



Healthy Headwaters Lab

Great Lakes Institute for Environmental Research
University of Windsor

Holistic. Strategic. Partnership.

Healthy Headwaters Lab Manual

April 2021 Version





Healthy Headwaters Lab Manual

Healing the HOMES - Huron, Ontario, Michigan, Erie, Superior - one headwater at a time ;-)

Version: April 2021

Welcome!	3
Acknowledgements	4
Our mission (lab ethos)	5
Code of Conduct	6
Essential Policies	6
Taking Photos & Videos	6
Scientific Integrity & Open Science	6
Justice, Equity, Diversity, Inclusion & Indigenization (JEDI)	6
Black Lives Matter	7
#KindnessInScience	7
What's in our toolbox?	8
Mental health	8
Translation Ecology: Working with the community to co-produce knowledge	8
Expectations and Responsibilities	9
Everyone	9
Principal Investigator	10
Post-Docs	10
Graduate Students	10
Contractors	10
Undergraduate Thesis Students	10
Research Staff	11
General Policies	11
Office Spaces and Contact Information	11
Hours	11
Leave policies	12
PI Office Hours	12
Meetings	13
Regular assessment meetings for technical staff	13
Bi-weekly lab meetings	13
Individual meetings	13
Deadlines	13
Letters of Recommendation / References	14

Professional Development	14
Data and File Management	14
Field and Lab Work	14
Health and Safety	14
Equipment and Supplies	15
Organic Analysis & Nutrient Research Facility	15
Resources	15
Asana	15
Microsoft Teams	15
OneDrive - for data and shared files	16
GitHub - for R code and the Lab Wiki	16
Zotero	16
Calendars	16
Communications	16
Ground rules	16
Weekly newsletter	17
Publications	17
Conferences	18
Presentations	18
Public outreach	19
Social media platforms	19
Science stuff	19
Water quality & ecosystem science	20
Microbial analysis	20
Finances	20
Student awards	20
Reimbursements and financial support	20
Resources	21
Onboarding checklist	22

Welcome!

Hello! Boozhoo! Kamusta! Bonjour! Kia ora! Konnichiwa! Welcome to the Healthy Headwaters Lab group. I'm so grateful and thrilled that you've joined the squad. You are here because you have an amazing skill set, personality and passion that align well with the lab and our mission. In your time here, I hope we can generate new exciting science and solutions for freshwater ecosystems in the Great Lakes watersheds and beyond. We will do this by working in a highly dynamic and interdisciplinary team in a supportive, respectful and productive way. Much of our work thinks globally, but acts locally, here in the Laurentian Great Lakes of Huron, Ontario, Michigan, Erie and Superior ("HOMES"). We will be undertaking research primarily in the real-world: on farms, forests, fields and a range of waterbodies from puddles, drains to rivers and coasts. Our work may take us to underappreciated wet-ish corners of small waterways to intermittent rivers around the world. We will help connect local knowledge and solutions to issues affecting freshwaters around our planet. Thus, you are officially one of my HOMiES ;)

This lab manual was created to give us a sense of collective purpose, outline a way of relating to one another and working together that reflects our values and mission. This lab manual a living document and so it may change a bit over time as we evolve but one thing is clear: you belong here. Welcome!

Namaste,

Catherine

August 9, 2020

Acknowledgements

Our lab would not be here without those that have come before us, the knowledge they've shared with us, and the First Peoples that have called this place and land Home. The Healthy Headwaters Lab and the University of Windsor sit on the Traditional territory of the Three Fires Confederacy of First Nations, comprised of the Ojibway, the Odawa, and the Potawatomie. We acknowledge and respect the longstanding relationships with First Nations people in this place in the 100-mile Windsor-Essex peninsula and the straits – les détroits – of Detroit.

The Healthy Headwaters Lab launched in 2019 as a collaborative research team in the Great Lakes Institute for Environmental Research (GLIER) building at the University of Windsor. Catherine is grateful to this Institution that invested in the launch of the lab and the NSERC Canada Research Chair program that has invested in Catherine's research, vision and program. So much of our work is place-based and local, so we are grateful to the community groups, collaborators and First Nations people for co-developing research with us right from the start. We also acknowledge the support of our friends and family who have supported us (and you!) over the years and play important roles during our time in this lab and beyond.

This lab manual takes inspiration and guidance from several other generous researchers who have graciously shared their best practices with the global science community¹. We have acknowledged those words to our best knowledge and apologize if we may have inadvertently left some out.

¹ Adapted from the [Aly Lab](#), [Te Punaha Matatini](#), [DIB Lab](#), and [MemoLab](#), particularly the codes of conduct.

Our mission (lab ethos)

Our lab has a single mission: to restore freshwater ecosystems to full health and vitality for the benefit of future generations. Our immediate emphasis is on headwater ecosystems – small streams and wetlands, drains and other small waterways – that are incredible places of discovery science but also most threatened by human actions, impacted by climate change, and for the most part lack legal protection and conservation. We conduct research that is integrative of molecules and ecosystem processes across the land-water interface to whole food webs including species of high conservation value (i.e., species at risk).

“Ehara tāku toa i te toa takitahi, ēngari he toa takitini”

- My strength does not come from me alone but from the collective (Māori whakatauki/proverb)

We co-produce knowledge with our partners and co-develop sustainable solutions for fresh water. We value **collaborative partnerships**, **strategic alignment of the science with society**, and **holistic approaches to restoration**. Our lab is comprised of members from diverse lived experiences, perspectives and expertise that together are critical to achieving our mission. We are therefore committed to open exchanges of ideas, expression of creative expression, and respectful debate to ensure that the science-based solutions has the best possible outcome for the communities and society we serve.

