

Atlas des
oiseaux nicheurs
Ontario
Breeding Bird Atlas

A GUIDE TO ATLASSING IN NORTHERN ONTARIO

Ontario Breeding Bird Atlas

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The Ontario Breeding Bird Atlas is a partnership project of:



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Environnement et
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Thank you very much to the [Ontario Breeding Bird Atlas Supporters](#)

Land Acknowledgment

Northern Ontario has been stewarded by many Indigenous Nations including the Cree, Anishinaabe, Mississauga, Algonquin, and Metis Nations, since time immemorial. It is now covered by Treaties 3, 5, 9, 60, and 61, and unceded territory.

COVID-19 and atlassing in Northern Ontario

The global pandemic has changed how we go about our lives. The Atlas-3 partners want to be clear that atlassers must adhere to national, provincial, and local health advice and directives. Follow the advice of your local public health authority, or the health authority where you may be atlassing, and adjust your behaviours and routines based on their guidance. Please respect local health and safety requirements, including but not limited to: respecting travel restrictions, frequent hand washing, wearing a mask, and practicing social distancing. If you are experiencing possible COVID-19 symptoms or have been in close contact with someone who has recently tested positive for COVID-19, it is advised to stay home and contact your health care provider or contact your [local health authority](#). Some people have a higher risk of getting seriously ill. Stay at home as much as possible if you are in a high-risk group.

[Local governments](#), including Indigenous communities, continue to make public health decisions to lower the spread of COVID-19 in communities. The public health measures they have in place depend on the COVID-19 activity in their area. All atlas-related activities that involve work in Indigenous communities and reserve lands should be coordinated through the Atlas office. The Atlas office will be communicating with Indigenous communities regarding permission to visit or survey on First Nations reserves, including determining required COVID safety protocols, before Atlas work is undertaken.

Refer to reputable sources for information on COVID-19, such as [Health Canada](#) and [provincial](#) guidance.

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1. Introduction

1.1 Background

Obtaining adequate coverage of northern Ontario, particularly the most remote areas, is among the biggest challenges of the Atlas project. Obtaining that coverage will give us our best ever understanding of the distribution and abundance of the area's birds and we hope will provide some wonderful wilderness adventures in this special area. This manual will be useful for volunteer and professional atlassers who will collect data anywhere in northern Ontario, including northern residents, southern Ontario atlassers who will be involved in trips to northern Ontario, and visitors from outside the province.

As with the previous atlases in Ontario, the project's goal will be to map the current distribution and relative abundance of all species of birds breeding within Ontario over a five-year data collection period: 2021-2025. The goal of each participant is to collect observations on breeding birds using standardized methods within 10x10km (10-km) atlas squares and submit that data as described in the [Instructions for General Atlassing](#). This manual is not a self-contained atlassing guide but is intended to be a supplement to that document.

For administrative purposes, Ontario has been divided into 47 Regions, each with a [Regional Coordinator](#) (RC). Regions 34 and 36-44 (Figure 1) make up northern Ontario. With very few exceptions, 100-km blocks in Regions 34 and 36-42 have road access, and those in Region 43 and 44 do not. Atlassing in this, mostly roadless, part of Ontario has its challenges. Gathering adequate data to show the distribution and relative abundance of species will require a huge effort, with much of the work taking place in areas far from settled areas or roads. Bird abundance and distribution for most species in northern Ontario is poorly known and the scale of habitat management is such that the data will be of exceptional value. To punctuate this, climate change is expected to have a greater effect on biodiversity at higher latitudes. Ontario's Far North (Regions 43 and 44) incorporates much of the world's second largest wetland complex (the Hudson Bay Lowlands) and is an expansive wilderness area.

Atlassers in Regions 43 and 44 are required to contact [Atlas Staff](#) before atlassing in these Regions. Atlassing in these regions requires a great deal of coordination and logistical support. Communication with atlas staff and regional coordinators is a must before travelling to these regions to conduct Atlas surveys.

We welcome your interest in helping with the atlas in the North and encourage your participation as it will be an interesting and rewarding experience.

1.2 Respecting Indigenous Peoples

Much of Region 43 and 44 is remote and unsettled land. Indigenous Peoples have been living, meeting, and traveling in these regions and caring for these lands since time immemorial. Ontario's lands and waters are Treaty lands or the unceded territories of First Nations and Metis peoples. Many of the settled areas in northern Ontario are First Nations reserves, which are lands set aside under the Indian Act and treaties for the exclusive use of a First Nation. Permission from the First Nation is required before accessing reserve lands. Although reserve borders were imposed on First Nations, many First Nations have continued hunting, gathering, and fishing in their traditional lands that extend beyond the

reserve boundaries. In addition, sensitive and important sites may be located outside the reserve boundaries and continue to be significant for a community's cultural and spiritual practices. Atlassers should be aware that we are visitors to these lands and we should actively demonstrate our respect for these lands and their Indigenous stewards. Atlassers planning to survey in these Regions are required to work with the [Atlas Staff](#) well in advance of their planned trip to make contact and seek permissions for atlassing on reserve lands. Ideally, permission, but notice as a minimum, should also be provided before atlassing on Indigenous traditional territory, preferably through your Atlas Regional Coordinator. As atlas participants, you may be the only representatives of the atlas that some local residents will meet. In advance of your trip, we encourage you to seek out information about the rich culture of northern Ontario First Nations and Metis communities. Recognize that rivers, lands and coastal waterways are long-standing Indigenous travel corridors. In your learning, for instance, consider investigating all the communities located along the river you plan to travel. Being a good ambassador of the atlas includes learning about and respecting the Indigenous people, their culture and the land of northern Ontario.

Some northern residents will also be contributors to the atlas, possibly acting in multiple capacities from conducting point counts to providing logistical advice and guiding services. The Atlas is currently (November 2021) working on ensuring that Atlas trips to polar bear country are accompanied by guides from local communities, providing further opportunities for learning more about Indigenous culture and practices and incorporating Indigenous knowledge into the Atlas.

1.3 Atlas objectives in northern Ontario

One objective of the atlas is to expand and enhance data collection of the breeding birds of northern Ontario by increasing survey coverage. The goal of the Atlas is to map the current distribution and relative abundance of all species of birds breeding within the province over a five-year data collection period: 2021-2025. The goal of each participant is to collect observations on breeding birds using standardized methods within 10x10km (10-km) atlas squares and submit that data as described in the [Instructions for General Atlassing](#). Atlas squares are nested into 100x100km (100-km) blocks based on the Universal Transverse Mercator (UTM) grid. The atlas will attempt to obtain adequate coverage of every 100-km block in Northern Ontario (see Figure 1). Adequate coverage of a 100-km block in northern Ontario is defined as:

- For northern Ontario blocks in regions 43 and 44 (Figure 1), there must be adequate coverage of at least two 10-km squares (i.e., 20 hours of coverage and 25 point counts per square), and 50 total hours of atlassing is required.
- For northern Ontario blocks which are road accessible, there must be adequate coverage of at least five 10-km squares.

