



Meet the
**Water Rangers
Guardians!**

This year, with the help of Great Lakes
Guardian program, we transformed how
Ontarians interacted with local waterbodies.



Funding provided by
Ontario



An innovative environmental non-profit

From the tiniest creek to the biggest lake, Canada is known for its water. Yet average citizens do not realize how their livelihood is connected with their watershed. Even when they learn about beaches closing or fish dying, they do not feel there is anything they can or should do. Water Rangers empowers citizens to learn and take action on water conservation through our user-friendly web platform, water stewardship training, and water quality testkits. Founded in 2015 through Aquahacking, we're a non-profit organization based in Ottawa aiming to make water science easy to understand. We deepen our impact by providing tools and training to understand, test and protect waterways.



About this project

Water Rangers Guardians conduct water quality tests, clean up garbage and naturalize shorelines in order to become guardians for their local lake, river or stream! The program engaged community groups over the year, and trained students during excursions. This project was funded by Ontario through the Great Lakes Guardian Fund.

Our Theory of Change states that when people learn about, then test water, they are prompted to take action to protect it (Learn --> Test --> Act). Through this grant, thanks to Government of Ontario's Great Lakes Guardian Fund, we took community and youth groups through this journey by first introducing them to water health, teaching them how to test water and the value of collecting baseline data over time, and then prompting them to act by collecting bags of garbage and restoring a modified shoreline by letting it go natural and planting native shrubs.

Groups selected were located in regions throughout the St. Lawrence Watershed (shown to the right). We provided support in-person and online to take groups on a journey that deepened their appreciation for waterways.

Legacy

Almost all participants wished to continue monitoring the next year. They are allowed to keep their testkit and continue contributing to open data and water stewardship. We can't wait to continue with them next year!



Funding provided by
Ontario





Water Rangers Guardians

Project objectives

This program's outcomes focused on these three pillars:

EDUCATE

Through education at workshops, online and through printed materials, we presented knowledge about monitoring and protecting waterways/shorelines in bite-sized chunks, so that participants felt empowered and not overwhelmed. As they progressed, we made challenges fun and apply their knowledge in easy-to-follow activities. Rewards like prizes and badges for children helped Guardians share their knowledge and reward young (and young at heart) water stewards.