“Take your work seriously, but never yourself” – Margaret Fonteyn

We value being whole thus we like to have fun, sometimes together, sometimes not. We build one another up without putting others down. We may sometimes fail ourselves or the team, and when we fall short, we respond through kindness. When we offer criticism, it is clear, specific and feedback is offered as suggestions without attacking the person. We make time for lunch, and coffee/tea, and also chocolate, usually together.

Code of Conduct

Essential Policies

The Healthy Headwaters Lab, GLIER, and the University of Windsor are environments that should be free from harassment of any type, regardless of a person's gender, gender identity and expression, age, sexual orientation, disability, physical appearance, race, or religious beliefs. The Healthy Headwaters Lab strives to be a collaborative research community that is committed to providing a safe and accepting space for all employees, students, and visitors. Please read the University of Windsor's Harassment and Violence Prevention Policies (linked [here](#)) and GLIER's code of conduct (coming soon). In joining the lab, GLIER and University of Windsor communities, it is expected that you will uphold this code which includes being [an active bystander](#) if you notice unacceptable behaviour around you. The University of Windsor also offers several opportunities to learn through their [Bystander Initiative](#) workshops.

If you or someone else is being harassed, please contact Catherine immediately. If Catherine is the cause of your concern, then please reach out to the GLIER Graduate Program Chair and/or Director, Integrative Biology Graduate Secretary and/or Department Head, or another trusted departmental member who can assist.

Taking Photos & Videos

Out of respect for others, we only take photos of others (including lab members, collaborators, partners, or other members of the public) when we have explicit permission to do so. You must also have explicit permission to post pictures of others especially children/youth on social media (see the [Social Media](#) section below).

Scientific Integrity & Open Science

We strive to proceed with the highest integrity in the design, conduct, review, and communication of our science. Without scientific integrity, we are unable to develop, sustain, and grow trust among our collaborators and communities. Please read the University of Windsor's research policy statement [here](#).

A natural extension of our commitment to scientific integrity is to act as transparently as possible through an open science framework. [Open science has six key principles](#): Data, Source, Methodology, Peer-Review, Access, Educational Resources. At every juncture, we seek to build on existing knowledge, and when we create/co-create new knowledge, we share freely, and acknowledge attribution. From the outset of your work, we will co-create a contributions matrix (see [here](#) for one example, [here](#) for a Feminist Lab's perspective). For the time being, our current approach will be to summarize and simplify contributions in a contributions table from the conceptualization of the research through to the publication and communications. See section on [Publications](#) below.

In some cases, knowledge we co-produce or are privileged to receive (e.g., from elders) may not be ours to give (See our statement below on Equity, Diversity, Inclusion & Indigenization). We therefore will give full acknowledgement to the traditional knowledge holders and follow any/all requests regarding use of this knowledge.

Justice, Equity, Diversity, Inclusion & Indigenization (JEDI)

We are committed to research excellence; thus our lab recognizes multidimensionality in equity, diversity and inclusion best practices. Our lab and the university commit to NSERC Canada's [Dimensions](#)

[program and charter](#) and seek create the best possible research environment. We strive to be an ally to Black, Indigenous and People of Colour (BIPOC) in our team, in the local communities where we live and work, across Canada and worldwide. Individually and collectively, we may decide to mobilize in support of causes affecting our community/ies and/or planet and understand that being a scientist and affiliated with academic institutions also comes with a social contract to do what is right and just.

In all cases, please consider your words and actions carefully. The Healthy Headwaters Lab is a place to learn and grow, and learn from mistakes. Resources such as this Facilitation toolkit [here](#) and Allyship [here](#) are designed to help, and we are constantly expanding our network to find like-minded allies.

Allyship,
like love,
is not a title,
it's a series
of constant actions.
Allyship is not the goal.
Healing is.
Systemic change is.
Social justice is.

-Shadeen Francis (shared on Twitter @austin_doug13)

Black Lives Matter

We believe that Black lives matter. In the Healthy Headwaters Lab, we are committed to confronting the systemic biases that include racism, which has pervaded academic institutions, science and society. We are supportive of open discussions to explore this, learn and grow while also understanding that there is burden and trauma associated with asking BIPOC (Black, Indigenous, People of Colour) to share their experiences or offer advice. It is our default position to mobilize in support of anti-racism in our work and communities as inaction supports the status quo colonial, patriarchal systems that create oppression. Oppression acts in intersectional ways, thus by supporting our BIPOC community members, we are also supporting the full diversity of the human experience (e.g., LGBTQ2+, able-ism, etc.). It strengthens the work we do and the impact our work has in society.

#KindnessInScience

“He aroha whakatō he aroha puta mai”

– If kindness is sown, then kindness is what you will reap (Māori whakatauki/proverb).