These are the minimum criteria for adequate coverage, but all data, including partial coverage, in northern squares will be very useful. However, we hope to collect considerably more data than this in most blocks – particularly those with road access. The more data the better, because of the paucity of existing data for northern bird distribution and abundance. Please refer to the [Instructions for General Atlassing](#) for complete details.

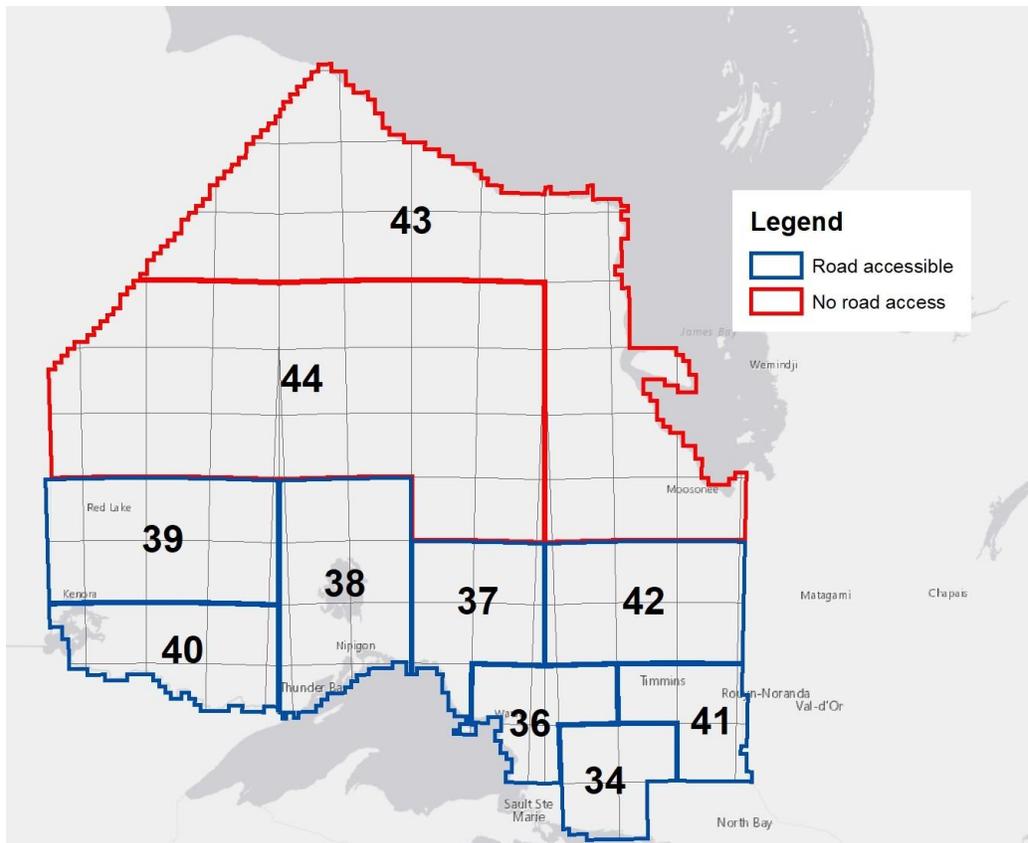


Figure 1. Atlas-3 regions in Northern Ontario. The 100-km block grid is shown in grey.

1.4 Roadless Versus Road-Accessible Regions and Blocks

The approach to covering the roadless, remote regions is somewhat different than road-accessible areas. In Regions 34 and 36-42, RCs will be working with a combination of local volunteers and visiting atlasers, and most of the access will be by vehicle, though numerous opportunities exist for off-road work by canoe, and there will be some fly-in options as well. Much incidental work will be done in these areas by people passing through, as well as by local atlasers. Though road access provides a lot more flexibility for atlasling, we highly recommend that atlasling be done in teams (2 or more) for safety. Greater access means a larger selection of squares to work in. Coordination is vital to ensure the highest priority squares are atlasled. Please contact your [RCs](#) to ensure your plan makes the strongest contribution possible to atlas objectives.

In Regions 43 and 44, coordination with the [RCs](#) and [Atlas office](#) is essential. All blocks must be accessed by either aircraft or canoe (or both) or by boat from northern communities. Because there are very limited options for covering the atlas blocks in Regions 43 and 44, atlas work must be fully coordinated, and most trips must focus on obtaining minimum coverage goals in the block(s) during a single visit. Most of the work in Regions 43 and 44 will take place using teams of four participants flying into remote communities then working from boats or canoes, sometimes with guides, and there will be some special trips to remote coastal areas. In most cases, there is good access to only a

few squares in each block. The [RC](#) will inform you which squares should be covered in each block.

1.5 Coverage Priority

In Atlas-3, the priority in the north is to cover the squares and points that were covered in Atlas-2, whenever possible. Analyses are underway to determine where additional coverage would be most valuable and new priority locations will be provided before the start of the atlas trip, and will be updated as coverage is obtained, so please check with the local [RC](#) or Atlas Staff. However, data from anywhere in Regions 43 and 44 is valuable, so if you have an opportunity to collect data anywhere in these Regions, please do so. Remember to contact the [RC](#) before you plan your trip to ensure your plan includes the latest priority atlas locations.

We provide the following guidance on the priority you should place on each activity because we are asking atlasers to carry out several tasks. For northern Ontario, the priority should be:

- Adequately cover (20 hours and 25 point counts) two 10-km squares in each 100-km block in Regions 43 and 44 and five squares in Regions 34 and 36-42.
- Repeat as many Atlas-2 point counts as possible.
- Find breeding evidence for as many species as possible in each 100-km block.
- Upgrade breeding evidence for as many species as possible to Probable Breeding.
- Upgrade breeding evidence for as many species as possible to Confirmed Breeding.

1.6 Coverage Strategy

Dates: The peak season for atlassing in northern Ontario, and the time when most expeditions to remote areas should take place is mid-June to early July. Of course, some species are less active at this time of year, so we encourage additional work outside of those dates for early- and late-nesting species. However, we expect such efforts to be largely restricted to road-accessible blocks.

Casual observations: We encourage everyone to submit as much data (checklists and point counts) as possible for northern Ontario. If you live in the region, are just passing through or are travelling to a square to do atlas work, keep track of your observations using atlas protocols and submit them to the atlas.

Protected Areas: sampling in protected areas (e.g., provincial parks) is encouraged because it provides valuable baseline/benchmark data for the greater landscape and over time allowing for comparisons between protected and non-protected areas. More information on camping in parks, and potential free access for atlasers, is provided in [Appendix D](#).

Local atlasers: If you live in northern Ontario, work closely with your RC to determine priority squares near you. As much as you can, coordinate your efforts with other atlasers to ensure that your efforts complement each other and help ensure that all blocks in the region are adequately covered. Check out the [atlas coverage map](#) to see available and priority squares.

