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"Do the best you can, with what you have, where you are.” - Teddy Roosevelt

"Think of the past and speak of the future.” - Anonymous

"Work is love made visible.” - Kahlil Gibran
INTRODUCTION

As an NFCT Trail Maintainer you are the foundation of our trail management plan. Over time, long distance land based trails have only proven to be sustainable by the development of trail maintainer programs. Trails like the Appalachian Trail, Long Trail, and Pacific Crest Trail are small membership driven organizations with a lot of distance to cover. The only way that Northern Forest Canoe Trail can maintain a uniform and safe travel corridor is with the help and support of our Trail Maintainers. Thank you for rising to the challenge and sharing your time and experience with the NFCT membership and the public alike. This handbook has been created by the NFCT Stewardship Committee to be used as a resource to guide your efforts. We all look forward to working together to create a supported and unique community.

History of the NFCT

The Northern Forest Canoe Trail was first conceived in the 1990s by Mike Krepner, Ron Canter, and Randy Mardres, who were working to trace Native American travel routes. They soon realized that these historic routes could be linked to connect Old Forge, NY to Fort Kent, ME. To formalize this concept and allow the opportunity for the corridor to be established, Kay Henry one of the founders of Mad River Canoe Company, and her husband Rob Center incorporated the Northern Forest Canoe Trail in 2000. By 2006 agreements were made with landowners, the trail was signed, and a series of 13 maps had been created to guide users. Creating resources for paddlers has been an ongoing development with the creation of an informative website, an on-line trip planner tool, and a guidebook. The NFCT is now working to develop stewardship programs, to foster rural economic development, and to use the trail as a platform to educate and connect people to place.

NFCT Mission Statement

The Northern Forest Canoe Trail is a 740-mile inland paddling trail tracing historic travel routes across New York, Vermont, Quebec, New Hampshire, and Maine. NFCT connects people to the Trail’s natural environment, human heritage, and contemporary communities by stewarding, promoting, and providing access to canoe and kayak experiences along its route.

Trail Management Plan

As trail information is developed, more people are accessing the waterways. We have a unique opportunity to create a system of management that will allow us to maintain the current infrastructure to accommodate and direct appropriate use.

All land-based aspects of the NFCT are publicly or privately owned. We are able to include them as the NFCT corridor by transforming “handshake” agreements with individual landowners into a written document allowing the land feature (portage, access, or campsite) to be considered part of the NFCT corridor for a timeframe chosen by the landowner.

We then develop a unique management plan for that particular land feature taking into account the landowners wishes. When the timeframe of the agreement is up, we re-evaluate the agreement and make changes as needed.

It is our number one priority to have a safe and usable corridor. It is the responsibility of the NFCT Trail Director to work with Trail Maintainers, Land-owners, and Land-managers to identify safety issues and plan for appropriate actions. Our next priority is to mitigate erosion issues. We are also working with land owners to
identify areas along the NFCT that are ideal for campsite development in areas with limited campsite availability.

Maintenance and monitoring of trail infrastructure are important to assure that trail users are able to safely navigate the corridor and that the trail infrastructure is safe for use. To accomplish these goals the NFCT applies several mechanism of management. In most cases the types of management used depend on the degree of work that needs to be done for any given project.

- **Contracted Work**: For large projects that involve a high degree of mechanized equipment or specialized skills, the NFCT works with contracted trail professionals.
- **Large Projects**: For projects that involve the creation of standard trail infrastructure primarily utilizing hand tools we utilize our NFCT Stewardship Intern Crew. Our Stewardship Intern Crew typically consists of up to 5 interns who receive up to two weeks of training and work on projects across the NFCT for up to seven weeks during the summer. If the project is appropriate we can also turn it into a Waterway Work Trip bringing in up to six more volunteers.
- **Small Projects**: Smaller projects that involve the creation of trail infrastructure can be accomplished with identified and managed volunteer days.
- **Continued maintenance**: The maintenance of signage, reporting of trail issues, and the observing of trail use is accomplished with the Adopt-a-Segment Program.