Presumably, you've joined this lab group because you've sensed that we are a positive group doing important science. Our lab structure is by design, and the reason is simple – we are serious about achieving our [Mission](#) and we know the road ahead is long (but worth it). Unfortunately, the science system has historically been built on power dynamics that do not serve our mission or enable us to effectively or efficiently address the environmental challenges facing our planet. You can read more about aligned systemic and/or institutional issues such as the decolonization of science, underrepresentation of many peoples in science and intersectionality, privilege and wicked problems, [all curated in this SciBlog Series](#). As individuals and as a team, we will fall or fail from time to time. One way we are addressing this is through a #KindnessInScience (KiS) lens and toolbox which is “an inclusive approach that fosters diversity, respect, wellbeing & openness leading to better science outcomes”. KiS

will provide the global science community with tools and approaches to help serve our mission and grow a community of allies. Thus, being part of the Healthy Headwaters Lab re-affirms what Catherine believes about you: you belong in this lab, the world needs your skills, and together we can arrive at equitable, positive and sustainable solutions for our planet.

What's in our toolbox?

In addition to the science and communication skills that you will strengthen in this group, we have an additional toolbox to help confront, question and grow. Instead of “calling out” negative behaviours, we can also “call in” allies and good examples. When microaggressions or questionable comments arise, one can ask for clarification or “what do you mean by that? Help me understand your comment”. Framing the narrative towards bridge-building, consensus and compassion are always more helpful. In all cases, the Healthy Headwaters Lab provides a space for discussing situations or sharing resources to help fill our toolboxes. There's no right way to do things, so please share widely. We are constantly growing in this space.

Mental health

Taking good care of your health and well-being. Being a whole person is a conscious practice. As a lab group, we support and encourage you to set in place structures and practices that ensure you have balance and achieve wholeness. We will support you to achieve your fullest potential but that also requires self-awareness: understand your strengths, areas you are looking to improve, and be able to communicate clearly with the team about your needs. Mental health is one key aspect of graduate school and research that is often ignored, not discussed, or associated with shame (Read about it [here](#) and [here](#)). Take the steps now, early and throughout your time in the lab to develop healthy habits. Use the resources available to you (for free!) at the university [here](#), and also know that the lab (and Cat) is a safe space for addressing possible barriers - and finding enablers - to your success.

Sometimes mental health maintenance comes from feeling direction and purpose, and we can easily get lost in minutiae, overdue tasks, and side projects in academia. If you find yourself getting overwhelmed, take some time to recentre yourself to your long-term goals. Reach out to other team members to talk through difficulties. If necessary, talk to Catherine about balance of tasks.

Translation Ecology: Working with the community to co-produce knowledge

Ecologists who specialize in translational ecology (TE) seek to link ecological knowledge to decision making by integrating ecological science with the full complement of social dimensions that underlie today's complex environmental issues². Because we are committed to our mission, we work with decision-makers at a range of levels to co-develop [actionable research](#), and co-produce knowledge. Essential readings on this topic will be part of your onboarding and lab background readings, but for a primer, see [here](#)).

² Enquist, C. A., Jackson, S. T., Garfin, G. M., Davis, F. W., Gerber, L. R., Littell, J. A., ... & Hiers, J. K. (2017). Foundations of translational ecology. *Frontiers in Ecology and the Environment*, 15(10), 541-550.

Expectations and Responsibilities

Everyone

Everyone should:

Big picture

- Conduct themselves as ambassadors for the Healthy Headwaters Lab, both within GLIER and when traveling for the lab
- Help your fellow lab members out when they need it, both with actual project work and by supporting them emotionally as part of the Healthy Headwaters team.
- Respect everyone else in the lab, and respect that they may have a different perspective than you. Respect that others may have a different work or communication style. Our Healthy Headwaters team has traveled different life paths to get here. This variation is a strength.
- Uphold your and the lab's scientific integrity: Avoid mistakes by working carefully and thoughtfully. Read other work that can inform your methods – sometimes this work might be outside of your immediate field.
- Discuss your project with others. Be open to constructive feedback – critically looking at your work with others is a way to grow and improve. Knowing how to take feedback is a vital skill!
- Tell your collaborators if you do make a mistake. Everyone makes mistakes but admitting to and correcting them is what matters.
- Know the difference between constructive criticism and criticism, and practice only the former. Our aim is to improve the overall work that the lab is doing, NOT to tear people down!
- *Completely avoid academic misconduct!* (See [Scientific Integrity](#))
- Stay up to date on research in our field. Good ways to do this are to sign up for mailing lists, follow scientists on social media, using RSS feeds, attending interesting seminars, or reviewing journals' tables of contents.
- Think about your long term career and life goals, and vocalize those to others in the team so we can help you build toward them.
- Let someone know if you are struggling (academic life can be tough!). This lab respects everyone's right to health and happiness, and we are here to support you.

Small picture

- Participate in the regular lab meeting (unless sick, on vacation, at a meeting, or in the field). Lab members should try to not schedule other meetings at the same time as the lab meeting. We will periodically survey to group to find a suitable lab meeting day/time.
- Stay home if you are sick – you'll recover faster, and you won't get others sick! Just make sure you let Alyssa or Jess Ives know so they can add it to the [lab calendar](#).
- Take breaks (within reason!), chat with colleagues (unless they need to focus), enjoy your time in the lab! Building relationships with other scientists, including informal ones, is a critical aspect of your professional growth.
- Let others know if you're running late or need to cancel a meeting (contact information is available in [GLI – Healthy Headwaters Lab – General/Operations/Administration/Lab-](#)

Directory.docx). Running behind happens, and things come up, but communicating shows respect for others' time and allows everyone to use their time efficiently.

- When you leave, keep in touch with the lab; i.e., HOMiES for life!