MONITOR

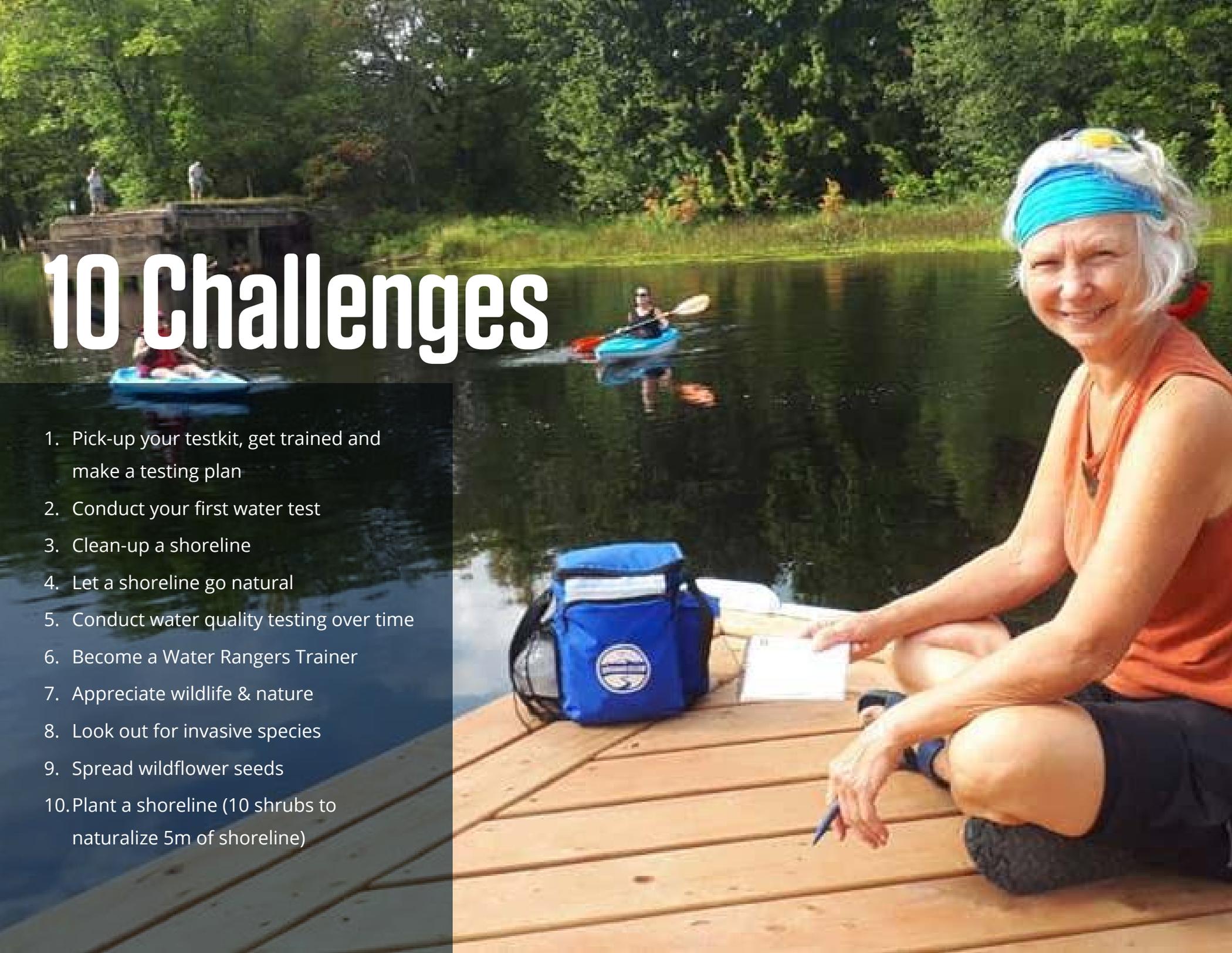
Many bodies of water are lacking continuous data monitoring, and this was a great opportunity to get local residents to conduct simple tests to complement other testing protocols. Using equipment that is both easy to use and requires minimal calibration, we empowered residents to learn about water quality health indicators while collecting valuable contextual data. We also encouraged our participants to take photos of wildlife, and learn what invasive species might be present. This arms them with appreciation and knowledge.

RESTORE

As users grew their connection to waterbodies, through learning and monitoring, we encouraged them to restore shorelines. They learned how the riparian zone supports wildlife and protects their property from erosion. First step: not mowing the lawn right to the shore. Then, in the Fall, we asked them to spread native seeds, and pick up native shrubs and plant them to further secure their shoreline against erosion.

They also enthusiastically cleaned garbage from shorelines, further beautifying Ontario's waterways.

10 Challenges



1. Pick-up your testkit, get trained and make a testing plan
2. Conduct your first water test
3. Clean-up a shoreline
4. Let a shoreline go natural
5. Conduct water quality testing over time
6. Become a Water Rangers Trainer
7. Appreciate wildlife & nature
8. Look out for invasive species
9. Spread wildflower seeds
10. Plant a shoreline (10 shrubs to naturalize 5m of shoreline)

Who?

-  Lake/River association
-  Other organizations / groups
-  Individuals
-  Want to continue next year

These groups are committed to protecting waterways. They signed up their groups or individuals to receive a testkit. Overall, at least one group also identified as multicultural, LGBTQ+, youth, seniors, persons with disabilities, Indigenous peoples, and Francophone communities.

26
Testkits
TARGET: 25

114
participants at 11 events
TARGET: 50 participants
at 4 events



Where?

