

Cetacean seeker

Canadian Geographic's December 2016 issue examines the Slocum Glider, a battery-powered underwater drone designed to monitor and collect data on whale activity on Canada's east and west coasts. With your students, use the infographic and the following questions to explore how new technologies are being used to help monitor and manage Canada's wildlife.



Check for understanding

1. How do Slocum Gliders detect whales?

2. Why are whales hard to detect?

3. Outline three characteristics or features that make the Slocum Glider unique:

4. Examine the infographic and list some pros and cons of the Slocum Glider.

Pro	Con



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Extend your geographical thinking

1. Explore the migration routes of 20 species at risk in Canada

Download and print Can Geo Education's [Wild Migration](#) tiled map. As a class, piece together the map and identify the 20 species at risk that are labelled on it. Using coloured string, have students trace the migration routes of each animal and use the scale to calculate the approximate distance that each animal migrates. As a class or individually, have students create a bar graph comparing the distance of different migration routes.

2. Using drones in your community

Explain what drones are and how they are used. Using a map of your community or an online mapping platform, such as Google Maps, have students brainstorm ways that drones can be used in your community. Divide students into small groups and have each draw a community map, indicating where they think drones would be helpful and why.

3. Whale watching in Canada

There are many whale watching destinations in Canada. Using online tourism sources, such as [Lonely Planet](#) and [Go Canada](#), have students identify the best place to go whale watching in Canada. Using Can Geo Education's [blank map of Canada](#), ask students to plot these locations and include some facts about the area. Once students have shared their maps and facts with the class, have the class vote to determine the best whale watching spot in Canada.

Resources

- [Ocean Networks Canada](#)
- [Vancouver aquarium](#)
- [National Oceanic and Atmospheric Administration](#)
- [Why Animals Migrate](#)
- [Wild Migration's Giant Floor Map](#)
- [Canadian Geographic's Migration's in Motion](#) map article "Stunning map predicts how wildlife will move to adapt to climate change"
- [The Nature Conservatory Migration's in Motion](#) interactive map

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Undersea drones are the newest whale protection tool

By Alexandra Pope

To protect endangered whales, you first have to be able to find them.

That's no small feat given the vastness of the open ocean, but researchers at the University of Victoria and Dalhousie University in Halifax have come up with a low-cost and minimally invasive way to track whale movements: listening for their songs.

Research teams have deployed battery-powered underwater drones called Slocum Gliders to patrol little-studied areas on both coasts for whale activity. The data they collect is used to pinpoint where different types of whales are congregating, in turn helping to inform ocean management practices.

"These animals are highly migratory, so the only way we can manage their conservation is to manage their habitats," explains Kimberley Davies, a post-doctoral research fellow at Dalhousie.

The Dalhousie team supplies data to the Canadian Navy, which now ceases its training exercises on the continental shelf when whales are detected. The team is hoping to eventually be able to broadcast whale advisories to commercial ships too.

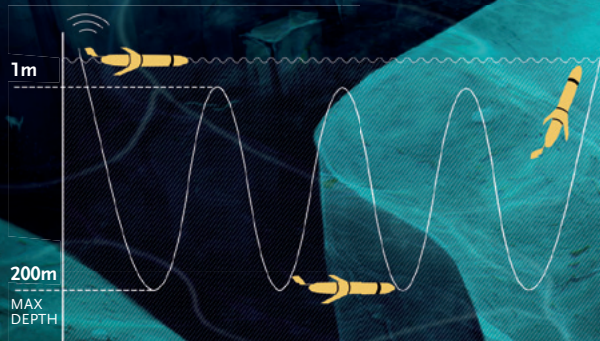
"We want to help mitigate harm to the animals as much as we can," Davies says.

Every four to 24 hours, the glider surfaces and transmits its findings to an online database.

Availability of zooplankton, a dietary staple for whales, depends heavily on water temperature and salinity, so the glider measures both to help researchers identify areas where whales are likely to gather to feed.

Each glider is equipped with an acoustic sensor that detects whale calls and voice recognition software to help it identify the species based on its song. The drone is almost silent, meaning the acoustic sensor is able to clearly detect whale songs without engine noise interference.

A battery-powered pump fills and empties an inflatable air bladder, moving the glider between the ocean surface and floor (BELOW).



Depending on the type of battery used, the glider can stay in the open ocean for up to four months and travel some 2,000 kilometres on a single charge — that is, as long as it doesn't run into trouble. "We once had a fisherman pull one of the gliders out of the water and try to sell it back to us," says Davies.



For more groundbreaking Canadian whale research, visit cangeo.ca/dec16/whales.