approved eight research projects associated with wilderness. This research will provide valuable information that can be used to improve wilderness and forest management. A complete listing of research can be found in Appendix E.

Table 15.1. Public contacts made in the Boundary Waters Canoe Area Wilderness in 2008.

Public Contacts	Total	10YWSC Elements
Field Contacts	2,997	2, 4, 5, 6, 7, 10
BWCAW Permits Issued at a F.S. Facility	11,450	2, 4, 5, 9
BWCAW Video User Viewers	40,236	2, 4, 5

Table 15.2. Projects completed to meet land stewardship goals in the Boundary Waters Canoe Area Wilderness in 2008.

Surveys/Inventories	Total	10YWSC Elements*
Heritage Sites		4,6
Surveyed (campsites & portages)	92	
Monitored	76	
NNIS		2, 10
Weed Inventory & Control	19 new infestations = 0.02 acres, 0.8 acres controlled at 130 sites	
Spiny Water Flea	Basswood Lake surveyed and none found	
Rusty Crayfish	No surveys in BWCAW in 2008	
Fire Program Support		1,2, 4,
Two wildfires, public safety, wilderness resource advisors	6 rangers, 50 days	
Law Enforcement – Forest-wide		4, 5, 7
Warning notices	17	
Incident reports	205	
Violation notices	48	
Main incidents:	motorized equipment in wilderness disposing of debris, garbage or waste entering without a permit	
Volunteer Group	25339 hours	2, 4, 5

*10YWSC Elements: 1. Fire Plans; 2. Non-native, Invasive Plants; 3. Air Quality Values; 4. Wilderness Education Plans; 5. Opportunities for Solitude or Primitive and Unconfined Recreation; 6. Recreation Site Inventory; 7. Outfitter and Guides/Cooperators; 8. Adequate Plan Standards; 9. Information Management, 10. Baseline Workforce

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Table 15.3. Boundary Waters Canoe Area Wilderness permit reservation lottery for 2008.

Type of Use	Number of Applicants
Accepted (Section 1.01)	
Day Use Motor	2,499
Day Use Motor – Canada	10
Overnight Motor	800
Overnight Paddle	3,496
Overnight Hiker	1
Total	6,806
Denied (Section 1.02)	
Day Use Motor	2,337
Day Use Motor – Canada	10
Overnight Motor	122
Overnight Paddle	29
Total	2,498
Total Lottery Applications:	9,304
Total Reservations May 1-Sept 30 2008*:	34,681
*Note: Total reservations include no-shows, cancellations and voided permits. Motor quotas and closures due to fire may affect available quota to reserve. Numbers gathered from Query.	
10YWSC Elements 4, 5, 7, 9	

Table 15.4 Campsite and portage restoration in the Boundary Waters Canoe Area Wilderness in 2008.

Item	Total
Routine campsite maintenance	2658
Latrines Dug	169
Latrines Reset	32
Fire Grates Replaced	26
Tent Pads Rebuilt	9
Campsite Erosion Control Projects	21
Trees transplanted at Campsites	383
Trees	0
Hazard Trees Felled	565
Trees Bucked	1824
Trees Low-stumped	192
Portages	0
Rods of Portages Brushed and Cleared	30,869
Miles of Hiking Trail Brushed and Cleared	117
Water Bars Cleaned	602
Water Bars Installed	38
Portage Tread Projects	15
Square Footage of New Boardwalk	89
Check Dams Installed	134
Culverts Installed	0
Gradient Dips Installed	7
Illegal Site Rehabilitation	0
10YWSC Elements 2, 5, 6, 9	

Table 15.5. Common noise levels from the Minnesota Pollution Control Agency.

Noise	Decibels (dBA)
Jet Engine (25 meters)	140
Chain saw	90
Heavy Truck Traffic	80
Conversational Speech	60
Library	50
Secluded Woods	30

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Figure 15.1. A hiking trail to Perent Lake in the Boundary Waters Canoe Area Wilderness with recent use by All Terrain Vehicle's (ATV's) in 2006.



Figure 15.2. A hiking trail to Perent Lake in the Boundary Waters Canoe Area Wilderness “after” signing 350 yards from the wilderness boundary in 2008 (see Figure 15.1 for a “before” picture).