Visiting atlassers: In Regions 43 and 44, because of the difficulty and expense of access, most atlas trips to these remote areas will be coordinated through the [Atlas office](#) and will focus on repeating trips, squares, and points covered in Atlas-2. It will take about one week for a team of four atlassers (at least two of whom are skilled birders) to adequately cover one block in remote areas beyond the minimum standard. Usually, a team of four will prepare their trip to ensure that they can cover a specified block adequately during a single week-long visit – many trips, especially into the remote north, will be of two week duration. In Regions 34 and 36-42, coordinate your plans with the RC prior to your trip. RCs will know areas that could benefit from your atlassing efforts. Of course, we will be thankful for any data that can be provided anywhere in the province.

Previous data: A list of the species reported in the square (from both the current and previous atlas projects) is available on Square Summary Sheets on the atlas [website](#). If the square was well-covered, this list can be a useful guide for that square. Note that in many cases squares were poorly covered, so only a few species or no species will have been reported in that square during Atlas-2. However, the sheet summarizes the percentage of squares in the region that each species was reported, and that can be a useful guide to the relative abundance, or likelihood of coming across, each species.

Safe dates: the atlas has produced a series of seasonal charts depicting when a species may be breeding, when it may be migrating, and when it is safe to assume an observation of a species in breeding habitat is indeed a breeding individual. Please refer to [Appendix H: Safe dates/breeding dates](#) for more details.

Confirming records: Spending a large proportion of your time attempting to confirm breeding for a species is not recommended if your time is restricted. The priority is to determine the presence of the largest number of breeding species at any level. One exception to this is if you encounter a significant species ([Appendices K and L](#)), if possible, try to spend more time confirming the breeding record. Looking for nests should be left for later in your trip when minimum coverage has been achieved and you can target specific areas or species to increase breeding-level evidence.

Pace yourself: If your trip is a relatively short one, you may choose to collect atlas data all day long. Remember, daylight hours can be very long at northern latitudes! On longer trips you should ration your time to be sure that you do not become over-tired and compromise the quality of your data. Atlassing in the early morning when the birds are most active is of paramount importance, and especially so for doing point counts. Dawn can be at 3:00 am at high latitudes. The afternoon lull in bird activity is the best time to rest. The late afternoon and evening, when many species become more active again, is the other important time to collect atlas data.

Camp in the square: If conditions permit, it is ideal to set up camp in each target square. Living in the square gives you 24 hour a day surveillance, which is very helpful for filling out the species list, especially for nocturnal species. It also makes it easy to start early morning surveys.

2. Field Techniques

2.1 Breeding Evidence

See [Instructions for General Atlasing](#) for a general account of how to collect and record breeding evidence data. Whenever possible, data should be recorded in separate checklists, keeping the distance travelled under 5 km and the time per checklist to under 1 hour.

To find as many species as possible in each square, it is necessary to visit as many of the square's habitats as possible. Habitats, and the proportion of each in each square, are shown on the [Atlas Square maps](#).

2.2 Point Counts

See [Instructions for Point Counts](#) and [associated Appendices](#) for a detailed explanation of point count methodology. The following adds relevant information on doing point counts in northern Ontario.

What Type of Point Count

There are two types of point counts used in the Atlas: Traditional and Advanced. See the [Instructions for Point Counts](#). In northern Ontario, we would like the Advanced methodology used as much as possible because of the extra detail it provides. We recommend doing as many of these counts as possible close to home, so you are as familiar as possible with the methodology prior to heading into the field.

When?

In northern Ontario, counts should be done between dawn and 10:00 am, between June 1 and July 10 in good weather.

How Many?

Any number of point counts in a square is useful, but squares with 10 or more point counts will be used in the analysis of relative abundance for the final atlas product. However, in northern Ontario, the minimum target is 25 point counts in each of two 10-km squares in each 100-km block in Regions 43 and 44, and in each of five 10-km squares in 100-km blocks in Regions 34 and 36-42.

Where?

In much of the province, most point counts will be along roads. Obviously, there will be no roadside point counts in roadless remote areas, including many protected areas. The [Square Coverage Summary](#) sheet shows how many roadside and off-road counts should be done in the square. Square Coverage Summary sheets for every square in the province are available on the [website](#). Up to 50 random "designated" roadside point locations are shown on the 10-km atlas square map. If you are to do 20 on-road counts, choose numbers 1-20, unless some of these are in unsuitable locations (e.g., too busy, unsafe), in which case add numbers 21, 22, and so on, as required. Cover them in any sequence.

The Square Coverage Summary sheet shows the target minimum number of off-road point counts in each habitat for each square, and each square map shows you the layout of the habitat within the square. In regions 43 and 44, the priority is to repeat point counts from Atlas-2. Those locations will be identified on square maps. If there are fewer than 25 of

these Atlas-2 point count locations identified on the map, or if you can't reach some of them, then add additional points by habitat, as specified on the square map to a total of 25 per square. Within each specified habitat, you decide where to put the point counts, but please select these locations ahead of time, or do them at predetermined distances along a transect line, so you are not biased by choosing points based on the birds you find there. Please try to ensure that each station is located such that the entire 100m-radius circle, or as much as possible of the circle, is within the prescribed habitat. Count stations should be at least 300m apart in wooded landscapes, and further apart (e.g., 500m apart) in open landscapes.

You should select point counts throughout the square as access allows. If you have no information on where to put point counts in a square, try to sample the habitats proportionately to their availability in the square based on your best judgement. In protected areas, authorizations may be required in operating Provincial Parks and National Parks. Please refer to [Appendix D - Access to parks](#). Atlassers can contact their [RC](#) for more information including opportunities for free access and camping.

Audio recording of your point count

For volunteers interested in performing point counts who have limited birding knowledge, bioacoustics can be used to record your point count using an autonomous recording unit (ARU) or digital recorder (contact your [RC](#) about using a Zoom H2n recording device in your home region, or the [Atlas office](#) for remote northern trips). To use bioacoustics for a point count, the atlasser visiting a point count survey station would make a 5-minute recording under the same conditions and time period that point counts would normally be conducted. Detailed instructions on how to use Zoom H2n recorders and the bioacoustics page on the website are in development.

2.3 Data Recording

We encourage the use of the NatureCounts app for Atlas-3 for a variety of benefits; however, due to the unique nature of collecting data in northern Ontario (i.e., wet conditions, data storage, recharging batteries), atlassers may also wish to use a notebook or [printable data forms](#), but you must be sure you record all the required information.

2.4 Managing your data

Data management and security is the most important job. If not done correctly, the huge time and expense of northern Ontario atlassing logistics may be for nothing. Each group should have one person whose job it is to ensure that all of the data forms are fully completed and make it back to with you and into the Atlas database safely. Establish a daily routine of checking all forms for accuracy and completeness each day, taking a photo of each form or page in your notebook, and then storing them in a safe, waterproof container.

