

WILDLIFE MANAGEMENT INDICATOR SPECIES-AQUATIC

(1) Overview

Current Situation

The Superior National Forest Fisheries and Aquatics Program began developing a protocol to monitor lake and stream habitat (MIH-14) in 2005. This protocol includes identifying, establishing, and evaluating stream reference reaches and those aquatic species that occur within associated habitats. Significant progress was made in developing a monitoring protocol for stream reference reaches. Forest and District employees also participated in several lake and stream surveys with the Minnesota Department of National Resources, Fond Du Lac Band of Lake Superior Chippewa, and 1854 Authority. It is anticipated that the Forest will begin to develop a further refine lake habitat, fish population, and water quality monitoring protocol in 2006 or 2007.

Stream Reference Reach and Fish Population Surveys



Measuring captured fish from
Nester Creek

Stream reference reaches were established on the Superior National Forest in 2005 to begin long-term monitoring of stream water quality, stream channel and habitat conditions, Regional Forester Sensitive Species (RFSS) populations, as well as important game and non-game fish species. Reference reaches were located within watersheds based on existing or proposed vegetative management activities, RFSS populations, habitat restoration projects, and to obtain information for mid-level project areas. Fish population surveys were conducted within established reference reaches to determine fish species diversity and abundance. Fish population surveys consisted of electrofishing 200-meter stream sections within each reference reach. Game and non-game fish species as well as RFSS were captured, identified, measured, and recorded. Snorkel surveys were also conducted within survey reaches to determine presence/absence of RFSS including creek heelsplitter and black sandshell mussels.

In 2005, stream channel reference reaches were established at 28 sites in 13 streams and rivers on the Superior National Forest including the Dark River, Leander Creek, McNiven Creek, Slow Creek, West Knuckey Creek, Murray Creek, Langley River, Cloquet River, West Split Rock River, Nester Creek, Kadunce Creek, Elbow Creek, and Kimbal Creek. Long-term monitoring at established reference reaches and monitoring stations is planned to occur every 3-5 years. It is anticipated that these monitoring efforts will provide important information on the status of stream habitats as well as important game and non-game fish species.

Interagency/Inter-governmental Lake and Stream Fish Population Assessments

The Superior National Forest cooperated with the Minnesota Department of Natural Resources Fisheries Division, Fond Du Lac Band of Lake Superior Chippewa, and the 1854 authority to assess lake and stream fish populations in 2005. Stream electrofishing surveys with the MNDNR occurred on the Dark River to continue long-term monitoring of eastern brook trout populations and to begin monitoring the success of the Dark River Habitat Restoration Project. Stream surveys conducted during the last several years indicate that brown trout populations appear to be declining in the Dark River while resident brook trout populations appear to be stable or increasing (Karl Koller, MNDNR, pers. com.). Future monitoring efforts will be necessary within established reaches to evaluate habitat improvement structures, stream channel conditions, and existing brook trout populations.



Eastern brook trout captured during electrofishing



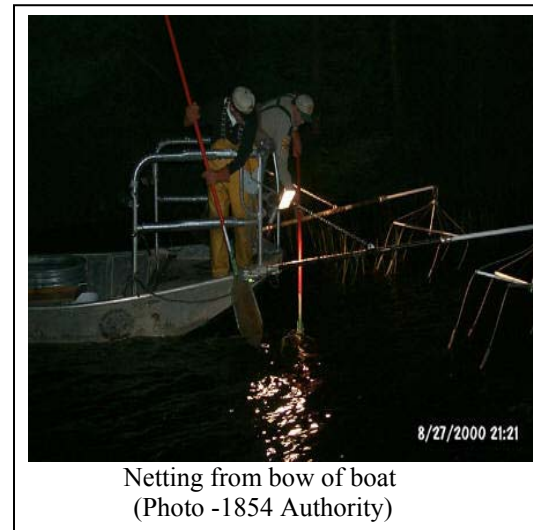
Electro Fishing in Dark River



Backpack electrofishing in the Dark River

Superior National Forest Fisheries and Aquatics Program Staff and District employees also assisted the Fond Du Lac Band of Lake Superior Chippewa and 1854 Tribal Authority to conduct spring walleye assessments on four National Forest lakes in 2005. Forest Service staff participated in electrofishing surveys in Crescent Lake, Whiteface Reservoir, Caribou Lake, and Ball Club Lake. Tribal biologists have cooperated with the MNDNR for several years to identify priority lakes for spring and fall walleye assessments.

