

## Forestry Safety Guidelines for Conducting Field Research

### Contributors

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### 1.0 Introduction

The purpose of this guide is to provide you with an overview of your responsibilities when conducting field research, and to ensure that all research is conducted in a safe manner. This guide is one of three that all students, staff and faculty members of the University of Toronto must read before participating field research:

#### **University of Toronto Guidelines for Safety in Field Research**

<https://ehs.utoronto.ca/wp-content/uploads/2015/10/Guidelines-on-Safety-in-Field-Research.pdf>

#### **Forestry Field Safety Guide (this guide)**

<http://www.forestry.utoronto.ca/wp-content/uploads/2012/04/Field-Safety-Guide.pdf>

#### **DANIELS Forestry Vehicle Policy**

<https://forestry.utoronto.ca/wp-content/uploads/2019/07/Vehicle-Policy-17-7-19.pdf>

You and your supervisor will be asked to sign a form confirming that you have read, understand and consent to all the responsibilities outlined in those three guides. If you are going to conduct canopy research at Haliburton Forest, you will also be asked to read and sign the forms contained in two additional guides:

#### **Canopy Lift Safety Guide**

<http://www.forestry.utoronto.ca/wp-content/uploads/2012/04/CanopyLift-Safety-Guide.pdf>

#### **Operator's Manual for the Scanlift SL240**

### 2.0 Responsibilities

This section outlines each person's duties in the chain of responsibility that has been established in compliance with the University of Toronto Guidelines for Safety in Field Research. All persons are responsible for reporting any hazard and safety incident to their Team Leader and their Academic Supervisor. If you feel they have not taken (or will not take) appropriate action, then you should report it the chair of the DANIELS Forestry Safety Committee. Most importantly, you should exercise your "right to refuse to unsafe work" if necessary.

**Academic Supervisor:** As outlined in the Guidelines for Safety in Field Research, the primary responsibility for compliance with the five safety guidelines listed above lies with the Academic Supervisor. The primary responsibilities include 1) approving the

composition of the research team, 2) establishing a clear chain of responsibility and designating a Camp Safety Coordinator when using on-site accommodation, 3) identifying safety risks particular to the team's research, 4) ensuring that appropriate steps are taken to minimize those risks, 5) ensuring that each member of the team is aware of the risks and the procedures required to minimize the risks, 6) ensuring that each team member has signed the "Field Research Safety Planning Record" and the "Haliburton Safety Form" (if applicable, Appendix A in this guide), 7) submitting these safety forms to the Dean's office prior to conducting research, 8) submitting a list of drivers (including driver's license numbers) to the Office of Risk Management (see Appendix B for contact information), 9) providing emergency phone numbers to the Team Leader and the Camp Safety Coordinator, where applicable, 10) maintaining regular contact with the Team Leader, Camp Safety Coordinator, and Haliburton Forest Liaison (as applicable), 11) ensuring that the chain of responsibility remains operational throughout the field season (in particular, ensuring the Camp Safety Coordinator carries out their responsibilities), 12) ensuring that safety concerns raised by any Team Member are resolved in a timely manner, 13) reporting any safety incidents (including "near misses" and persistent failure to follow safety procedures) to the chair of the Faculty of Forestry Safety Committee, and 14) reprimanding anyone who does not follow safety procedures (including unsafe driving).

**Note:** For research at Haliburton Forest, duties 9-14 of the Academic Supervisor may be assumed by the Haliburton Safety Coordinator.

**Team Leader:** The Team Leader is responsible for ensuring that safety procedures are followed by his/her team on a day-to-day basis. Primary responsibilities include: 1) implementing the safety procedures established by the Academic Supervisor, 2) conducting ongoing risk assessments and reporting any new hazards to the Academic Supervisor and, where applicable, the Camp Safety Coordinator, 3) resolving any immediate safety concerns that arise in the course of field work, 4) maintaining regular contact with the Academic Supervisor, 5) informing all higher-ups of safety incidents (including "near misses" and persistent failure to follow safety procedures) and concerns, including the Academic Supervisor and the Camp Safety Coordinator, 6) reprimanding any Team Member who does not follow safety procedures (including unsafe driving), 7) posting his/her team's daily location in a conspicuous location and 7) ensuring that there is a complete first aid kit and proper communication devices in each vehicle.