Principal Investigator

In addition to the expectations for all lab members, Catherine also:

- Is ultimately responsible for everyone and everything in the lab
- Has your & the lab's best interests in mind
- Does a lot of different jobs from teaching, research, project planning, grant writing, and service within and beyond GLIER, the Dept of Integrative Biology, the Faculty of Science, the University.

Post-Docs

In addition to the expectations for all lab members, post docs also:

- Are viewed as staff
- May co-lead projects and run lab meetings
- Are expected to produce publishable scholarly and creative work
- Are a resource and source of mentorship for students and staff
- Balance research, teaching, and other duties, and let Catherine know if they are having issues doing so

Graduate Students

In addition to the expectations for all lab members, grad students also:

- Participate in regular [individual meetings](#) with Catherine
- Produce publishable scholarly and creative work
- Balance coursework, GA-ships, and research, and let Catherine know if they are having issues doing so
- Engage in outreach and translation events in the field
- Assist other team members with their field and lab work when appropriate

Contractors

In addition to the expectations for all lab members, undergraduate students also:

- Participate in group meetings with relevant team members and Catherine
- Support a specific project and work towards key time-bound deliverables
- Assist other team members as needed in the field, lab, and at translation events

Undergraduate Thesis Students

In addition to the expectations for all lab members, undergraduate students also:

- Receive a graduate student and/or staff mentor for day-to-day guidance and training
- Participate in group meetings with your mentor(s) and Catherine
- Co-design and pursue independent research and publish work (with guidance from your mentor(s) and Catherine) in accordance and the requirements of the undergraduate thesis course you are enrolled in (usually Dept. of Integrative Biology - BIOL 4904, but also, School of Environment - XXXXX)

- Engage in research in the field, lab, and translation events in the field
- Present their thesis at Department events and academic conferences when feasible (typically these are the UWill Discover, and possibly IAGLR)

Research Staff

Research staff are varied in their tasks, skills, and areas of expertise. They provide support and connectivity to the various projects and the lab as a whole. Details of the individual staff roles are given in the [Lab Wiki](#). Please check the Wiki if you are unsure of who is responsible for what. See note below about shared leadership/co-directorship of the lab.

A note about shared team Leadership: Catherine is the lead PI and generally responsible for all things that take place within the lab. That being said, we take a co-leadership/co-directorship model that gives team members shared ownership of the lab responsibilities. Take full advantage of the leaders in our team, they are brilliant and knowledgeable and essential to our lab's functioning and mission's success.

General Policies

Office Spaces and Contact Information

The lab directory is in [GLI – Healthy Headwaters Lab – General/Operations/Administration/Lab-Directory.docx](#) and includes information for all the office and lab spaces for the Healthy Headwaters Lab. Emergency contacts for all lab members are stored in [GLI – Healthy Headwaters Lab – General/Operations/Administration/Emergency-contact-information.docx](#). *Regularly make sure your emergency contact info is up to date.* If your family/key contacts are overseas, please ensure you also have a local (Windsor region) contact in the list that we can contact in any case of emergency. This local person could be a friend, fellow grad student, flat-mate/roommate who would like to know that you made it home safely from a long day in the field, or could pick you up from the lab if you're feeling sick.

Hours

Having lab members present in the lab at the same time is useful to create a sense of community and teamwork, be relatively free from life's distractions, and to learn from and help each other. However, there are times when working remotely makes sense, and we are lucky in academia that we have some flexibility in how we work. Regardless of how/when you work, treat this as a job (i.e., 40 hrs/wk unless otherwise stated in your contract) and take your position with the Healthy Headwaters Lab seriously. If you are planning on working remotely, put it into the [lab calendar](#), so we know where you are in case we need to get in touch. Organization and transparency are key; thus, we have several guidelines to ensure we work together smoothly.

Lab and field work can be long and grueling, especially during the field season. As much as possible, limit your working hours to weekdays and reasonable working hours. If you anticipate working late in the evenings and/or weekends, please work with Catherine and key staff to establish and implement a reasonable safety protocol. Exceptionally long days are the exception, not the norm. Field seasons are seasons, and not year-long. Strive to find a balance at multiple scales - day, week, season, year.

Daily, we endeavour to make collaborative work and meetings within the team manageable. We have 'core' hours that lab members should be present, i.e., in their offices/at their desks at GLIER for:

(9:30am-4:30pm) on weekdays, with part-time staff aiming to be present on pre-determined days of the week. This is not a hard and fast rule, but a guideline. Working at home can be arranged, especially during critical writing times or life stages. In every situation: organization, transparency, and clear communication are key. Regular tea breaks, team lunches, and birthday treats are encouraged!

Leave policies

Holiday leave - People should enter their planned vacation into the lab calendar. North American holidays are usually two weeks leave however this can be flexible depending on the nature of your leave. Please work with Catherine when planning time off. Generally, please let people know, make sure your collaborators and colleagues know you'll be off, and keep delegation of work duties to your colleagues at a minimum. When you plan to be out of the office for several days in a row, please set an out-of-office response for your email, with an expected return date.

Sick leave – See our statement on health & well-being. For day-to-day sick days, please text or email Catherine and Alyssa (and any office mates, graduate students, or staff if you are working closely with them on an immediate aspect of your research). For longer-term issues, please see healthcare professionals, the Graduate Program coordinator, and work with Catherine to find a suitable arrangement.

Parental leave - As a research lab primarily funded by NSERC Canada, students and postdoctoral staff are eligible for a one-year [parental leave](#) with no distinction between maternity, paternity or adoption. As a lab, we are a family-friendly work environment and will happily welcome family (including pets/fur babies!) to lab events and outings. Please work with Catherine to sort out the best arrangements to suit your needs as they change over time.