In 2004, Tribal biologists and MNDNR employees conducted spring walleye assessments on Whiteface Reservoir,, Ninemile Lake, Elbow Lake, Ball Club Lake, and Devilfish Lake and in 2003, Silver Island, Caribou, and Pike Lakes. (Brian Borkholder, pers. com. 2005). Fall assessments have routinely occurred in over 20 National Forest lakes since 2003 to evaluate walleye year class strength and recruitment (Brian Borkholder, per. com. 2005). It is anticipated that the Forest will continue to assist with Tribal and State fish population assessments as well as utilize this information for future lake water quality and habitat monitoring efforts.



(2) Monitoring Activities

Monitoring Question

What is the quality of lake and stream habitat on the National Forest? How does it affect RFSS, game fish, and other important fish populations?

Monitoring Driver(s): O-WL-36. MIH 14: Lake and stream habitat. Maintain or improve lake and stream habitat quality. Objectives, standards, and guidelines are found primarily under Watershed and Riparian Management direction.

Applicable Monitoring Activity, Practice, Or Effect Measured	Methods	When Monitored	Location or Project Area
Stream habitat and channel conditions as well as relative abundance (catch per unit effort (CPUE) and population characteristics of existing fish populations.	Identify, establish, and monitor stream reference reaches. Monitor stream habitat and channel conditions as well as associated fish populations.	May-October	Identify representative stream channel reference reaches within watersheds that are associated with mid-level project areas, future management activities, and habitat restoration projects.
Lakes - Water Quality Parameters	Establish lake water quality monitoring stations in BWCAW (BWCAW Fuels EIS). Data includes stream Morphology, sediment, temperature. Other measurements include Wolman pebble counts, dissolved oxygen, total suspended solids, pH, alkalinity, and phosphorus.	June-September	Selected lakes in the BWCAW

(3) Evaluation and Conclusions.

Desired Conditions/Objectives

Monitoring Driver(s): O-WL-36. MIH 14: Lake and stream habitat. Maintain or improve lake and stream habitat quality. Objectives, standards, and guidelines are found primarily under Watershed and Riparian Management direction.

2005 Accomplishment. - Streams. Stream channel reference reaches were established at 28 sites in 13 streams and rivers on the Superior National Forest including the Dark River, Leander Creek, McNiven Creek, Slow Creek, West Knuckey Creek, Murray Creek, Langley River, Cloquet River, West Split Rock River, Nester Creek, Kadunce Creek, Elbow Creek, and Kimbal Creek. Long-term monitoring at established reference reaches and monitoring stations is planned to occur every 3-5

years. It is anticipated that these monitoring efforts will provide important information on the status of stream habitats as well as important game and non-game fish species.

Stream electrofishing surveys with the MNDNR occurred on the Dark River to continue long-term monitoring of eastern brook trout populations and to begin monitoring the success of the Dark River Habitat Restoration Project. Future monitoring efforts will be necessary within established reaches to evaluate habitat improvement structures, stream channel conditions, and existing brook trout populations.

2005 Accomplishment – Lakes. Superior National Forest Fisheries and Aquatics Program Staff and District employees assisted the Fond Du Lac Band of Lake Superior Chippewa and 1854 Tribal Authority to conduct spring walleye assessments on four National Forest lakes in 2005. Forest Service staff participated in electrofishing surveys in Crescent Lake, Whiteface Reservoir, Caribou Lake, and Ball Club Lake. It is anticipated that the Forest will develop a lake habitat and fish population monitoring protocol that will incorporate ongoing fishery assessments.

In 2004 and 2005 the forest monitored the chemistry of over a dozen lakes to assess changes that could affect the aquatic ecosystem. The Joint Fire Sciences Program (JFSP) partially funded this study to determine if BWCAW prescribed burning is affecting lake chemistry and thereby also mercury in fish. Besides the JFSP study, five additional lakes were sampled as part of a program to track long-term trends in lake chemistry across the forest.

The SNF and MN DNR jointly captured and analyzed fish from over a dozen lakes as a part of the overall state fish contaminant monitoring program. Analysis by MPCA of trend data from lakes that have been repeatedly been sampled over multiple years revealed that fish mercury content in Forest lakes decreased in approximately half of the lakes, increased in about ¼ of the lakes, and remained relatively constant in about ¼ of the lakes. These ratios are approximately the same as the trends observed in the overall statewide dataset.