LAKES

Adam Lake	Kashwakamak Lake
Allumette Lake	Lake Champlain
Bernard Lake	Lake Hardwood
Big Rideau Lake	Lake Huron
Black Donald Lake	Lake Ontario
Black Lake	Long Lake
Buckshot Lake	Lower Rideau Lake
Calabogie Lake	Mazinaw Lake
Cardinal Lake	Mississippi Lake
Cataraqui Lake	Muskrat Lake
Centennial Lake	Sand Lake
Christie Lake	Sharbot Lake
Devil Lake	Silver Lake
Gray's River	Widow Lake
Hogg Lake	

RIVERS

Barron River
Bonnehchere River
Madawaska River
Mississippi River
Muskrat River
Nation River
Ottawa River
Raisin River
Raquette River
Rideau River
Snake River
Tay River

OTHER

Ardmore Creek
Black Bay
Brewer's pond
Brewery Creek
Constant Creek
Green Lake Creek
Mooney's Bay
Mudpuppy Pond
Rideau Canal

53

Water bodies

165

Sampling sites

382

Observations

* Water bodies can have multiple sample sites

Water testing

Our first connection point was through water testing. They conducted water tests (either at a regular testing spot, at regular intervals) or when travelling, used their kit to explore new spaces.



“ Great program. Great people to work with. Great toolkit. Keep on going!

Doreen Donald, Mississippi Lake

95%

Had never tested regularly, and 48% had never tested before



What's in a kit?



1 Thermometer: Air temperature, Water temperature *

2 Test strips: pH, Alkalinity and Hardness *

3 Conductivity meter: Conductivity of fresh water + water temperature *

4 Secchi disk: Secchi depth if deep enough, or water depth if in shallow water

5 ChemMets Test: Dissolved oxygen

6 Suspect pollution kit: Gloves*, Whirl-Pak bags*, sterile sample container

7 Also contains: Sample cup*, Phone case*, Field sheets*, Pen, Laminated field guide*,
8 Selfie stick (for reaching)

* The mini kit is a smaller version and contain these items

Shoreline 'No mow zone'

Before we planted in the Fall, we encouraged our participants to designate an area that should not be mowed.

Some restricted access and talk to their family about letting an area 'go natural'. As with any process, naturalization takes time, and we wanted them to see how nature works! We can't wait to see how it looks next year!

265m

shoreline left natural this summer
TARGET: 250m





Shrubs & seeds

With participants scattered across Eastern Ontario, we organized 'pick-up spots' in Carleton Place, Ottawa, Perth, and Pembroke, so that people didn't have to come as far. Timing was of the essence too: we had to wait for first frost to pick-up the plants, and had to get them in the ground before the ground was thoroughly frozen. It was 13 hours of driving later in the sleet, that all the plants were delivered to our keen volunteers who had agreed to be pick-up locations. Winter descended early this year, so big props to all our committed guardians who planted in rain, cold and snow!

Right: The car was packed! And check out our shoreline seeds... two types for different shorelines! Each participant was given mulch, a planting guide, and approximately 10 shrubs to plant. Some with bigger planting areas took those from our participants who were unable to plant.



WET MEADOW MIX

This seed mix performs best in full sun, thrives in rich soils, and is suitable for field or meadow restorations. In your mix you'll find a recommended measure of the following:

Grass: Bluebank Rye, Virginia Rye, Big Blue Stem, Canada Rye, Switch Grass, Rough Droopseed, Bluestem.

Flower: Common Milkweed, Blue Vervain, Virginia Mountain Mint, Green Headed Coneflower.

Sedge: Field Fringed Sedge, Fringed Sedge.

See Planting Guide for planting instructions.

NATIVE PLANT SHORELINE PLANTING GUIDE

STREAM CHANNEL MIX

This mix thrives in consistently moist soil that has full sun-part sun exposure. In your mix you'll find a recommended measure of:

Grass: Virginia Wild Rye, Riverbank Wild Rye, Switch Grass, Tall Meadow Grass.