**Adopt-a-Segment Program**

The NFCT is 740 miles long. To properly observe and maintain the entire trail it has been divided into 55 adoptable segments, typically 10-15 miles in length. The goal is to have a minimum of two designated Trail Maintainers for each segment. It is recommended that Trail Maintainers visit their trail segments in the spring after the high waters have subsided, during the summer, and in the fall before waters are too low or too cold. Trail Maintainers report their observations to the NFCT Trail Director so that adequate management plans can be made.

**Trail Hubs**

Trail Hubs are locations throughout the NFCT where maintenance resources can be stored and accessed. It is very important that we have safe, adequate, and usable tools and boats available for use by Trail Maintainers. It is also important to have the right tool for the job. We plan to have a hub every 50 miles along the trail. The hubs will also be locations where we can perform trainings to hone the skills needed to maintain the trail. Hubs will contain:

- Stewardship Canoe
- Replacement Signs
- Tools
- Transportation equipment
- Registration box sign-in sheets and journals
All HUBs will contain a cache of the following tools:

- 1 Masdam Rope Winch w/ 100’ of rope
- 1 pair of loppers
- 1 long handled shovel
- 1 Claw Hammer
- 1 Bit and Brace w/ Phillips adapter
- 2 Screw drivers
- 6’ eye and eye webbing
- 6’ endless loop webbing
- 12 lb rock bar
- Large bow-saw
- Polaski
- Files
- Water-tight Storage Box
- 10 NFCT Confidence Markers
- 15 NFCT Arrows
- Snatch Block
- Screws for sign installation (100 count)
Maintainer Resources

NFCT Trail Maintainers can expect to have:

- Access to safe, durable tools at the nearest HUB
- Access to an NFCT Stewardship Canoe located at the nearest HUB
- Two copies of a map of their section provided each year by the NFCT Trail Director
- An NFCT Trail Maintainer Feedback Form provided each year by the NFCT Trail Director
- The official NFCT Map that contains their Trail Segment
- A free NFCT membership for each year they are in the program

Maintainer Safety

Safely is not a set of rules that will guarantee nothing may go wrong. It is a mindset that anticipates problems, uses experience to avoid them, and builds habits to ease the effort needed to be safe. When we travel to and from a project on the NFCT, and when we work on-site, all trail maintainers should strive to:

- be aware of potential dangers,
- take steps to minimize them, and
- work at it until it is second nature.

NFCT Paddling Guidelines:

- Lifejackets are to be worn while in boats. It is a basic habit of being prepared, and setting a good example for other trail users.
- When possible, travel in pairs. The classic buddy system ensures that help is close by if needed. “Pairs” means two (or more) boats, not just paddling partners.
- Keep other boats in sight. This helps to keep groups together.
- Designate Lead and Sweep boats. Generally strong, experienced paddlers should be in lead and sweep positions, which all others are expected to stay between.
- Travel with a first aid kit. The project coordinator needs to bring a First Aid Kit stocked to treat both common injuries, as well as those that edged tools can inflict.
- If possible take a Wilderness First Aid course. The NFCT can help you identify good courses to take. These courses usually cost in the neighborhood of $200. Contact the NFCT Trail Director for more information.
- Take extra clothing. A set of dry clothes and water shoes show preparation.
- Leave a travel plan with a reliable source. When you are heading out on your trail segment it is good to leave your trip plan with a reliable source. Give them a check in time that allows you plenty of room in case your trip is delayed, but not such a big buffer that something could go wrong and no one would know for a while. Establish a check in time and be sure to call and report back from your trip.
- Ticks. Ticks are a growing problem in the North Country, with the potential of spreading Limes Disease. There are a few things we can do to keep from being bit by ticks:
  - Wear light clothing: This will help you see any ticks that may be on you.
  - Tuck your pants in your socks.
  - Always do a thorough tick check when you get back from the woods.

Have a good “weather eye”:

- Know the prevailing wind direction beforehand, but watch the weather too. A sheltered route may be longer but it will be safer, and probably less work.
- The diurnal pattern is calm in the morning; windy in the afternoon. Since an easy access paddle can become a tough, dicey slog against wind and waves on the return and an upset in cold water is potentially
life-threatening, anticipate a bad situation and plan a more sheltered return route.

**Tool Safety Guidelines:**
- Sheath tools while carrying them. If a tool in the tool cache is missing a sheath, notify the trail director.
- Store tools securely in the boat. This prevents harm or loss if the boat capsizes.