**Team Member:** Each team member is responsible for 1) reading and understanding all safety guides related to their work, 2) acknowledging the risks of their particular research project by signing the "Field Research Safety Planning Record" (in Guide #1) and the "Haliburton Safety Form" (if applicable, Appendix A in this guide), 3) using appropriate protective equipment provided and following the safety procedures outlined in the "Field Research Safety Planning Record" (in Guide #1), 4) working safely and in a manner to prevent harm to himself/herself and others, 5) reporting hazards and safety incidents (including "near misses") to the Team Leader and the Camp Safety Coordinator, and 6) ensuring that there is a complete first aid kit and proper communication devices in vehicles that they use.

**Camp Safety Coordinator:** The Camp Safety Coordinator is responsible for: 1) enforcing the camp safety rules, 2) posting all of the safety rules and manuals in a conspicuous location, 3) reporting hazards and safety incidents (including “near misses” and persistent failure to follow safety procedures) to the Academic Supervisor, 4) posting the emergency phone numbers provided by the Academic Supervisor in a conspicuous location, 5) arranging safety review meetings on a regular basis throughout the field season, 6) ensuring that each team posts their daily location in a conspicuous location, 7) reprimanding anyone who does not follow the camp safety rules (including unsafe driving), and 8) ensuring that (where possible) there is a working phone that remains in a designated location.

### 3.0 Risks and Safety Procedures

**Driving:** Drivers must read and adhere to all practices in the DANIELS Forestry Vehicle Policy guidelines.

**Use of Dangerous Equipment:** There is equipment at camp and in the field that can be extremely hazardous if not used properly, including chainsaws, brush saws, power tools, batteries and chargers, electrical generators, propane appliances, flare guns, bear bangers, canopy lift, all-terrain vehicles, and motorboats. **Do not use any equipment without having first been properly trained.** Field researchers who have had previous training or experience with these items must first discuss with and obtain permission from the Academic Supervisor before using any such equipment. Under no circumstances is equipment to be used without the necessary personal protective equipment.

Activities such as tree climbing, tree felling (or any use of a chainsaw), the use of motorboats, or conducting research in active logging areas will not be allowed without permission from the Academic Supervisor. Should the maintenance of equipment, preservation of specimens or any other research-related activities require the use of toxic substances, refer to section 10 on toxic substances in the University of Toronto Occupational Health and Safety Guide for Supervisors.

**Communications:** All employees will ensure that their daily location is posted at the camp before leaving. If circumstances change during the day, a second crew must be informed of the change. Failure to report back at a pre-set time will result in the following procedure:

1. At the appointed time, people at camp should turn on their radios and phone (as applicable) so that the tardy crew may call in.
2. A crew will be dispatched to look for the individuals after a 2-hour delay.
3. The Academic Supervisor will be notified if the second crew cannot locate the individual(s), and it is presumed that they are lost.
4. The decision to call the appropriate authorities will be taken by the Academic Supervisor, and in absence of contacting him/her, by the second crew.

If one member of a 2-person crew does not return on time, the first member is to stay at the location, sound the truck horn every 15 minutes, use the satellite telephone or radio to contact help after 1 hour, then follow the procedure above.

**Working Alone:** Working without a partner is strongly discouraged. Whenever possible it is safest to work with a partner in case of an injury or emergency. However, it is recognized that in some cases working alone is the only option. To work alone, you must first get approval from your Academic Supervisor and discuss special safety procedures that need to be followed. In order to reduce the risk of accident or injury in such situations, it is vital that other team members know where you will be and when (especially your return time), that you have the appropriate safety equipment with you, and that you have adequate means of communication. The latter may entail having a short-wave radio or satellite phone on your person or in your vehicle when you are working alone, as approved by your Academic Supervisor.

**Getting Lost:** Personnel must carry a compass in the field at all times. A GPS unit is not a substitute for a compass. Before entering the bush, always note the direction you will need to come back out and write it down.

If you get lost, remain calm and sit down to think about what may have happened. Think about the general direction you are from a road, or where the sun was when you entered the bush. Listen for vehicles travelling along a road, and remember after an hour or so your partner should be sounding a horn. Use your whistle or yell at intervals of about 10 minutes. If you really are lost, **stay where you are**, find a large tree to sit under, build a fire if you have to for warmth – be careful not to start a forest fire. Wait for someone to come looking. Moving around only makes the task of finding you more difficult.