2005 Accomplishment Contribution Towards Desired Conditions & Objectives

A. FOREST PLAN DIRECTION/FEIS CONDITION				
Record of Decision (July 2004)	(DECADE 1)		2005 Accomplishments and/or Condition	
Existing Condition	FP Desired Condition, Objective, or S&G's	FEIS Projected or Proposed Condition	Actual Accomplishments implemented	Actual Accomplishments & Approved NEPA Decisions
Establishment of some lake and stream habitat reference sites on the Forest. No standardized protocol for identifying, establishing, and monitoring reference reaches.	Maintain or improve lake and stream habitat quality.	Variable conditions depending on water body. Need to maintain or improve lake and stream habitat to support MIS, RFSS, and other important aquatic species.	Established 28 reference reaches on 13 streams and rivers on the Forest	Reference reaches were established in the Virginia and Devil Trout Project Areas.

B. ACHIEVEMENT OF FOREST PLAN DIRECTION/FEIS CONDITION			
% Achievement of Decade 1 Direction/Condition		Trend	
Actual accomplishments implemented	Actual Accomplishments & Approved NEPA Decisions	Actual accomplishments implemented	Actual Accomplishments & Approved NEPA Decisions
Lake and stream monitoring sites established on approximately 10% of Forest.	BW Fuels EIS - 100%	Positive trend in lake and stream water quality monitoring on Forest.	BW Fuels -EIS- Monitoring sites established. Positive trend.

Standards and Guides

Standard & Guide Descriptor	Standard & Guide Description	Compliance	Remarks
S-WS-4 & 36 CFR 219.12(k)	Water quality Best Management Practices, which are represented by some of the MN Forest Resources Council (MFRC) Voluntary Site Level Forest Management Guidelines, will be implemented as standards on NFS land. Refer to guideline G FW-1 for a discussion of the overall relationship between MFRC site level guidelines and the management direction established in this Forest Plan.	Yes	Good, based on current and past audits by mfrc and observations of snf timber sale administrators
S-WS-5	New facilities (such as roads, trails, campsites, and buildings) within riparian or flood prone areas will be discouraged. If such facilities are built in riparian or flood prone areas, they will be constructed and maintained in a way that minimizes adverse impacts to the ecological function of the area.	Yes	Good
S-WS-6	Management activities involving heavy equipment crossing (by road, trail, or skid trail) of any stream or drainage ditch, or operations on the immediate shoreline of any lake or	Yes	Good

Standard & Guide Descriptor	Standard & Guide Description	Compliance	Remarks
	open water wetland will be designed and conducted in a way that: a. Limits the number of crossing locations to the absolute minimum needed to conduct the activity b. Maintains or improves channel stability (dimension, pattern and profile) or shoreline stability in the affected or connected waters c. Uses filter strips as directed by Forest Plan guideline G-WS-4 and MFRC site level guidelines.		
S-WS-7	When removing beaver dams or other channel obstructions from streams, control hydrologic discharge to minimize the potential for downstream flooding, sedimentation, and associated impacts on channel morphology and habitat, including wild rice beds.	Yes	Good
S-WS-8	On lakes and wetlands where the Forest Service controls the discharge of water, minimum flow will be established to minimize impacts on downstream resources.	Yes	Good, but overall this has limited applicability to snf
G-WS-4	On slopes averaging 18% or steeper, the width of filter strips adjacent to lakes or streams will be either 150 ft. from the ordinary high water mark, 150 ft. from the bank full elevation, or the width of the entire slope that is adjacent to the water's edge, whichever is greater. Exceptions to filter strip guidelines are allowed for projects specifically designed for stream, lakeshore, or wetland restoration.	Yes	Good, but probably warrants more focused monitoring
S-WS-9	Within the near-bank zone, harvest trees only to maintain or restore riparian ecological function.	Yes	Too early to tell, but early indications based on project planning and design features suggest good compliance. But initial compliance favors harvest exclusion more so than proactive treatment
S-WS-10	Within the near-bank zone, do not deposit debris or spoils from maintenance, construction, or dredging. However, depositing materials for habitat improvement or restoration is allowed.	Yes	Good, but probably warrants more focused monitoring
G-WS-6	Within the near-bank zone, minimize soil disturbance and avoid activities that may destabilize soils or add sediment to the water.	Yes	Good, but probably warrants more focused monitoring
G-WS-7	Within the near-bank zone, minimize mowing or any other activity involving intensive removal of understory vegetation.	Yes	Too early to tell
S-WS-1	Management actions on NFS land will not increase the total (all ownerships) acreage of upland young forest (<16 years), and upland openings to the point where the combined acreage exceeds 60% of the total area of any 6th level watershed. Upland openings include permanent openings, roads and associated clearings, parking lots, cropland, pastures, borrow pits, utility rights of way, town sites, homes and yards, and upland brush, and grass. In 6th level watersheds that already exceed the 60% threshold, no action on NFS land will be taken that causes a net whole watershed increase of more than 1% in open and young forest conditions.	Yes	Good
S-WS-2	Excavated soil material, construction debris, spoils or debris from dredging projects, and debris and soil moved from upland sites during timber management activity (such as timber harvest, shearing or brush raking) will be deposited or spread out in upland locations. Stabilize soil deposited in this manner with vegetation.	Yes	Good
S-WS-3	Salvage and reuse topsoil for site rehabilitation during construction projects or other land use activities. When topsoil is unsuitable for reuse, other methods or tools such as sodding, hydro-seeding, fertilization, or erosion-resistant matting may be used to help rehabilitate disturbed areas.	Yes	Good