Flower: Blue Vervain, Swamp Milkweed, Great N. John's Wort, Greenweed, Tall Sunflower.

Sedge: Hops Sedge, Bobbs Sedge.

Other: Silt Wash.

See Planting Guide for planting instructions.



829_m
of shoreline naturalized
TARGET: 225m



The big plant

Thanks to Watersheds Canada

Our initial plan was to have a youth group help us, but two groups cancelled at the last minute. Luckily, volunteers stepped in, and we were able to naturalize a big portion of shoreline at the Mississippi River near Perth. They're worried about erosion and flooding in the spring. Thank you to Watersheds Canada for their help planning, planting, and supplying the plants!

120_m
of shoreline naturalized





125

Shrubs and bushes planted



Shoreline clean-ups

We loved how excited people got about collecting trash along the shoreline. We felt it too! Along with our friends at South Nation Conservation Authority, we helped clean-up a creek (after conducting some water quality tests, of course!)



3.9km

of shoreline cleaned

TARGET: 225m

“

I was far more aware of the amount of garbage in the river. I think it made me more conscious to pick up garbage anytime we saw any while paddling.

- Jenn Viv



Most of our participants said that looking out for trash was eye-opening... but none so eye-opening as seeing wildlife affected! This skunk had a salad dressing container stuck to its head.

Our brave Water Ranger Guardian managed to help the littl fellow out, with no negative repercussions!

Appreciate nature

We had so much fun getting nature photos from our Guardians! We know that they said they visited the water more often, but 67% also visited places they had never been before!

91%

Visited the water more regularly



Invasive species

“

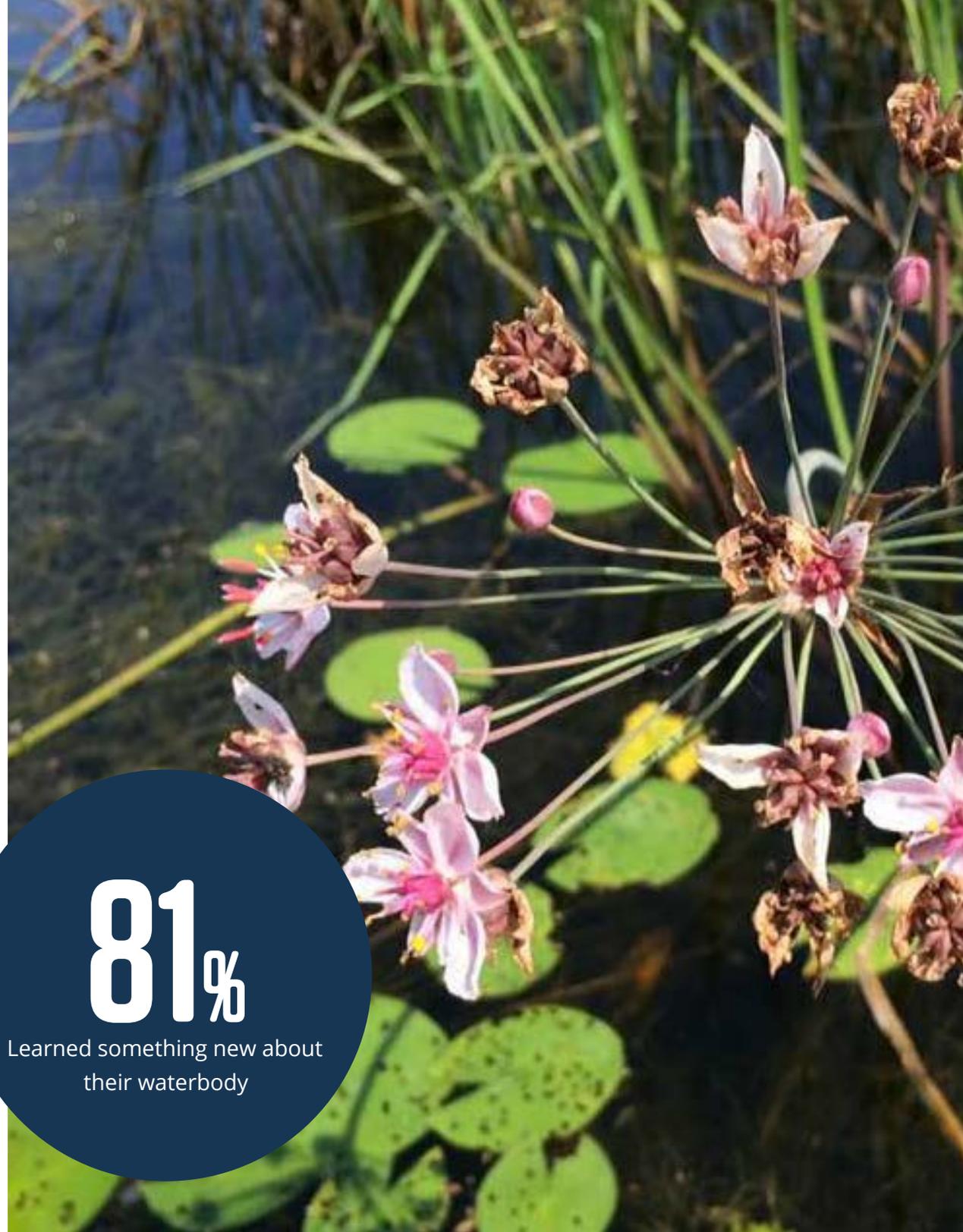
What is this plant in the Snake River? Flowering Rush. *Butomus umbellatus* considered an invasive species in Ontario. Thanks to Kim Emde for the i.d.