**Communication Guidelines:**
- Set clear directions and expectations for the trip to the site and the project.
- Determine if there is adequate cell phone coverage: (The only sure test is to check on-site for reception) to be used in emergency.
- Be aware of the best exit route, in case of a medical emergency (an emergency response plan)

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**TRAIL MAINTENANCE BASICS**

**Signage**

The Northern Forest Canoe Trail route is marked by a variety of signs. As a trail maintainer, one of your responsibilities is to help monitor theft/vandalism of signs and to assist with routine sign maintenance. The NFCT is signed for downstream paddlers. Sections where through-paddlers will be paddling upstream, it is signed for visitors traveling in both directions.

**Signs you may encounter include:**

- **NFCT Medallion:** Rarely used alone, but in conjunction with other signs (portage, campsite, or arrows)
- **Portage Trail Signs:** These are installed close to the water. Always installed in conjunction with an NFCT Medallion.
- **Campsite Markers:** Brown and silver.
- **Arrows:** Used primarily on portage trails to indicate turns. Installed in conjunction with an NFCT medallion.
- **Yellow and blue blazes:** have been added on some portage trails, mostly in Maine.
- **Privy**

**Things to think about when installing signs:**

- **Install up out of reach.** It is best to stand on a bucket or step ladder when installing the signs. The NFCT uses screws to install the signs. Both steps reduce the risk of theft or vandalism.
- **Install on existing posts or larger trees** (with at least a six-inch diameter).
- **If installed on live trees, leave a 1 inch gap** to allow the tree to grow without bending the sign.

**Sign maintenance**

- **Inventory existing signs.** On your first visit, indicate on the maps provided the location of all NFCT signs. Are there locations missing signs or that would benefit from additional signage? Indicate this on the Trail Segment Assessment form during this visit.
- **Ensure visibility of signs** – especially in the field of view of a paddler. Clear out branches, brush etc. to ensure good visibility.
- **Back out screws:** If there is no room between the tree and the sign, back out the screws 1 inch, so the tree has room to grow without bending the sign.
- **Check integrity of sign post:** Tamp down post if loose. If about to decompose, make a note.
Corridor Clearing

A key role of trail maintainers is keeping the trail corridor open. The trail corridor includes the trailbed, as well as a trailway that extends on either side of the tread. Keep in mind that a corridor tends to be wider and higher than a typical hiking trail. Cut, flush to the ground, too close to the treadway. Aim for a bed, a 6 foot trailway, and a 10 foot vertical clearing limit.

When pruning, cut the branch flush collar, or “wound wood.” This reduces the tree to grow over broken limbs, damages. It can be recognized as a slight bulge in the bark at the base of the limb.

![Figure 1. Trail Corridor. Source: United States Forest Service.](http://www.mastergardenproducts.com/)

There are several tools handy for pruning. Here are some guidelines to keep in mind when pruning:

- **Bowsaws**: Always carry with a sheath. Be careful not to twist the blade, they do break.
- **Lopers**: Best for small limbing jobs. Anything larger than 1.5 inches in diameter is pushing it.
- **Two person crosscut**: Great for cutting larger trees that have fallen along the trail. Require careful handling to ensure teeth aren’t accidentally bent.
- **Axes**: Not for pruning, but okay for clearing blow downs.
• **Chainsaws**: Chainsaws can only be used by trained individuals wearing proper safety attire (boots, chaps, helmet, gloves, eye and ear protection), and never when working alone. All NFCT volunteers using chainsaws must be trained to Game of Logging Level 2, or the Forest Service Training. If cutting near a waterway, only biodegradable bar oil is to be utilized.

**Checking the safety of structures**

There are several trail structures you may encounter as a volunteer. Below are guidelines for inspecting the safety and maintenance needs:

- **Rock steps, water bars, and stepping stones**: Rocks can move due to frost heaving and improper placement. Check steps to see if they wiggle, or have slid so they are no longer positioned at the appropriate angle.
- **Boardwalks, bog bridging, and wooden stairs**: Check for rotting boards, protruding nails, bad angles, and slippery surfaces.
- **Turnpikes** (i.e. raised walking surfaces): Check for soil erosion and gullying in the trailbed.