The ability to backup data on your GPS unit, zoom H2n recorder, camera, and other devices is also very important but may be difficult on a remote trip. For data stored on your devices, ensure you have multiple SD cards for your camera and recording device. Carry a portable hard drive and associated cables to backup your data, such as these [rugged external hard drives](#).

2.5 Data Submission

We encourage the use of the NatureCounts app for data entry and submission. Atlassers may also enter data online via the atlas data entry [website](#), or submit data via a spreadsheet (details forthcoming) . [Android](#) and [iOS](#) versions of the app are available and a user manual describes how to use the app. Keep in mind that atlassing in remote areas without cellular service may make it more challenging to use the app, due to the need for recharging the device, storing offline maps, or field conditions that are not suitable for electronic devices (e.g., wet weather). Instructions on how to use the app out of cell coverage is in development.

2.6 Qualifications and conditions for remote atlassing

Conditions dictate that in most cases teams of four volunteers, or two plus a guide, travel into roadless areas. This will allow the most efficient and safe distribution of people and effort. More would be logistically expensive and less would be unsafe (i.e., 4 people = 2 canoes). At least half the members of each team must be experienced birders with a thorough knowledge of the species likely to breed in the study area, and they must have the ability to do point counts for those species. Also, at least two members of each team must have wilderness tripping experience, including map, compass, and GPS use. All four members of the team should have considerable camping experience and wilderness first aid training. Familiarity with northern conditions, while not a prerequisite, is a definite asset.

All members of the team should be in good health. Traveling on foot in remote areas is often very difficult and in most cases walking will be your only method of transportation when away from water. Canoes are a possibility in most inland locations.

The preferred situation is that a team of volunteers, who know each other well, plan ahead for a trip of this type. Single volunteers or those with an incomplete team should contact the [Atlas office](#) or the RC and we will attempt to connect you with team members with complementary skills and experience.

On the “Northern Atlassing Trips - Application Form” (in development), we require information on your camping and birding experience to ensure that only people capable of withstanding the potentially rigorous conditions, and able to operate safely and efficiently in isolated situations make the trip to the remote north. Regardless of whether you do eventually make the trip into remote areas of northern Ontario, we would invite you to help us collect data for the atlas project. There are plenty of opportunities for visiting interesting parts of the province where data must still be collected. Some of these opportunities are covered at the end of the manual under “Atlassing alternatives”.

All volunteers supported by the Atlas office for a remote northern trip will be required to sign an agreement (in development) that ensures you commit to doing a good job of data collection, including properly documenting significant records, and that Atlas data that you collect will be submitted in a timely fashion.

3. How to Participate

The following are the next steps – once you have read this manual and the [atlassing](#) and [point count](#) manuals, and understand what is involved in atlassing remote areas of northern Ontario:

If you wish to work in Regions 43 or 44, see the website at (link). Here you will find materials summarizing suggested remote trips and a form entitled “Northern Atlassing Trips - Application Form”. You should complete this form as far in advance as possible of the trip – we recommend at least six months ahead, and preferably more. This will give us an idea of who you are, when and where you would like to work, and will help us coordinate effort across northern Ontario. We can also try to find you a partner or place you in a group if you don’t have one.

We require one month to review your application and get back to you. If you meet the basic qualifications, we will start working with you to set up a trip, including details of which blocks you are to cover and travel logistics.

If you want to work in any of Regions 34 and 36-42 (or anywhere else in the province), please contact the [local RC](#). For road-accessible work, or other work where you do not require fly-in assistance, you should work out the details with the local RC.

For trips to Regions 43 and 44, you should contact Atlas staff. We will work with you to sort out logistics and to help ensure the trip goes smoothly. We will also make sure arrangements are made for access to reserve lands and Indigenous Peoples’ traditional territories. Please refer to Atlassing Remote Northern Ontario (to be developed).

Once you’re done collecting data, your data should be submitted to the Atlas [website](#). If you have paper forms, please input those directly to the [website](#). The procedures to submit data through the app or online are detailed in the [Instructions for General Atlassing](#). We would also like to receive a written report from you, a couple of pages long, describing your trip. Some of these reports will be included in our newsletter or web page. The following trip details should be included at the end of your trip report:

- start date;
- end date;
- starting location (e.g., Pickle Lake);
- ending location (e.g., Fort Severn);
- nature of trip (e.g., Canoe trip on Severn River);
- flight details (if applicable);
- additional access details;
- names of participants; and
- any photos of the trip.

In addition, the report should describe your feelings about your experiences and the program itself, and any suggestions you have for others who will cover remote areas in a similar manner in the future.

4. Pre-season preparations

4.1 Respecting Indigenous Peoples

Seek out information about the rich culture of northern Ontario First Nations and Metis communities. Recognize that rivers, lands and coastal waterways are long-standing Indigenous travel corridors. In your learning, for instance, consider investigating all the communities located along the river you plan to travel. Being a good ambassador of the atlas includes learning about and respecting the Indigenous people, their culture, and the land of northern Ontario.

4.2 Mental Preparedness

When joining an Atlas-3 northern crew you must be aware that you are committing to a physically and psychologically challenging trip.

To be successful and to make the most of the expensive logistics of getting into Regions 43 and 44 you should be prepared for working long days, seven days a week, for the duration of your trip.

- You should be willing and able to walk about 10 km per day in rough terrain.
- You will be in a remote field setting with shared sleeping quarters, no access to showers, and will often need to travel during harsh weather.
- The biting insects in these regions are often described as incredible and relentless.
- There will be black bears, and you may be required to help deter them.

If you are unable or unwilling to work under these conditions you should consider other opportunities to contribute to the Atlas.

4.3 Health Insurance

If you are not an Ontario resident covered by OHIP: Well in advance, you should arrange for private travel health insurance as your current provider may not cover an emergency evacuation from Regions 43 and 44. When talking to your insurance company, make sure emergency evacuations from remote places are covered. Also, be clear on which steps must be taken in case of an emergency evacuation for your insurance to be valid. Most insurance companies require notification before you are evacuated, otherwise they may not cover the expenses. Other options include purchasing travel health insurance from companies such as Blue Cross and CAA.

Evacuation expenses will not be covered by the Atlas-3 partners!

4.4 Vaccination and other health considerations

Ensure your tetanus vaccination is up to date. Consider a visit to your family doctor and dentist before any extended trip to ensure no surprises occur while you are away. COVID-19 vaccination is required, along with proof of vaccination via the [Ontario QR code](#).

4.5 Training

Reconciliation and Indigenous Engagement

Please review the recording from the Atlas-3 launch weekend regarding [Indigenous engagement](#). In addition, two webinar recordings, [Reconciliation 101](#) and [Conducting Research with Indigenous Peoples](#), should be reviewed.

First Aid

Atlassers must have a minimum of Wilderness First Aid training. Wilderness Survival training is strongly encouraged. Atlassers must provide their own first aid kits and related supplies. Ensure you have enough first aid supplies for the size of your group and the length of your trip. For a list of recommended first aid supplies, check this [resource](#).