**Bears:** First, to put this in perspective, the odds of being attacked by a bear (i.e., physically attacked and not just bluff-charged) are very remote. In fact, your odds of being in an automobile accident are about 10,000 times greater than being in a bear attack. On average, less than 2 people are killed each year by black bears in all of North America. However, this does not mean that we can take a cavalier attitude. We must exercise appropriate caution at all times in areas where bears may be present. This is especially true during the spring season when females are accompanied by cubs and may be more aggressive. The following information will help in the remote instance

that you are charged or possibly even attacked by a bear.

If you encounter a bear, back slowly away, and if threatened (e.g., bluff-charged) use noise makers or yell loudly. Note that during bluff charges the bear will usually snort, blow and may clack its teeth together. This is actually a good sign: the bear just wants you out of the area. Continue yelling and backing away slowly until you reach a vehicle, holding your hands in the air to make yourself appear larger. Stay out of the area for at least one hour following such an incident, especially if the bear is a female with cubs. In almost all cases the bear will leave the area following a bluff-charge.

In very unusual cases, bears have been known to hunt humans. This behaviour is recognized by intent stalking. However, bears are not as noisy while stalking as they are during a bluff charge. This is a rare but extremely dangerous situation that requires you to try not to panic and to follow the following procedures: **do not run away** - the bear is much faster than you. Do not climb a tree except - the bear is a better climber than you are and could pull you out of the tree. Continuously yell loudly, use your noise

makers (bear-bangers) or flares, and if the bear is close enough use pepper spray. Back away in the direction that you want to go, while yelling at the bear, wave arms or a shirt to make yourself look large. **It is important to think about the direction that you want to go;** backing away further into the bush only increases the danger by prolonging the episode. In the very unlikely event that a bear actually attacks, fight as hard as you can using whatever weapons are available, including large sticks.

When there is a risk of bears in an area, it is recommended that individuals or teams carry bear-bangers and pepper spray with them. Bear-bangers are noise-makers that mimic the sound of a shotgun and are effective at warning bears away before they reach close range. If a bear continues to approach despite all efforts to scare it away, then pepper spray may be used. However, pepper spray should always be used with caution and as a last resort. The purpose of a spray is to irritate and incapacitate the bear, but if used incorrectly it can either do the same to humans or serve to enrage the bear. Making loud noises while working and moving through the bush (e.g., talking, singing, breaking sticks) is also advisable to alert bears and other wildlife to your presence. Some people swear by 'bear bells' that they wear on their person while working in the bush.

***Injury:*** Most field work in the forest will require you to traverse a wide variety of terrain. It is possible that one may injure oneself while doing so; this is especially true in rainy weather, when the bush is wet or at the end of a long day walking and working in the bush. Injuries may be in the form of an ankle sprain or twist, cuts and bruises to legs, arms or eyes, etc. It is therefore very important to carry a fully stocked first aid kit in your vehicle at all times so that you will have the necessary tools to respond in such situations. Carrying a personal first aid kit into the bush with you is also recommended if you will be working far away from your vehicle.

***Safety Review Meetings:*** Knowledge of safety issues must be refreshed periodically to be retained in memory. If a safety issue arises months into the field season, you will probably have trouble remembering the correct procedures to take if you haven't read or thought about them since day one. There is also a tendency to start taking safety for granted once people become more comfortable in their job. To avoid these situations, safety risks and procedures must be reviewed on a regular basis throughout the field season.

The Camp Safety Coordinator is responsible for arranging periodic safety review meetings. These meetings should serve two purposes: 1) to ensure that everyone remembers and is correctly applying the guidelines laid out in all appropriate safety documentation, and 2) to provide a forum for individuals to bring safety concerns to the attention of the Camp Safety Coordinator and the rest of the research team. This should include any incidents and "near misses" where action can be taken in a timely manner to prevent re-occurrence.

Safety review meetings are to be held on a weekly basis until safety guidelines are well-ingrained in all team members, and on a bi-weekly basis thereafter.

## **Appendix A:**

### **Safety Responsibilities & Procedures for Research at Haliburton Forest**

## **A1. Responsibilities**

In addition to the Academic Supervisor, Team Leader, Team Member, and Camp Safety Coordinator, safety issues are also the responsibility of the Haliburton Safety Coordinator and Haliburton Forest Liaison.