PI Office Hours

- 2020 update: Catherine can be counted on to be readily available by phone/text, email, or Teams chat (preferred) 9:30am-4:30pm daily. When the university campus opens, Catherine has an open-door policy, come by if the door is open. But in light of COVID-19, we are all primarily working from home.
 - Catherine has multiple responsibilities & may not always be in the office (she may be giving a lecture, picking up a child from school, or meeting with a farmer, etc.), but she will usually scribble her whereabouts on the whiteboard on the office door (Room 317) or send a quick update on Teams, with longer-periods of absences posted on the [GoogleCalendar](#). Regular updates will be delivered during lab meeting and weekly email updates.
- Catherine will work tirelessly but also respects personal time and space. Catherine is known to have very early starts to her days, and on occasion late at night or weekends depending on a given project, course, or student's needs. This is not an expectation for YOU to respond immediately or at all hours of the day. Communications will be limited to working days/times and response times to emails are usually as soon as is humanly possible.
- In case of any urgent matters, please call or text Catherine directly at: (416) 992-4597
- Catherine's office is in the GLIER Building, Room 317 & telephone number extension is 4773

Meetings

Meetings will be generally scheduled between 10am and 3pm on Tuesdays, Wednesdays, or Thursdays, unless special circumstances require meeting outside those times. This allows more flexibility in work schedules for everyone in the lab. If you'd like to request a meeting with Catherine, please make them for during this time period, and for no more than 1hr in length, when feasible. This is a guideline for meeting with others in our team as well. Meetings off-campus (i.e., at Anchor coffee, walking meetings along the river) are also a reasonable option if that makes sense for the work being discussed.

Regular assessment meetings for technical staff

Technical staff will meet monthly with Catherine for the first three months of their employment, and then every six months after that. These meetings will allow both the staff and Catherine to ensure that the tasks and workload are appropriate and that expectations for the position are being fulfilled. The regular meetings will provide a venue for both parties to check in with each other on the goals and expectations, to identify any potential issues before they are a problem, and to discuss longer-term strategy for the position and the staff member's career goals.

Staff should prepare for these meetings by critically thinking about where they have excelled, what challenges they face, and where they may need to improve.

Bi-weekly lab meetings

We have bi-weekly lab meetings that everyone is expected to attend (when not sick, on vacation, or in the field). If possible, try not to schedule other events during the bi-weekly lab meetings, as spotty attendance makes the meetings less valuable. The meeting purpose is to check on the status of ongoing work, plan future activities, and raise issues or concerns lab members may have so that we can address them. Lab meetings will be held at the same time every week during each term, but may be changed, if necessary, to accommodate certain events (conferences, meetings, etc.). Lab meetings will be noted in the [GoogleCalendar](#).

Individual meetings

See Catherine's office hours message above. Catherine's meeting time fills up quickly, especially during teaching, thus request at least 1 week in advance, take advantage of your peers and lab meetings (using the Asana meeting agenda to add items for discussion), and ensure you send an Outlook or iCal calendar request message. Catherine's work schedule is available for all to view on Outlook. For students, Catherine will work with you to set up regular meetings.

Deadlines

Please be as organized as possible when it comes to your deadlines. Make sure Catherine and your colleagues (including Collaborators/Co-supervisors) also know your deadlines, and send reminders as the deadline approaches (especially if you haven't heard any confirmation from them in a while). Here are a few rules of thumb:

- One week notice: paperwork, abstracts, quick edits of something already previously reviewed, manuscript proof ready for final submission
- Two weeks (minimum): 2nd and subsequent edits of a manuscript

- Three weeks (minimum): Initial edit of a manuscript, letters of recommendation, cover letters or teaching/research statements
- Four weeks (minimum): Final thesis draft for submission, grant applications

Manuscripts and other communications are priority! Turnaround time should be 1-2 weeks but please bug Catherine for feedback. To ensure smoother editing, peer-reviewing is highly recommended, as is use of lab meetings. Consider that peer review of each other's work is not only helpful to the reviewee, but is excellent professional development for the reviewer.

Letters of Recommendation / References

Getting awards, grants, and jobs(!) are very important. Catherine will be happy to provide a strong reference letter if you've been in the lab for a minimum of one year. When applying for jobs or grants, please send Catherine your full and up-to-date application materials a minimum of three weeks in advance and in your request, include: text or draft letter highlighting the key themes/topics or examples of evidence that match criteria of the job/grant being applied for. Catherine may also send you a draft letter to make sure all critical information is captured before sending through.

Professional Development

The Healthy Headwaters Lab supports the professional development of its team members. If there is a skill you want to develop, talk to Catherine about options.

Data and File Management

The Healthy Headwaters Lab collaborates with many partners, which means you may have access to external datasets in addition to those generated within the lab. We practice open science, but to continue working well with various partners, and as a matter of respect, we must always give power to the data owners on what is done with their data. As such, always ensure that you have permission to use data, whether it is data generated by an external partner, or another lab member.

Raw data should be saved within the GLI – Healthy Headwaters Lab – General/Data folder, within the specific project folder to which it pertains. Raw data should be named using the following format: FILENAME_YYMMDD. Generally, the FILENAME will be concise and descriptive and refer to the project under which it falls (e.g., SedimentP_Essex_20190715).