- Kathryn Lindsay

A huge part of this program was educating people and equipping them with new knowledge... when they were ready for it! Our advanced users went beyond water testing and delved into invasive species monitoring. But, we know that stewardship should be a gradual process, and we were so pleased to hear that 81% had learned something new!

81%

Learned something new about their waterbody



Working with youth!

Our youth ranged from 4 to 17 this year, with the majority being in grade 8. For pretty much all of these youth, this was the first time they had conducted water quality tests. Youth also helped us clean shorelines and identify native plant species. Kids learned to use their senses and apply the scientific method in the field. Here are just a few photos!



305

Youth trained
TARGET: 145 youth





Our theory of change says that when people learn about, and then test water, they are prompted to act to protect waterways.

A little bit of motivation!

A program that lasts 3 seasons can be hard to maintain. Our participants have busy lives, and so we tried to make it fun and community-driven.

Sent regular updates

Sent out weekly newsletters to let people know where they were at

Kept track

Tracked metrics and posted results on social media.

Had challenges!

Created challenges with prizes (check out Megan, who won our Nature Appreciation Challenge and got this awesome t-shirt designed by a local designer! She, of course, wore it while out conducting a shoreline clean-up.

Resupplied our most dedicated testers

For the first 5 testers who were extremely keen, we offered to send them resupplies for the most expensive component, the dissolved oxygen ampoules

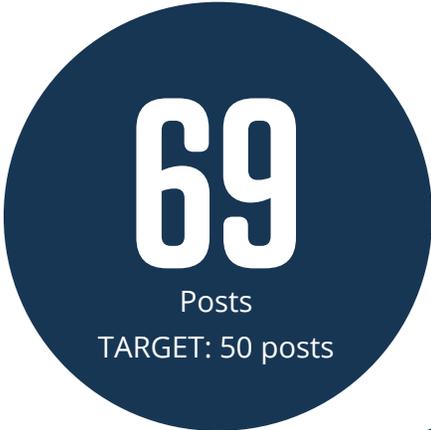
Got social

Started a closed Water Rangers Testers group on Facebook, where testers could share their results, photos and experiences. Right now, we have 41 members there.