Canoeing skills

Participants must have skills commensurate with wilderness canoeing. There must be at least one very experienced and skilled canoeist in each canoe. If possible, do a short canoe outing to learn each other's strengths and weaknesses, and accommodate as necessary. The atlas may not fund or endorse a trip if we feel that the participants' skills are inadequate.

Bird identification

Study recordings and field guides for all species likely to be encountered. Get a list of species reported to the first or second atlases in nearby squares from the Atlas web page. [Square Coverage Summary Sheets](#) are the best source of this information. Try out [Dendroica](#) to improve your ID skills or to help shake the rust off before the season starts. Remember that at least two out of every four-person team must be able to do the "Advanced"-type point counts.

Atlassing

Everyone should be fully trained in how to use the NatureCounts app, complete Atlas data forms, and/or record Atlas data. Obtain help from the [Atlas office](#) or RC if necessary.

GPS, Maps, and Compass

Ensure everyone on the trip is fully capable of using EACH of these items.

Satellite phone

Learn how to use it and test it before you depart on your trip. It is for emergencies only. Satellite phones are used for communication with your check-in contact or in the event of an emergency. They are not intended for personal calls as costs are prohibitive (>\$2/minute). Satellite phones should not be left turned on to receive incoming calls unless there is an emergency. Battery life is very limited. Spare battery packs are provided for safety reasons. Refer to [Appendix 4](#) for a list of emergency contact numbers.

inReach or Spot units

Two-way satellite communication devices are a great option for trips that occur outside of cellular networks. These devices both send and receive text messages, have SOS buttons to call for emergency response, and have apps that work off your iOS and Android device. Learn more about [inReach](#) and [Spot](#) units. If you have a unit, learn how to use it and test it before departing on your trip. Contact the [Atlas office](#) as we may provide units. You will need to learn to use it and test it prior to departure.

Powering your devices

Many of the devices you will have, such as your GPS unit, communication devices, recording device, and camera require regular charging and spare batteries. Ensure you have planned accordingly and have solar and other chargers and spare batteries to keep your devices powered for the duration of your trip.

Bear safety

Black bears and polar bears pose a significant risk in northern Ontario. Please view this training [video](#). Refer to [Appendix 7](#) for specific details regarding black bears.

Firearms and Guides

Firearms are recommended only on trips to polar bear country (i.e., within 100km of Hudson Bay or James Bay north of Attawapiskat in July). To use, carry, and transport a firearm, there are certification requirements. Check with your air carrier to ensure that you can meet their transportation policy. Your [RC or the Atlas office](#) can make recommendations based on your location as well. See firearm safety information in [Appendix 8](#).

To reduce the requirements for volunteer atlassers to carry firearms, the Atlas is currently (November 2021) working on means of ensuring that Atlas trips in polar bear country will be accompanied by guides from nearby communities. Contact the [Atlas office](#) for more information on this.

4.6 Reimbursement

Reimbursement for trip logistics costs may be possible. Please consult with the [Atlas office](#). There are opportunities to apply for Baillie Fund grants as well. Visit Birds Canada's [website](#) for details.

4.7 Gear – What to bring

The following list is meant as a guide to help you decide on what to bring. Regions 43 and 44 can be wet, cold, and very windy; these areas can also be dry, hot, and windless. Consider the time of year and the amount of clothing you *really* need. Avoid cotton shirts and pants as they dry slowly and do not provide any insulation when wet. Make sure your clothing layers well, giving you the greatest flexibility in a variety of temperatures – dress like an onion. Be prepared for sitting for hours in the cool or wet early morning, and for some balmy t-shirt days. You want to have windproof clothing. Once the wind dies down, be ready for an onslaught of mosquitoes and black flies. Tightly woven, non-stretch fabrics will form a barrier to probing proboscises. Hunting activity may be on-going during your trip. Bring and wear hunter's orange.

Keep in mind that you may have to carry your gear several kilometres across portages or to camp sites. Excluding the clothes you will be wearing, we therefore expect you to fit your gear into one large 90-120L backpack! Plan on wearing waterproof hiking boots and gaiters and keep your raingear accessible.

The Atlas provides:

- Bear spray (training required)
- Point count recording equipment (Zoom H2n, tripod, waterproof camera, SD cards)
- For remote trips to Regions 43 and 44, a satellite phone and an inReach device for communication

4.8 Travel to Remote Areas

Volunteers must make their own way to starting points in northern Ontario. Timmins or Moosonee (Figure 3) will be the starting point for most trips to coastal sites in Region 43, and are accessible by [rail from Cochrane](#) or by air. Sioux Lookout or Pickle Lake will be the

major starting point for flights into much of Region 44, and for northwestern sections of Region 43, and are road-accessible. Hearst is another possible starting location, depending on the trip; it is road accessible. From Moosonee and Sioux Lookout, we hope to have flights arranged to take people to remote communities. From these remote communities, some trips will leave by canoe while others will require special charter flights or boat charters to remote locations.

Figure 3 shows the major habitat types within Ontario in relation to major transportation routes and some of the larger communities in northern Ontario in relation to Toronto (in development).

FIGURE 3. COMMUNITIES AND HIGHWAYS IN NORTHERN ONTARIO

5. Canoe-Atlassing in Northern Ontario

The following are recommendations and requirements for those involved in future atlassing canoe trips in remote northern Ontario. The Atlas Office and RC will ensure that the recommended preparations in this guideline have been followed.

The best philosophy on planning an atlas canoe trip is:

The fewer surprises the better.

5.1 Pre-trip preparations

Maps

Obtain maps at least one month ahead of the trip. Work this out with the Atlas office, which can supply most of the maps. The NatureCounts app will have a map, but it is not something to rely on in the remote north. You need:

- 1:250,000 scale topographic maps to provide an overview and for general planning.
- 1:50,000 scale topo maps to provide detailed planning and navigation.
- Atlas 10-km square map. In most remote squares, the map will be a satellite image described below.
- Atlas 10-km square habitat map, from satellite images. Good for finding the habitats you need to visit.
- Electronic versions of maps in your GPS or smartphone. [Backroads Mapbooks](#) is a good option for your GPS unit. Please see [Appendix F](#) for more details

Planning

Meet several times with your group and Atlas staff and/or RC to plan all aspects of the trip, including:

- Locate target squares on the map and consider where to camp for best access to those squares and to cover the required habitats. When you arrive, good camping won't always be available, so build in flexibility. When canoeing you will almost always camp in the target square.
- Work with the [Atlas office](#) and RCs to contact Indigenous communities and understand responsibilities for who to contact when arriving in a community before heading out on your trip.