R code should be stored in the Healthy Headwaters [GitHub](#).

It is highly encouraged that you back up your data regularly (daily, weekly, monthly) in OneDrive as well as a physical hard drive. The lab will provide a physical hard drive if needed, please ask Alyssa.

Field and Lab Work

Details of the various types of field and lab work conducted by the Healthy Headwaters Lab are given in the [Lab Wiki](#).

Health and Safety

Health and safety in the field are paramount. Research is **never** worth risking injury. If you are ever in a situation where you feel unsafe, immediately discontinue the activity. You can contact Catherine or the project manager to discuss options for delaying or modifying the work, depending on the situation.

Before going into the field or working in the lab, everyone must be adequately trained. It is ok to not know something - and if you forget, just ask! It is always better to double check with others if you're unsure about protocols, rather than risk your safety or compromise data.

Emergency contacts for all lab members are stored in [GLI – Healthy Headwaters Lab – General/Operations/Administration/Emergency-contact-information.docx](#). Please make sure your emergency contact information is up to date!

Equipment and Supplies

Equipment and lab/field supplies are shared. If stocks of any consumable item are running low, please let Alyssa know before they run out. For supplies that expire after opening, please make sure they are clearly labeled with the date opened and the expiry date.

If any piece of equipment needs maintenance, please let Alyssa know as soon as possible, to minimize the time that it is unavailable for use.

Organic Analysis & Nutrient Research Facility

The Organic Analysis and Nutrient Research Facility (OANL) at GLIER (room 220) processes many of the samples collected by the Healthy Headwaters Lab, and the Healthy Headwaters Lab contributes partial support for OANL staff. Dr. Nargis Ismail oversees the OANL. More information can be found [here](#).

Resources

Asana

Asana is an organizational and task management tool that facilitates communication and collaborative work within the lab. The agenda for [lab meetings](#) is organized on Asana. Please read the README task at the top of the [Lab Meeting Agenda](#) to understand agenda best practices.

Asana conventions:

- Add the appropriate lab members as followers to tasks, so they can stay up to date on the status and discussion around it.
- Update due dates, even if you're behind schedule! If you change the date, add a comment as to why the date has been changed.

For resources on Asana and how to use it effectively, check out resources [here](#).

Microsoft Teams

Microsoft Teams is a chat app that allows the Healthy Headwaters team to connect with each other more quickly and informally during the day. There are various chat streams for different sub-groups, including staff and individual projects and programs. The chat should be used the way you might poke your head into someone's office to ask a quick question or remind them of something. People are prone to miss important messages in Teams, so if it is critical that people see the information, it should be sent through email.

OneDrive - for data and shared files

OneDrive is used for storing raw data and files for the Healthy Headwaters Lab. See the [Data and File Management](#) section above for details on naming conventions. Within OneDrive there are a number of shared folders, in which files for the whole lab group are stored. A folder map can be found at [GLI – Healthy Headwaters Lab – General/File structure diagram](#) and is useful for understanding where files should be stored.

GitHub - for R code and the Lab Wiki

The Healthy Headwaters Lab uses R and RStudio to conduct statistical analysis. As R is an open source resource, learning to use it during your time in the Healthy Headwaters Lab gives you a skill that continue be freely used after you move on, as opposed to other statistical software that may require a license.

You are encouraged to backup and share your code using GitHub ([Healthy Headwaters Lab R repository](#)). Always be sure to comment your code thoroughly so it can be easily understood by readers. All repositories on the Healthy Headwaters Lab GitHub are public, so keep that in mind when creating code. You are encouraged to share and discuss your code with other lab members. Feedback on other lab members' code should be submitted by creating a new branch, giving the opportunity for discussion.

The [Healthy Headwaters Lab Wiki](#) is a shared resource to which everyone is encouraged to contribute. The wiki is a forum for documenting information that may change more frequently than what is in the lab manual, especially as new projects are developed by the team. Whenever possible please document what you figure out on the wiki, including updating old sections which may no longer be relevant.

Zotero

Zotero is a free-to-use reference management software. Using a reference management program can make writing manuscripts and reports much more efficient, and helps you keep track of the resources you have used. Zotero has a plug-in for Word that allows you to insert citations in your text as you are writing. You are encouraged to use this, as it reduces the time you will spend cleaning up your file once it is written and makes it easier to switch among reference formats. The Healthy Headwaters Lab has a shared Zotero library. To get access to the shared library, contact Catherine.

Calendars

The Healthy Headwaters Lab calendar is connected to the Healthy Headwaters Lab team in Sharepoint and can be accessed through Outlook or Teams. Lab members should use the calendar to record planned absences from the lab, including field work, vacation, meetings, remote work, etc. When appropriate, details should be included in the calendar entry.

Communications

Ground rules

- Please refer to the [code of conduct](#).
- Treat all communications using your UWindsor and Healthy Headwaters Lab accounts as professionally as possible.

- In-person, Asana, and email communication is preferred over texting. Save texting for immediate updates (e.g., in the field, traveling between sites, running late for a meeting).
- When communicating with new partners or partners you are not familiar with, run your planned communication by Catherine or one of the staff first, and always cc one of them on emails.
- In case of doubt, cc: Catherine and/or the healthy.headwaters@uwindsor.ca email address
- When working with the public or within a stakeholder group, feel free to give out either the healthy.headwaters@uwindsor.ca email address or Catherine's office phone number. When doing so, let Catherine know so she has context for any inquiries that come in.