***Haliburton Safety Coordinator:*** The Haliburton Safety Coordinator is a University of Toronto employee responsible for: 1) ensuring that every researcher (including Academic Supervisors) has read this guide (including this Appendix) and signed all the required safety forms, 2) establishing the chain of responsibility and designating the Bone Lake Camp Coordinator, 3) ensuring that the chain of responsibility remains operational throughout the field season (in particular, making sure the Bone Lake Camp Coordinator does his/her job), 4) reporting any safety incidents (including “near misses”) to the Chair of the Faculty of Forestry Safety Committee, 5) reporting any safety incidents that involve Haliburton Forest staff or the public to the Haliburton Forest Liaison, 6) ensuring that safety concerns raised by any team member or the Liaison are resolved in a timely manner, 7) providing the Bone Lake Camp Coordinator and Academic Supervisors with emergency phone numbers, 8) maintaining regular contact with the Team Leaders, the Bone Lake Camp Coordinator, and the Haliburton Forest Liaison, and 9) reprimanding anyone who does not follow safety procedures (including unsafe driving).

***Haliburton Forest Liaison:*** The Haliburton Forest Liaison is an employee of Haliburton Forest who will facilitate communication and cooperation between members of the University of Toronto research community and the staff of Haliburton Forest. The Liaison is responsible for: 1) alerting the Bone Lake Safety Coordinator of any safety concerns arising from logging activities or public events, 2) helping to resolve any safety concerns raised by the Bone Lake Safety Coordinator and the Team Leaders, and 3) reprimanding anyone who does not follow safety procedures (including unsafe driving).

## **A2. Additional Safety Procedures**

***Radios:*** Each team or individual must carry a radio with them in the field at all times. The radio should be operated on Channel 3 when communicating with other University of Toronto personnel in Haliburton. Channel 1 is dedicated for communication between staff of the Haliburton Forest and Wild Life Reserve, and as such, should only be used in an emergency. Most importantly, a radio needs electricity to work so it is imperative that your radio be charged at the end of each day. Also, radio antennae are prone to loosen and must be checked regularly to ensure their functioning. Finally, each morning before leaving Bone Lake, teams/individuals must post their work location and planned time of return on the board provided by the Bone Lake Camp Coordinator.

***Logging Trucks & Traffic:*** Driving conditions in Haliburton Forest are primarily on unpaved roads with different safety margins from municipal roads. As such, Haliburton Forest roads should be used cautiously and drivers must proceed carefully at all times. Dangers include blind corners, large rocks protruding from the road surface, soft shoulders, washouts, and logging trucks. Accidents between logging trucks and

personal vehicles usually result in serious injury, if not death! Always drive on the cautious side, obey all speed limits, and make sure you are informed about where logging is occurring in the reserve, so that you can avoid trucks if possible. When parking on the sides of roads where active logging is taking place, one should maintain as much distance as possible between the road and your vehicle for safety.

**Canopy Lift:** The canopy lift is a complex piece of machinery, and as such, requires special training and knowledge in order for it to be operated safely. **Only those people who have permission can work in or around the lift.** Safe operation of the canopy lift is dealt with in the Faculty's Lift Safety Guide (Guide #4) and the Operator's Manual for the Scanlift SL240 (Guide #5).

### **A3. Bone Lake Camp Safety**

**Signage:** Summaries of safety rules and regulations around UofT's camp at Bone Lake must be posted in conspicuous locations at the beginning of each field season so that all camp residents are aware of the potential safety risks and regulations.

**Propane:** Propane appliances should be inspected prior to every field season to ensure that they are in good working condition. **Warning: propane appliances which are not functioning properly can emit deadly carbon monoxide gas.** If you run out of propane you can refill the tank at Base Camp. When transporting either the large (fridges, lights, stove) or small (BBQ) containers, ensure that they are not going to roll around in the back of the truck. Needless to say, you don't want a container to start leaking. When the large tanks run out and need to be changed, the pilots on the stove and underneath the two fridges will need to be turned off before disconnecting, and then re-lit when reconnected.

**Swimming:** The dock is in shallow water, at most only 1.5 m deep. **The dock is not suitable for diving.**

**Boating:** Any boat to be used on Bone Lake or on any lake in Haliburton Forest must be equipped as per the provincial regulations requirements for safety and licensing. Haliburton Forest also maintains a strict "10hp or less" requirement for motors and some lakes are deemed for no motorized traffic. Please check with the Haliburton Forest representative (currently Tyler Peet) before heading out on a lake other than Bone Lake.

**Camp Fires:** All fires should occur in the existing fire pits. No fire should be lit without first being aware of the current "Fire Hazard Rating" for the Haliburton Forest area and the corresponding regulations for that rating. No fire is to be left unattended at any time. Fires are to be kept under control at all times and put out with water when they are left.