- Determine overall itinerary, including schedule and how you will reach the north, flights into remote areas, drop off and pick up points. The latter points will have to be worked out with the Atlas office and RCs.
- Determine daily routines in as much detail as possible, building in flex time for weather and rest days. For a group of four, with at least two expert birders, estimate seven nights needed to cover a block adequately (i.e., covering at least two 10-km squares with 20 hours of atlassing and 25 point counts in each, and at least 50 hours of total atlassing in the block). Experience has shown that one atlasser, working with an assistant, in remote areas of northern Ontario, can expect to cover four to ten point counts in a morning, depending on terrain and the ease of walking. Base your schedule on getting 25 point counts done in each square before 10:00 am. Doing the required point counts requires that you hike from the river-side habitats to reach specified habitat types further inland. The point count component of the trip requires the most planning and is focal to the trip.
- Be prepared for things taking longer than you expect. Routes you pick might not be an option in a wet year. Walking is challenging in boggy terrain and can be slow. There are no paths. Schedule a realistic pace – daily and for the trip – and build in rest time in the afternoon.
- Ensure everyone is fully aware of Atlas data collection methods, data forms, and make sure everyone can use the electronic equipment. Train group members as required prior to leaving for the trip.
- Go over the route and note hazards such as rapids and work out how you will deal with them. Obtain available information about the nature of the river and the hazards on it, and what to expect. The Atlas office can help with this.
- Be sure everyone is aware of their role (i.e., data collection, cooking, canoeing, finances, firearm) and what is expected of them on the trip. For example, who will ensure that all data forms are properly filled in, checked, backed-up, and safely stored at the end of each day.
- Plan meals carefully to ensure adequate food including for weather delays. Even though your pickup might be scheduled, delays are common due to weather conditions at the aircraft point of departure when your weather appears fine.
- Decide who is responsible for specific trip preparations.
- Prepare a budget – The Atlas covers the costs of flights into remote areas, and other major expenses such as approved boat rentals and in some cases, local guides. All other expenses are the responsibility of the atlassers. Figure out the costs of the trip in advance so there are as few surprises as possible (for yourself and for the atlas). Work out the budget for the trip with the Atlas office prior to departure and work out each person's costs. Ask the Atlas office about the availability of Baillie Fund grants to help offset trip costs.
- Decide what to pack for the trip – avoid unnecessary duplication and expense, but make sure you have everything you need. See [suggested checklist](#) of items to take.
- Determine who will write reports/articles at the end of the trip.
- Check with the air carrier to make sure that you comply with their weight requirements. Declare your dangerous goods ahead of time to avoid delays at the airport (e.g., stove fuel, cartridges, bear spray)
- Test all equipment before you go. A backup stove and spare parts is a good idea.

6 Safety Protocol

Safety is top priority. Let's repeat that: **Safety is top priority.** Any risk you take can endanger you as well as the lives and well-being of everyone in the crew. Remember, you are a very long way from help and, depending on location and weather conditions, it could take several days to arrange a medical evacuation. It can take hours to contact health or emergency professionals given weather and satellite availability. Be very cautious in everything you do.

6.1 Medical Information

At the beginning of the season, the crew lead assembles the following information from all team members so that it is available in the event of a medical emergency. Ensure that everyone knows where this information is kept: with the satellite phone.

Name

Date of birth

Chronic or recurrent medical conditions

Medications

Allergies

Medical insurance provider

Policy Number

Phone number

Necessary procedures to ensure coverage

Health card number

Blood type if you know it

Year last tetanus shot was received

6.2 Daily Safety Check-Out/In

Section in development -- check back soon!

6.3 General Safety

Please refer to the Atlas Guidance for Participants [Appendix A - Putting Safety First.](#)

It is recommended that all atlassers working in northern Ontario in off-road situations work in pairs. Each pair working in a team should inform the other members of the team as to their planned itinerary and route each day and establish a meeting/return time.

Hiking

Before you leave camp, let the people in your group know where you are going, what you are taking, when you will be back, and arrange a check-in time. Hike in pairs and do not lose sight of each other. Always check your surroundings for bears. Stay oriented and never leave camp without a compass. What starts off as a bright, sunny day can turn into a

desperately cold, wet, and foggy one. Be prepared for all weather conditions and be ready to overnight away from your field camp.

Return on time. As soon as you know that you will be late, attempt to contact other members of your crew to let them know about your updated plans.

The following items should always be taken on a day hike:

- Bear spray and fox pro whistle
- **Polar Bear country:** Firearms and ammunition
- InReach or satellite phone
- Compass
- GPS (e.g., Garmin Rhino) and batteries
- Sunscreen/bug spray/bug hat for those very sensitive
- Raingear
- Warm clothing (toque, mitts, wind breaker, etc.)
- Food and enough water
- knife
- lighter or matches
- small mirror or something reflective to use as a signal
- First aid kit with blister kit

Health

Medical evacuation from your camp may not be possible for several days due to poor weather. Therefore, taking all precautions to maintain good health is critical. If you are feeling ill, let the crew leader know, and take some time to recover. Ensure your first aid kits contain medication for various ailments and use them when needed. Make note of any items used so that the supplies are restocked at the end of your trip. As noted above, consider visiting your family doctor and dentist prior to your trip to ensure no surprises occur while you are away.

Heavy Lifting

Some work at your camp requires heavy lifting. Always use caution to avoid back injury. Unloading heavy, bulky equipment from the aircraft is very strenuous – take your time, lift only what you can handle, and team up for heavy items. When you are dragging gear across the terrain, take repeated rest stops when necessary – make sure everybody stays together. Recognize your limitations, but always do your fair share of the work.

Sleep

Life during the atlas field season can be a long string of odd-hour surveys and field camp setup and maintenance work punctuated by short naps at irregular intervals. You will become sleep deprived. Know yourself. If you are feeling tired, the risk of injury and accident increases, and you may be difficult to deal with. Take the time to catch a quiet sleep retreat.

Hygiene

Personal hygiene is critical for the health of all crew members. Wash your hands frequently. Always wash your hands, or use hand sanitizer, after you heed the call of nature, after being in the field, and before and after handling food.

Fire

Camping stoves, burning garbage, and flammable liquids are all potential sources of fires in camp. Caution should be exercised at all times when working with these.

Prevention Measures:

- Flammable fluids should be placed well away from any open flame, such as cooking equipment or burning garbage. These fluids should be stored well away from sleeping areas.
- Always use appropriate personal protective equipment when refuelling. Refuel cooking stoves outside. Clean up any fuel you spilled in the process.
- Do not place articles on the lit stove to dry, use a clothesline for drying.
- Check stove is in working order prior to the trip.
- Know how to use a stove safely before using it.