**Checking campsites**

- Do general clean up
- Reestablish fire ring if needed
- Check on washing area pit if installed

**erosion control**

The failure to keep water off trails is one of the main causes of trail damage. Water will take the path of least resistance as it travels downhill. The characteristics of a trail (compacted soil, lack of vegetation, and less duff) make it a perfect location for water to travel. As water travels down the trail it could pick up speed and volume allowing it to carry soil off the trail tread. Flat areas of trail that collect water are also problems. These areas will become muddy and the trail will likely become wider as people attempt to avoid the muddy section.

Properly laid out and constructed trails should allow water to flow off without causing damage. Water control devices are installed in trails to accomplish this. The most common types that are found on trails are water bars and dips.

- **Water bars**: A log or series of rocks that are dug into the trail at an angle toward the downhill slope. They create a sharp turn in the flow of water. An outsloped ditch in front of the bar carries the water off the trail. (Figure 3).
- **Drainage Dips**: There are various types and names for dips, but they are basically a low, outsloped (15%) area. The dips should be about six to ten feet long. They are semi-circular shaped, with the base at the outsloped side of the trail. On steep sections of trail there could be ramp on the downhill side of the dip that creates a rise in the trail.
Maintenance:
Periodic maintenance of water control devices is needed for them to continue to function properly. Water bars need more frequent maintenance than dips. These devices tend to collect more sediment and leaf litter. If this material is not cleared away water could flow past the device and down the trail.

- To maintain a water control device a tool such as a hazel hoe is required. Starting on the uphill end, use the hoe to scrape out the accumulated material. The organic matter should be scattered off the trail on the downhill side. Mineral soil can be used as backfill on the downhill side of the device. The outflow area must also be cleared.
- Check to ensure that outflow area is not causing erosion off of the trail. To function, the outflow area should widen and travel straight away from the trail.
- For water bars: clear out an area two shovel blades wide in front of the bar. Leave dirt directly in front of the bar to prevent it from being undermined by water flow. Check that the bar is still securely in place. Replace any missing rocks.
- After the removal of sediment any water control ditch should have a flat bottom. The cross-section would have more of a U-shape rather than a V-shape.

Identifying problems:
- The best time to spot problems with water on a trail is while it is raining. This allows for the observation of how water is flowing and where it is pooling. However, even during dry times it should be easy to spot erosion or mud problems on a trail.
- Make a note of problem locations so that they can be addressed.
INVASIVE SPECIES

Northeastern North America is facing a problem caused by invasion by non-native aquatic plants and animals. These organisms are causing dramatic changes to the region’s native ecosystems by preying on native species, outcompeting natives for food and habitat, transmitting diseases, and restructuring energy flows in entire ecosystems. Trail Maintainers can be the front line by helping with identification, monitoring, and in some cases removal of the invasive species.

Identification: Many of the invasives are common throughout the NE. The following are the most common aquatic / wetland / riparian invaders:

- Didymo
- *Eurasian watermilfoil
- *Variable leaf watermilfoil
- *Curlyleaf pondweed
- *Water chestnut (locally widespread but one that many folks want to detect early to prevent from spreading)
- Hydrilla (is not widespread, looks like native Elodea, but is one that many folks want to detect early to prevent from spreading)
- *Japanese knotweed
- *Purple loosestrife
- *Common reed grass

Each State has annual trainings for aquatic invasive identification. Contact the NFCT Trail Director if you need help finding a nearby training.

Monitoring:
On the Trail Section Assessment please note the presence of any of the above listed plants. If a kiosk is in your Trail section, be sure the invasive species information is present, clear, and looks up to date.
Also directions to STOP AQUATIC HITCHHIKERS should be posted:
Check, clean, and dry waders, gear, boats, and trailers before moving between waterways.

FEEDBACK PROCESS

“None of us are as smart as all of us.” – Japanese proverb

The foundation of the NFCT’s Adopt-a-Section Program lays in the astute observations of qualified maintainers. Like a peacock that fans its tail feathers to reveal hundreds of impressive individual “eyes”, trail maintainers spread out along the Northern waterways to keep a watchful presence over their piece of the NFCT. However, just as important as getting eyes on the trail is relaying those observations in a systematic and detailed fashion.