Weekly newsletter

The Healthy Headwaters Lab has a weekly newsletter that allows all team members to update the rest of the team on key things they have completed that week, plans for the next week, and other optional interesting tidbits. This newsletter is built through a Google Form, which is due to be completed every week by Friday mid-morning. The submissions are compiled and sent out on Friday midday.

Publications

This is one of our lab's most important currency with the scientific community, and a key milestone for graduate students in the GLIER program (i.e., a publishable manuscript is a requirement of completion). You will work with Catherine to outline thesis chapters as publishable manuscripts, and these will be your guideposts throughout your program.

Given the highly collaborative nature of our work, we will together outline a contribution matrix from the start to keep track of those involved. An example may look like this:

Co-Author	Conceptualized the work	Co-designed the study	Carried out the work	Facilitated stakeholder workshops	Analysed the data	Did some cool stats/graphics/etc.	Wrote the manuscript	Edited the manuscript	Communicated results / Translated work
You	X	X	X	X	X		X	X	
Catherine	X	X	X	X	X	X		X	X
RA1			X	X				X	X
Collaborator	X		X			X			
Technician			X			X		X	
Elder	X	X							X
Committee member		X				X		X	

In general, we promote and encourage publishing best practice. And it is a practice. Identify your target journals early and read the submission instructions carefully. We prefer to publish in journals that are open access or have open access as an option and thus Catherine has included publishing charges in various grants and budgets. When referencing, make sure to reference intellectual property like R packages, not just papers! Work with the university librarians to ensure you have cited things correctly, and they also have recommended ways to cite contributions from elders and other knowledge holders.

Additionally, you are highly encouraged to produce a creative work that accompanies each manuscript. Some journals require a single image/graphic as part of the abstract, some of our research has also been developed into a public library containing two-page downloadable resources for the public (see: <http://tinyurl.com/carextips> for an example, or the [Healthy Headwaters Lab Figshare page here](#)). Some of our teaching has been captured in a YouTube video (see: https://www.youtube.com/watch?v=jIFI_U7MGxA&t=2s).

Conferences

Conferences are a great way to present your work, polish your presentation skills, learn about other research, and network with other researchers and practitioners. More information on conference attendance can be found on the [lab wiki](#).

Presentations

Presentations, both oral and poster, can be difficult to do well! However, with enough practice and preparation, they are a very effective way to communicate your work with others, solicit feedback, and expand your network.

General Best Practice

- You are encouraged to begin each public presentation with respect and gratitude through an acknowledgement of the Indigenous peoples and places where you conducted the work but also where you are presenting. Please work with Candy and Catherine if you are unsure or would like some feedback and practice.
- Be mindful of inclusive language including gender-free pronouns and technical language. An elevator pitch/grandma approach to describing your science is good practice. Talking to farmers, community members, elders about your science requires practice and mindfulness about the levels and details of science being discussed. This will take practice and as a lab we will provide feedback.
- You are encouraged to use the lab logos and acknowledge the various funding sources and partnerships. Logos are saved on the shared drive for easy access. If you find or develop a new logo, please add to them as appropriate so that others can use the same logos.
- At the beginning of each presentation, mention any rules you have for sharing the information on social media (e.g., if you don't want people sharing photos of your slides/results, clearly state this). If you are ok with your results being shared on social media, consider including your Twitter handle and the #HealthyHeadwatersLab hashtag.

When preparing a presentation, keep these deadlines in mind:

- Circulate the abstract to all co-authors more than one week before deadline. Let your co-authors know what the deadline for submission is, and make sure you will have enough time to address any comments before that deadline.
- For posters, circulate the draft poster to all co-authors at least one week before the printing deadline. Ideally, circulate it earlier than that to allow yourself time to address comments. If any comments are contentious, you may need to recirculate a revised draft version for review.
Recirculate the final poster version at least two business days before printing.

- If you are giving an oral presentation, you should plan to give a practice presentation to the lab group at least one week before the scheduled presentation. If you are new to presenting, or unsure about the presentation matter, you should give a practice presentation two weeks before the scheduled presentation. This gives you buffer time to incorporate comments on the practice presentation and give a second practice presentation if necessary.

Public outreach

Public outreach is an important part of working in this lab, and a key mechanism of our lab's translation of research. We need to connect with people to gain public support, community buy-in, and the valuable local knowledge that is vital for building useful and needed work.

As a member of the Healthy Headwaters Lab, there may be various opportunities for public outreach, both planned (e.g., community presentations, information booths at local events) and unplanned (e.g., you may be approached by neighbours while doing field work). You should practice explaining your work in a way that engages rather than alienates people. Avoid jargon and technical terms. Practice speaking concisely and relating your work to outcomes that matter to the audience.

Social media platforms

Healthy Headwaters has a website (<https://www.healthyheadwaterslab.ca/>), which is generally maintained by Catherine, Candy, Shayenna, and a graduate student on a rotating basis. Anyone who is interested in being involved in the website management should get in touch with Catherine.

The website also includes a Healthy Headwaters blog: Reflections. Reflections is managed by Candy and Shayenna, with the potential for guest authors or co-authors. If you have an idea for a future blog post, bring it up with Candy.

Healthy Headwaters Lab does not have a Twitter account although the website is linked to Catherine's (@ecofebria). We do have a #HealthyHeadwatersLab hashtag, and team members are encouraged to use the hashtag for tagging people, topics, or content that is related or relevant to the lab's activities. When posting content associated with Healthy Headwaters, always ensure that the content aligns without mission and communications strategy. Be positive and kind.