7. Emergency Procedures

7.1 General Emergency Procedures

Getting outside help to your field site may take a long time. In the event of an emergency, therefore, your first action must be to administer first aid to anyone who is sick or injured, and to ensure the safety of the entire group. Assess the situation and make sure it's safe for you to help. Remember: you can't help if you get injured too. Evaluate whether an emergency evacuation is necessary and which resources may be needed. Always prepare a concise written report of the event to ensure that you are able to convey all important information when calling for help. In addition, before you call, determine your position as accurately as possible, such as the name of the nearest waterbody that can be found on a map and your lat/lon. Where can aircraft or boats reach you from? Write all this down so you do not forget when talking to rescuers. Keep a cool head and manage your sat phone battery. You will need it. Then, **call the contact person on the satellite phone to inform them of the situation**. If they cannot be reached, call **Central and Arctic (RCC Trenton) Emergency Numbers (24 hour) toll free (within Canada) 1-800-267-7270**. Emergency evacuations are organized by Central and Arctic (RCC Trenton) Emergency. If you need to call Central and Arctic (RCC Trenton) Emergency directly, make sure to communicate to every party how you can be reached so that you can stay informed about what is being planned. Keep an eye on the weather because a change in the weather can influence the action plan and determine whether or not someone can be flown out.

7.2 Serious Injury or Illness

If a member of your crew is hurt or falls ill, contact the **emergency contact name** as soon as possible. Let your contact know as well when doing your daily safety checks. Do not wait until your patient's condition is serious before reporting the accident or illness. It may take

days before transport to town can be organized, and the sooner it can be initiated, the better. It is always possible to cancel an evacuation if the patient's condition improves.

7.3 Steps to Follow in a Medical Emergency

1. The crew lead delegates specific jobs to available personnel.
2. Perform first aid. One person should remain with the patient to monitor his or her condition and to lend moral support.
3. Fill out the accident/illness report form (see [Appendix 2](#)).
4. Evaluate the situation and assess your resources:
 - a. Do you need emergency evacuation?
 - b. Do you require special equipment (e.g., clam shell spine board, special medication)?
5. Call the Central and Arctic (RCC Trenton) Emergency Number (24 hour)
 - a. Toll free (within Canada) 1-800-267-7270
6. Relay the information summarized on the accident/illness report. Be prepared to answer questions about the resources you have.
7. If other communication arrangements have not been made, call the Central and Arctic (RCC Trenton) Emergency Number back in ½ hour. Also, stand by to receive calls on the satellite phone.
8. Continue to monitor the patient's condition and collect vital signs as outlined on the Continuous Monitoring Chart (see [Appendix 1](#)).

7.4 Person Overdue

When a person has left camp and has not returned at the prearranged time, follow the steps listed below:

1. In appropriate conditions and habitat, scan the landscape thoroughly using a spotting scope, if available, in an attempt to locate the person. Try to contact the person through the communication device they are carrying (e.g., Rhino, inReach, satellite phone).
2. When the person is two hours overdue, notify the **emergency contact name** directly to discuss your options and to make a plan.
3. If the person returns after you have notified the emergency contact, inform them immediately.

We recommend that people do not go looking for the missing person, then you could have multiple missing people.

8. Support for Participants

The Atlas is hoping to provide flights from northern communities (e.g., Pickle Lake, and possibly Sioux Lookout, Moosonee, Hearst, Red Lake) free of charge to remote communities or other remote locations. The Atlas is also hoping to cover the costs of canoe or ATV rental, and hiring guides when necessary. The Atlas will also try to find free accommodations for you in remote communities, though this is not likely in most locations.

Be sure to check with us to determine what the Atlas will pay for before starting serious preparation for your trip.

Atlassers are responsible for covering the costs of getting to northern Ontario, including accommodations, and must provide their own food and equipment.

The Baillie Fund is providing support for some remote Atlas trips. Check with the Atlas office for details.

8.1 Free Camping

Ontario Parks and Parks Canada have generously donated free access and free camping in those parks for designated atlassers collecting atlas data. If you wish to obtain free access or camping for atlassing purposes, contact the RC well in advance, preferably a month or more ahead of your planned arrival, so that arrangements can be made if space is available. The RC will make arrangements with the Park and will have a letter of authority to share with designated square atlassers for free access and camping in operating parks.

Please refer to [Appendix D - Access to National and Provincial parks](#) for complete details.

8.2 Camping on Crown Land

Canadian residents may camp for free up to 21 days on any one site in a calendar year. Follow rules or restrictions posted on signs. Check if camping is allowed on the Crown land where you are planning to camp. Do not camp if camping is prohibited (you could be fined).

Non-residents, 18 years and up will need a non-resident camping permit to camp on Crown land north of the French and Mattawa rivers, unless otherwise prohibited. Please visit the [provincial guidelines](#) for more details.

9. Equipment – general points

Lifejackets (PFDs) should always be worn while in the canoe or boat and around the water's edge.

Refer to [Appendix 3](#) for specifics.

1. Clothes - Prepare for extremes of heat, freezing cold, and heavy wet weather. Bug jackets are worth taking. Thin gloves help protect hands from bugs - even deer and horseflies! Tuck your pant legs into your boots, and your bug jacket into your gloves.
2. Tents - Prepare for extremes of heat, freezing cold, and heavy wet weather. Be sure they are well designed for use in wind, which is often quite strong. One tent for each non-related participant is probably a good idea.
3. Gas stoves - are excellent. White gas is good but has the risk of spillage. Propane is safer but has the problem of many containers (weight and disposal issue).
4. Birding apps – a good selection are available for your iOS and android device. Check the app and play stores. Merlin, Sibley Birds, Audubon Bird Guide, iBird Pro are some examples.
5. Map apps – see [Appendix F](#) for details
6. GPS (e.g., Garmin Rhino or Montana) and compass - one each for each participant plus knowledge of their use.

7. Canoe – If you have the choice, 17 foot Royalex (aka ABS) is best for any river challenge.
8. Footwear – if you don't wear waders, expect to get wet feet daily.
 - a. Hip waders - Good for wetlands. Keep you warm and dry, though punching through sphagnum is a definite possibility and can fill hip waders with water.. Disadvantages include comfort, heat, suitability to rough and woodland terrain, and possible leaks. Do not even consider taking chest waders.
 - b. Knee high or half calf rubber boots - not a recommended practical alternative since you're likely to get water in them occasionally.
 - c. Running shoes - would allow for light travel in all conditions. However they require accepting wet cold feet for hours (which can be refreshing if it's hot out), and are susceptible to falling apart in the tough walking conditions on the muskeg. They also provide little ankle support – and a sprain could be serious. Keep a pair of dry runners for use around camp.
 - d. Waterproof leather boots - are comfortable and versatile, but require avoiding deep wet areas and will likely get water in them fairly regularly.
 - e. Gaiters - provide useful ankle protection, and reduce snagging pants on sticks.
9. A digital recorder or an app on your device - can be useful if there's a calling bird that you don't know.
10. Books - At least one book for each person - can be shared later. Don't scrimp on the reading material.
11. Duct tape – don't leave home without it!