Trail maintainers are expected to fill out a Trail Segment Assessment at least twice a year that records their observations along their segment.
- Maintainers provide information on facilities such as parking areas, launches, and campsites.
- Portage trails are accessed for erosion issues and clearing needs.
- River characteristics, signage, and safety issues should be checked.

The more detailed and thoughtful these notes are, the clearer the picture we will have of the trail’s individual and overall condition.

Along with the Trail Segment Assessment, Volunteer Hour Forms will be filled out so that NFCT may continue to improve the Trail maintainer Program. All of these forms will be available electronically.

Whether a segment is remote, easily accessed, or heavily used, field observations are essential. The feedback process has been developed so that NFCT can understand and address concerns about maintenance, safety, and facilities.
# Trail Maintainer Observation Form

Please fill out to the best of your ability, use the back for extra space and mark locations on the map provided. Return to:
Northern Forest Canoe Trail
Attn: Trail Director
PO Box 565
Waitsfield, VT 05673

<table>
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<th>1. Name and location of trail segment:</th>
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<th>2. Name and contact information of segment maintainer:</th>
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<th>3. Date of assessment:</th>
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## Parking Areas

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<th>2. Is there safe and adequate parking?</th>
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<th>3. How many vehicles do you think could fit in the parking area?</th>
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<th>4. Were other vehicles observed in the parking area(s)?</th>
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<th>5. Is the signage for parking adequate? Please describe:</th>
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<th>6. Is the parking lot easy to find?</th>
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<th>7. Are there adequate facilities for human waste management at/near the parking area?</th>
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## Put-in/Take-out: Name:

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<th>1. Is the put-in/take-out user-friendly? What can be done to make it better?</th>
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<th>2. Are there any signs of erosion? If so, please describe in detail:</th>
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<th>3. Are there currently any structures (stairs, ladders) in place and what are they?</th>
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<th>4. Are there any maintenance concerns?</th>
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**Portage Trail: Name:**

1. Are there any portage trails along your segment? If so, what is the name and location of the portage trail? Include GPS coordinates if known:  

   ________________________________________________________________

2. Is the trail properly signed and easy to follow?  

   ________________________________________________________________

3. Is the trail grown in and in need of brushing?  

   ________________________________________________________________

4. Are there muddy spots on the trail that people are avoiding?  

   ________________________________________________________________

5. Do you see signs of erosion on the trail? If so, please describe in detail:  

   ________________________________________________________________

6. Are there any safety issues on the trail?  

   ________________________________________________________________

7. Is the trail easy to portage with a water craft?  

   ________________________________________________________________

8. How much of the trail can you use wheels on?  

   ________________________________________________________________

---

**River/Lake: Name:**

1. Are river/lake features appropriately identified on the map?  

   ________________________________________________________________

2. Are there any safety issues on the river/lake?  

   ________________________________________________________________

3. Are there adequate signs for take-outs/put-ins and safety concerns?  

   ________________________________________________________________

4. On the back of this paper describe the river conditions you experienced on your visit: weather conditions, river flow, river obstructions, observations.  

   ________________________________________________________________

5. Did you see evidence of any invasive plants? If so, identify.  

   ________________________________________________________________

---

**Users and Impacts**  

1. Did you see any other paddlers or trail users on your trip?  

   ________________________________________________________________

2. Did you see evidence of other users such as trash, social trails, unapproved campsites etc?  

   ________________________________________________________________

3. How do these observations differ from your last visit? How do they differ from the first time you observed your segment?  

   ________________________________________________________________
# Campsites

1. Campsite Name or Description of location: 

2. What features are at the campsite (picnic table, tent platform, fire ring, etc.)?

3. Are there adequate facilities for human waste management at/near the parking area if there is one associated with the campsite?

4. Are there adequate facilities for human waste management at/near the campsite?

5. Do any of these features need maintenance? If so, what?

# General Feedback

1. Do you have access to a digital camera?

2. Do you have access to a hand held GPS unit?

3. Do you have access to a computer and internet?

4. Would you be interested in writing a blog about your segment that is posted on the NFCT website?

5. Have you attended any NFCT maintainer training events or work trips? If so, please give details:

6. Do you have suggestions for work trips, training, or workshops?

7. Do you have any suggestions for NFCT about the adopt-a-segment reporting process?

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Thank you for taking the time to give back to this amazing resource! Please let us know how we can further support your efforts.