Standard & Guide Descriptor	Standard & Guide Description	Compliance	Remarks
G-WS-1	Restore eroded sites, generally employing natural-appearing stabilization materials. Native species will be used in the restoration of vegetative cover. Nonnative annuals may be used as nurse crops to obtain rapid stabilization while slower growing native species are becoming established.	Yes	Good
S-WS-11	Activity fuels will not be pushed into windrows that encircle wetlands.	Yes	Good, but probably warrants more focused monitoring
S-WS-12	Natural wetlands will not be used for sewage disposal for administrative purposes, unless done for research to develop operational guidelines or after such guidelines are established.	Yes	Good, but no such proposals were made
G-WS-12	Use of wetlands under frozen conditions for temporary roads and skid trails will generally be permitted as long as no fill is placed in the wetland. These roads or trails will be blocked to discourage vehicle use under unfrozen conditions.	Yes	Good, but probably warrants more focused monitoring
G-WS-13	Wetland impacts will be avoided whenever possible. Where impacts are unavoidable, minimize and compensate for loss when undertaking projects.	Yes	Good
S-WS-13	Where utility rights-of-way are constructed across wetlands, the crossings will be designed and maintained to preserve hydrologic and riparian function.	Yes	Good
G-WS-14	Avoid felling trees into non-forested wetlands, except where done for purposes of habitat restoration.	Yes	Good, but probably warrants more focused monitoring
G-WS-15	Wetlands will be managed to prevent the reduction of their water quality, fish and wildlife habitat, and aesthetic values. Management actions will not reduce water quality within a wetland, or upstream or downstream of a wetland, unless restoration of natural conditions is the primary goal of the activity.	Yes	Good, but probably warrants more focused monitoring

(4) Necessary Follow-up and Management Recommendations

Monitoring Driver	Follow-up Actions
O-WL-36. MIH 14: stream habitat.	Long-term monitoring should occur at established stream reference reaches every 3-5 years based on a randomized selection protocol.
	Water chemistry variables/measurements should be included in stream reference reach protocol.
	Monitoring associated with the Dark River Habitat Restoration Project should occur every 3-5 years beginning in 2006.
	Monitoring associated with other stream and lake habitat restoration projects should be implemented during and following project completion and then every 3-5 years following.
	Need to continue coordinating with State and Tribal agencies to conduct fishery assessments as well as share fishery information.

Monitoring Driver	Recommended Management Actions
O-WL-36. MIH 14: Lake & stream habitat.	A lake habitat monitoring protocol should be developed for the Forest that includes lake habitat, fish population and water quality parameters.

(5) Collaborative Opportunities To Improve Efficiency And Quality Of Program

The Superior National Forest Fisheries and Aquatics Program will coordinate with other agencies, governments, and universities to monitor and document new and existing NNIS populations. Efforts will be made to coordinate future monitoring activities, share monitoring data, and potentially collaborate to fund future monitoring efforts. Superior National Forest temporary employees will be required to complete annual or at least bi-annual monitoring in June-September each year to meet Forest Plan monitoring objectives.

Collaborator/Partner	Monitoring Activity	Accomplishment
MNDNR	Lake and stream fish population assessments. Continue with cooperative assessments and data sharing. Review MNDNR lake and stream monitoring protocol. Determine if USFS protocol can be refined to adopt existing MNDNR methodology.	
Fond du Lac Band of Lake Superior Chippewa	Lake and stream fish population assessments. Continue with cooperative assessments and data sharing. Consult with Tribe to identify existing monitoring efforts and data collection on the Forest.	
1854 Tribal Authority	Lake and stream fish population assessments. Continue with cooperative assessments and data sharing. Consult with Tribe to identify existing monitoring efforts and data collection on the Forest.	
Minnesota Pollution Control Agency	Continue consultation to refine lake and stream monitoring protocols. Potentially adopt MPCA protocol.	
U.S. Geological Survey	Continue efforts to research lake water quality monitoring Stations and collaborative funding efforts.	