Appendix 1. Atlasser Trip Checklist

1. Are you doing on-road (Regions 34 and 36-42) or off-road (Regions 43, 44)?
 - a. On-road
 - i. Contact RC to confirm priority areas for coverage in the Region of interest
 - ii. Prepare for the season, see below
 - b. Off-road
 - i. Submit application to Atlas-3 staff
 - ii. Prepare for your trip, see below
2. Preparation
 - a. Review coverage strategy (p.8)
 - b. Review field techniques (p.10)
 - c. Contact Atlas-3 staff regarding permission to atlas on Indigenous land
 - d. Review safety considerations (p.14)
 - e. Review your health insurance and vaccinations
 - f. Review the required training (p.19)
 - g. Plan your route and travel arrangements
 - h. Review equipment list (appendix 3)
 - i. Obtain supplies
 - j. Host planning meetings as required
 - k. Review and plan for safety and emergency procedures

3. During your trip
 - a. Review manuals, as required
 - b. Back-up data
 - c. Safety checks
4. After your return
 - a. Enter your data
 - b. Trip report to the Atlas office
 - c. Accident report (if applicable)

Appendix 2. Accident/Illness

Report Form

Complete this form before calling for help. Make a copy to send with the patient if medevaced.

Location of patient
(longitude/latitude):

Name:.....
...

Date of
birth:.....

Medical insurance provider:.....

Policy
number:.....

Telephone
number:.....

Allergies:.....
.....
.....

Chronic and recurrent medical
conditions:

Date and time of accident or first
symptoms:

How did the injury
occur?

What is the ailment or injury?

.....

.....

.....

What are the signs and symptoms being displayed?

.....

.....

What first aid has been administered?

.....

.....

.....

Medication patient is currently taking.....

Last time patient ate or drank.....

Special equipment needed for medevac:.....

Continuous Monitoring Chart

Assess your patient's condition every 15 min until stable for four successive checks, then hourly until stable for four successive checks, then every four hours. Send this chart with the patient in case of an evacuation.

Patient's Name:

Date of Accident:

TABLE A1: GLASGOW COMA SCALE USED TO ASSESS LEVEL OF CONSCIOUSNESS

Eyes open	Best verbal response	Best motor response
		6 – obeys command to move
	5 – oriented	5 – localizes pain
4 – spontaneously	4 – confused	4 – withdrawal response to pain
3 – to speech	3 – inappropriate	3 – flexion response to pain
2 – to pain	2 – incomprehensible	2 – extension response to pain
1 – no response	1 – no response	1 – no response

TABLE A2. PUPIL SIZE CHART

8 mm	7 mm	6 mm	5 mm	4 mm	3 mm	2 mm	1 mm

TABLE A3. CONTINUOUS MONITORING CHART.

Time									
Level of consciousness (see Glasgow coma scale, Table A1)	Eyes								
	Verbal								
	Motor								
Respiration	breath/min								
	character								
Pulse	beats/min								
	character								
Pupils (see pupil size chart, Table A2)	Left	size (mm)							
		react to light? yes/no							
	Right	size (mm)							
		react to light? yes/no							
Skin	colour								
	temperature								

Appendix 3. Detailed Equipment List

- Atlas Participant's Manual
- Axe
- Backpack
- Boat safety equipment (e.g., Bailers, floating rope, floating flashlights, whistles, [Transport Canada requirements](#))
- batteries (AAA, AA, C, D, whatever needed for equipment)
- Bear bangers
- Bear spray and UDAP container
- Belt (to hold up your waders and to carry bear spray)
- Binoculars
- Bowl
- bug hat
- bug jacket
- Bungee cord and rope
- camera equipment (spare battery/battery charger/digiscope adaptor)
- Camp chair
- campsuds (biodegradable bath soap)
- Canoe packs and repair kit
- Canoes
- casual shoes (for around campsite)
- charging cables for devices
- Clothing – for all kinds of weather (warm, quick drying, loose)
- Comfortable rubber boots
- Compass
- computer (laptop) optional
- cool weather jacket/windbreaker
- Cup
- Cutlery
- Data Forms
- Day pack
- Dish soap (biodegradable)
- dry bag
- Duct tape
- durable water bottle
- earplugs (if you think they will help you sleep)
- External hard drive and cables
- Field Guides – Sibley plus one other per team
- First Aid Kit (suitable for size of crew and length of trip)
- First Aid manual
- Flashlight
- Flask
- Footwear – appropriate for your trip: boots, hip waders, camp shoes, sandals, rubber socks, rubber booties
- Frying pan
- Fuel
- Gas lighter
- Gloves
- GPS
- Grate (cooking over the fire)
- Hat with brim for sun

- head lamp
- heavy wool sweater (1)
- Hip waders - NOT chest waders - (make sure they fit well for many kilometers of walking).
- Insect repellent
- Knee pads
- lip balm
- long-sleeved shirt (2)
- Maps (see pre-trip preparation list)
- Matches
- Mattress and repair kit
- Multi-tool (Leatherman, Swiss Army)
- music/speakers/batteries
- Northern Atlassing Manual
- Notebook
- Paddles, including a spare per canoe
- pens / pencils
- Personal first aid kit
- Personal medications
- personal survival kit (link for example)
- Personal toiletries (towel, shampoo, toothbrush, toothpaste. Baby wipes are handy for quick wash ups)
- PFDs
- Pillow
- Pillow case
- Plates
- polar fleece pants (1) optional
- Pots
- quick-dry towel
- Rain gear
- Reading material for downtime
- Rope
- rubber boots (16" - 18")
- Satellite phone – limited supply available from Atlas for remote trips. See protocol regarding use.
- Saw
- scarf/neck warmer
-
- Scrubber and dishtowel
- sheets for bed optional
- shorts (can get pretty warm) (1)
- sleeping bag (rating of at least - 5 Celsius)
- socks (one pair per day, plus a couple spares)
- Solar panel (small size, for charging)
- utensils
- cutlery
- spotting scope and tripod with a scope mount
- Stove (one element as backup)
- Stove (two element)
- Sun screen
- sunglasses (essential, 1 good pair and 1 spare pair)
- sunscreen
- Tarp and /or ground sheet
- Tent and repair kit
- thermal underwear, top and bottom (1) optional
- Thermos

- thin fleece sweater (1-2)
- Timer
- Toilet paper
- toque/balaclava
- Towel (quick drying)
- Trowels (one per canoe)
- t-shirts (2-3)
- underwear (one pair per day, plus a couple of spares)
- Warm coat
- warm wool socks (4-6)
- Wash basins (two)
- watch (important)
- Water bottle
- Water carrier
- Water purifier
- Whistle (Fox Pro), air horn
- Windbreaker (such as a Gore-Tex shell)
- Wool hat (toque)
- work/field pants (2)

Appendix 4. Emergency Contact Numbers

In development -- check back soon!

Appendix 5. Daily Check-in Procedures

In development -- check back soon!

Appendix 6. Transportation of dangerous goods by air - defensive spray, bear spray and bear bangers

In development -- check back soon!

Appendix 7. Updated black bear encounter safety policy

In development -- check back soon!

Appendix 8. Firearms Safety

In development -- check back soon!