Sharing the story!

Here are just 4 of the posts from this year's Guardian program. We loved sharing their successes and journey with the public (beyond what they shared themselves on the closed Facebook Group). We know that it works too! Because we shared, our army of citizen scientists taking care of waterways continues to grow!



Water Rangers
Published by Water Rangers [?] · August 1 · 🌐

This year, some of our testers are participating in 10 challenges to deepen their connection to waterways.

One of this summer's Guardians, Kathy Lindsay, from [The Bonnechere River Watershed Project](#), taking it the extra mile with awesome signage at her no-mow zone. Anyone else got signage at their no-mow zones? We'd love to see it!

#GreatLakesGuardians



Water Rangers
Published by Water Rangers [?] · July 27 · 🌐

One of our testers, Susan Dubreuil, recently shared this beautiful native plant photo growing on a bit of shoreline she's letting go natural. We affectionately dub these sites, "the no-mow zone" 😊 In the fall, she'll be adding in more native bushes, thanks to the Great Lakes Guardian Fund from [Environment Ontario](#) and we'll get help picking more plants butterflies love from [Watersheds Canada](#)!

Here's what Susan says:
"Joe Pye Weed or Eutrochium. Plant is native to North America - no invasive species here! Deer do not like it but butterflies do! It is good for shoreline rehabilitation too. Starting to take root on the shore at our monthly testing site. YAY!"



Water Rangers
Published by Toni Van Eeden [?] · September 11 · 🌐

We love the daily emails we get about the adventures in testing and shoreline clean-up. This story is from Christopher Mellor and fam ([Taryn Mellor](#)) who shared with us their clean-up and testing photos during one of their back-country camping trips at Kashwakamak Lake. They were on an island and were curious about what kinds of trash they would find. Top 3: Bread tabs, rope and dog waste!

Other campers, what kinds of trash do you find frequently?



Water Rangers shared a photo.
Published by Water Rangers [?] · April 30 · 🌐

Our newest Water Rangers couldn't wait to get out and do their first tests! We trained these passionate water stewards just yesterday. 😊

They are one of 25 groups that are our Water Rangers Guardians this year, thanks to generous funding from Great Lakes Guardian Fund from [Environment Ontario](#).

Tomorrow we will be holding a session from 5-6pm and 6-7pm in [Pembroke](#) at the [Champlain Trail Museum](#) and [Pioneer Village](#), if you're interested in how the testkits work! There will be one kit there over the testing season available for people to borrow.



“

**We are much more
in tune with the
waterways we have
always enjoyed.**

We are also better equipped to identify potential issues and to do something about them. The Water Rangers team are fantastic - the engagement, communications, technology and support were terrific. We are already looking forward to seeing how the plants grow to protect our shorelines next year and to recommencing testing activities and cleanups!

- Sue Dubreuil



Teaching others

There's research that shows when you know something well enough to teach it, you truly understand it. While we know there's lots of room to make our training materials even better, we LOVED seeing our Guardians becoming teachers :D



95%

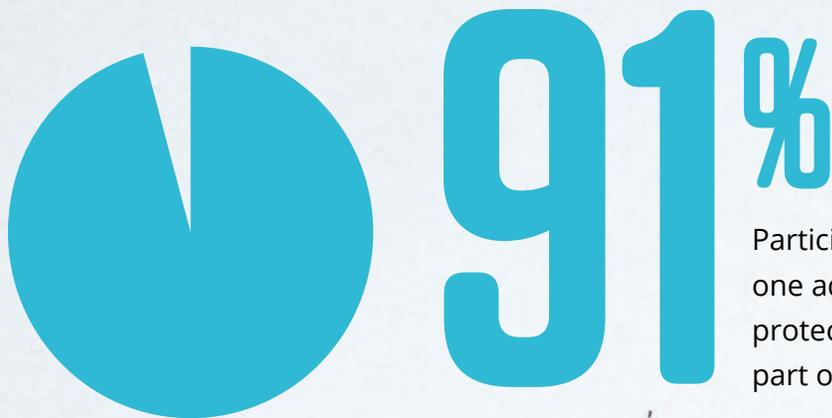
Shared their knowledge with curious bystanders. (In fact one Guardian told us his technique to stop bystanders asking him!)





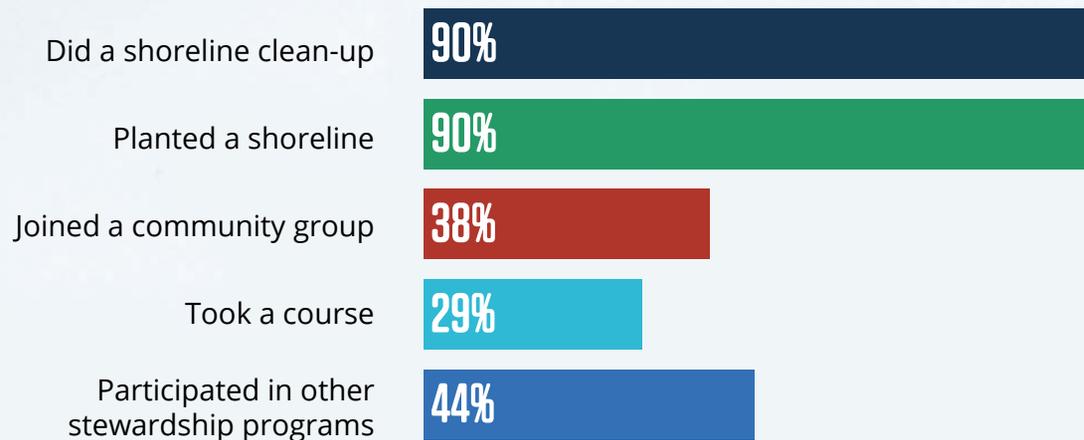
Doing more!

We wanted to know: does participating in programs like this lead to EVEN MORE? Our participants almost all said, "YES!"



Participated in at least one additional action that protects waterways while part of this program

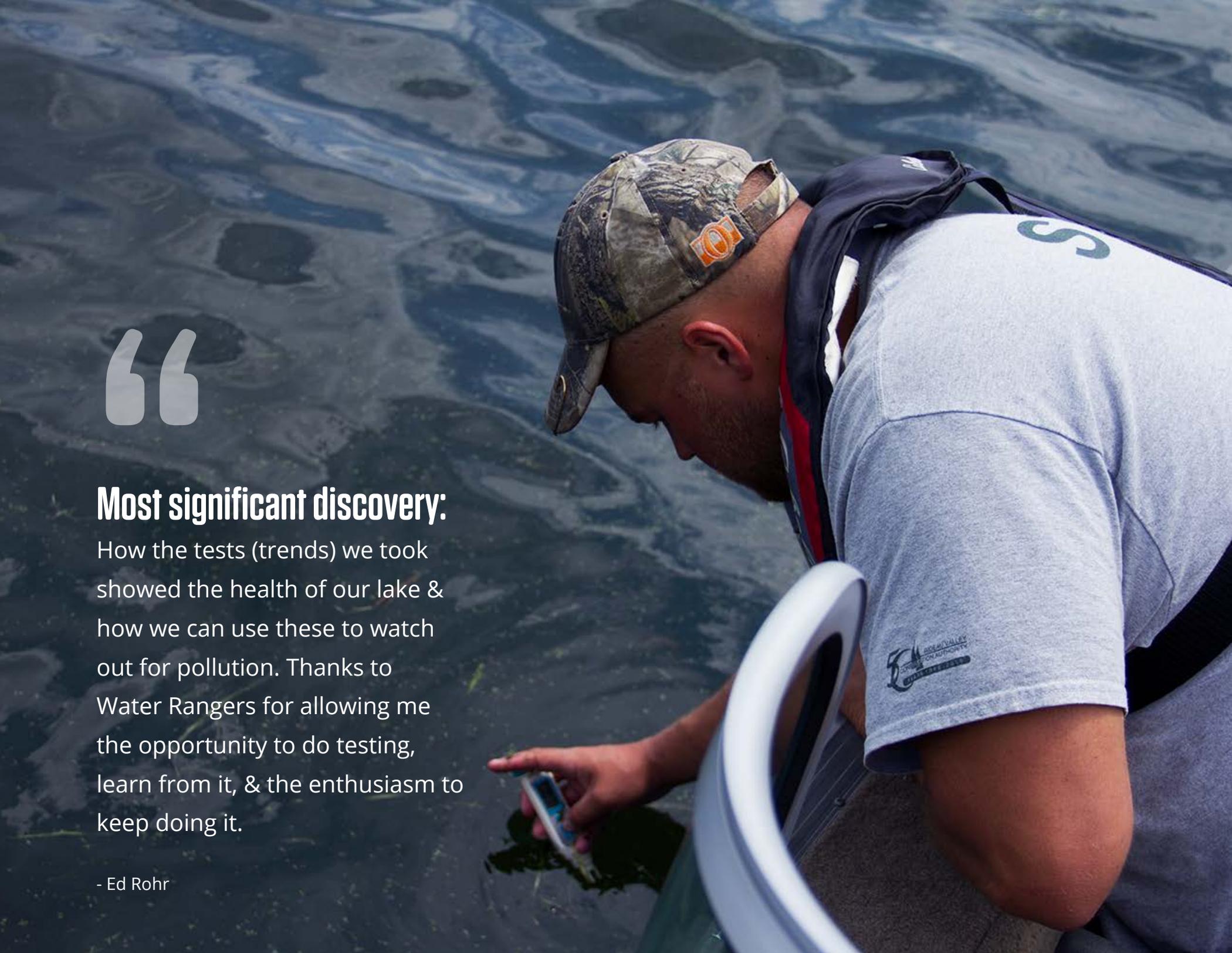
What they did



The people behind the scenes!

It's thanks to our team members' dedication to the cause that we have incredibly talented people working to protect waterways. This project wouldn't have been possible without the hard work of our volunteers, but also the people on the team who helped organize, track and monitor. Thanks to Toni, Kat, Abbey, Ollie, Alicia and Mark, who worked throughout the season to keep this going. An extra special THANK YOU to Jordan, Natalie, Jenn, Julie S, and Julie L, who gave up their Sunday afternoon to help us assemble the kits! We have yearly 'thank-you' year end parties to bring together those who believe in this movement and shared highlights from this project. Here's some pictures of our favourite people!



A man wearing a camouflage baseball cap and a grey t-shirt is leaning over the side of a boat. He is holding a small, handheld electronic device, likely a water testing kit, and appears to be testing the water. The background shows the dark, rippling surface of a lake. The man's t-shirt has a logo on the sleeve that reads "SILVER VALLEY CONSERVATION AUTHORITY CLEARCREEK TRUSS".

“

Most significant discovery:

How the tests (trends) we took showed the health of our lake & how we can use these to watch out for pollution. Thanks to Water Rangers for allowing me the opportunity to do testing, learn from it, & the enthusiasm to keep doing it.

- Ed Rohr



Funding provided by

Ontario

Ontarians have proven that they can deepen their connection to water, and we're so grateful to the Ontario Government for supporting our vision for connected, empowered citizens protecting waterways.

People are excited about testing waterways, and this program was a jumpstart. Thank you to all the volunteers that believed in this ambitious project! Now, we will continue supporting our volunteers to make sure the next generation understands and loves waterways so we can protect them.

Thank you!

Please contact kat@waterrangers.ca if you have any questions!



Funding provided by

Ontario