Science stuff

GLIER room 231 is the core lab for the Healthy Headwaters Lab, and where many of our technical staff are housed. Check here first if you have questions about whereabouts of lab or field supplies. This is the main area for benthic macroinvertebrate sample processing. We have a wet lab in GLIER room 235, where preliminary sample preparation is conducted, and equipment and supplies are prepared for the field. Our equipment is housed in GLIER Labs 222, 231, 235 and 143.

Our lab has also invested heavily in the newly refreshed Organic Analysis Nutrient Laboratory (OANL) at GLIER, and Catherine is the Co-Director of this Facility. This is where the bulk of our lab's analytical equipment is housed. Dr. Nargis Ismail is the university staff member who is responsible for the facility. She is a tough but sweet cookie and we like it that way. She ensures that the lab is certified so that the results are robust, comparable, and publishable. She will lead all training for use on the equipment and

we ask that you follow and comply with her rules and regulations. Get to know her early and interact with her regularly to increase your familiarity with our research equipment.

Water quality & ecosystem science

We have several analysers that are designed to measure nitrogen, phosphorus, carbon, and many other analytes. There are two SmartChem 170 analysers (one purchased by our lab) that measure various forms of N, P, Silica and other constituents. N & P are the most commonly measured water quality parameters, and ones that we will measure and analyse regularly. We have a Shimadzu TOC-N liquids and solids analyser that measures carbon in water samples and in soils/sediments. We have a Nanopure MilliQ water filtration unit housed in GLIER Lab Room 225. Please see Nargis for instructions on how to use this unit. We have a Horiba Aqualog spectrofluorometer which scans water samples for fluorescence (excitation and emission) and just emission (UV-spectroscopy). It is a simple but also complicated piece of equipment that you will need training from Catherine to use. This unit is housed in Room 143 and requires key access request from either Catherine or Jess Ives.

The lab has an ongoing water sampling station in rm 235 so that we are ready to collect samples or enable our partners to collect samples for us. Please work with Catherine and our research staff to learn that protocol, and you can find the field protocol [here](#). We have a range of field analysers that each measure: water flow, in-stream chemistry incl turbidity, pH, temperature, specific conductivity, and dissolved oxygen.

All of this equipment is precious (and very expensive). Please make sure you understand how to use them, including what to do if something isn't working. If something isn't working, **tell Alyssa or Catherine ASAP**. Concealing equipment issues may have consequences beyond your project or even the Heathy Headwaters Lab. Even if you have fixed the problem, it must still be recorded in case other issues occur in the future. More details about each piece of equipment and its maintenance needs and history are found in the [Lab Wiki – Equipment page](#).

Microbial analysis

This capacity in our lab is growing such that we plan to be able to do DNA extraction from water and sediment samples once our permanent lab is established. There are central facilities at GLIER that we can access if needed. Please work with Catherine find a suitable arrangement in the meantime.

Finances

Student awards

Students are encouraged to seek out and apply for appropriate scholarships and awards. This not only gives experience in applying for funding, but also may support extra activities – such as attendance at a conference or an interesting side project. A list of potential awards is listed on the [wiki](#).

Reimbursements and financial support

Conducting work and traveling for meetings should not place undue financial pressure on you. Whenever possible, work with Catherine or a staff member to make purchases for travel. This will avoid you incurring out-of-pocket costs and then waiting for reimbursement. If necessary, you can make pre-approved purchases on your personal cards and submit a reimbursement request. At the moment,

Catherine is the only one with this authority so you will work with her to set up a suitable arrangement for expenses. Always try to be frugal, within reason, with your travel arrangements.

The Healthy Headwaters Lab will strive to cover attendance for one conference per year for all lab members. Choosing a conference requires individual discussion with Catherine. Additional conferences can be attended if lab members are able to seek out external funding (see [Student Awards](#) above).

Office and lab supplies are ordered by lab staff members. Work with them to ensure you have what you need to conduct your work.

Resources

Websites & other people/places that we've referred to, borrowed from or are inspired by while developing this manual:

- <https://www.tepunahamatatini.ac.nz/>
- <http://www.KindnessInScience.org/>
- <https://github.com/alylab/labmanual>
- <http://ivory.idyll.org/lab/coc.html>
- <https://github.com/memobc/memolab-manual>

Onboarding checklist

- ☐ Read the entire Lab Manual, and set up meeting with Catherine to discuss any questions or clarifications
- ☐ Review the Lab Wiki, and set up a meeting with Jess Ives to discuss any questions or clarifications
- ☐ Meet with each member of the team separately to discuss any questions or clarifications on their role and skills. If you are an undergraduate student, you only need to meet with team members who are involved in your work
- ☐ Contact Jess Ives to be invited to join the lab Asana workspace
- ☐ Contact Catherine to be invited to join the shared Zotero library
- ☐ Contact Jess Ives to be granted access to the lab Team and associated OneDrive folder
- ☐ Contact Jess Ives to be granted access to the lab GitHub
- ☐ Complete the required Health and Safety trainings
- ☐ Contact Alyssa to determine which field and lab trainings you need to complete
- ☐ Work with Catherine and Mary Lou to get the correct keys for rooms you will need to access

Please give a signed copy of these expectations to Jess Ives after you have completed all the items above. If you have any concerns, please reach out before signing.

I _____ have read and agree with the expectations outlined here.

Signature:

Date: