



Biologist Report: Nighttime Boat Electrofishing

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At some point in the past, you may have witnessed a strange and curious sight appearing on a dark lake or pond somewhere in Vermont in the middle of the night.

You may have heard it before you saw it, and as you tried to focus your gaze out into the blackness towards the strange, low rumbling sound, a bank of hazy flood lights emerged from the distance, creeping slowly along the shoreline.



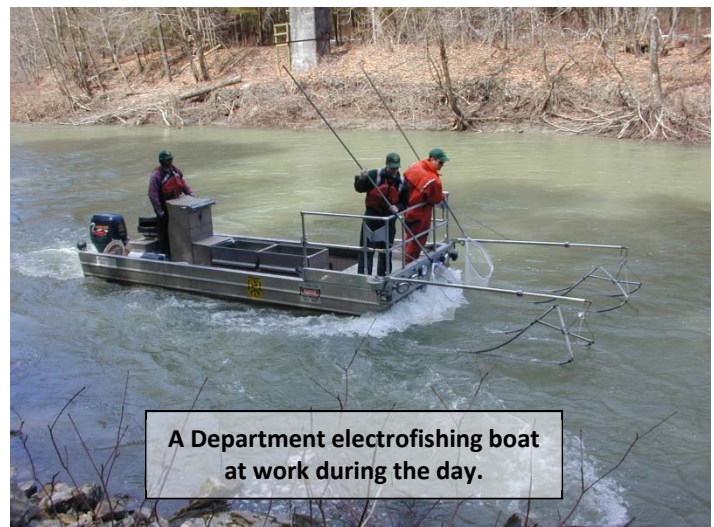
A nighttime view of a boat electrofisher in operation.

Resist your urge to frantically dial 9-1-1, your local game warden, or the county sheriff! What you have spotted is not an alien craft, nor poachers illegally nabbing fish. These are Vermont Fish & Wildlife Department fisheries biologists, working midnight hours while conducting a fish population survey with a boat-mounted electrofishing unit.

First of all, let's learn what this "electrofishing" is all about.

Electrofishing is a common technique used by fisheries biologists to easily collect fish and study fish populations in various types of waterbodies. In lakes, ponds, and larger river systems, the most common type of electrofisher is a boat mounted unit. Biologists also use backpack electrofishing units while wading to survey fish populations in small rivers and streams.

As the name implies, electrofishing uses electricity to momentarily stun fish so they can



A Department electrofishing boat at work during the day.

be captured. On Vermont lakes and ponds, fisheries biologists use an 18-foot flat-bottom aluminum boat equipped with a generator that creates electrical currents that pass through electrodes hanging in the water in front of the boat. As the vessel moves slowly along a shoreline, a field of electricity precedes the path of the boat. Using just the right amount of electrical current causes an involuntary muscular response in the fish called “taxis” that causes fish to swim towards the electric field. Once fish reach the center of the field, they become temporarily stunned (known as “narcosis”) and float belly up. Since narcosis only lasts for a few seconds, biologists must quickly net the fish and put them into a large on-board livewell, where they soon regain consciousness.



A tank full of healthy walleye electrofished from Chittenden Reservoir. A couple of the fish are still recovering.



What do biologists do with the stunned fish?

After electrofishing a predefined stretch of shoreline, or “sampling station,” the boat is stopped, electricity is turned off, and biologists begin to collect biological data from the captured fish. Fish are identified by species, measured for length, and weighed. Sometimes a scale or a spine is removed, which allows biologists to estimate the age of the fish. Fish are then returned to the water unharmed.

Why do biologists do this in the middle of the night?

While it is certainly a strange sight and a seemingly odd time of night for department biologists to be out working on the water, there are several good reasons for this:

- 1) **Safety** – although the field of electricity is very localized to the front of the boat, between 250 and 500 volts is directed into the water, generally at 4 to 6 amperes. Electrofishing surveys are done at night when the lake is quiet and there is less chance of people or pets swimming in areas being surveyed.
- 2) **Fish Behavior** – many fish species targeted during boat electrofishing surveys are more likely to be in shallow waters close to shore at night, when they feel safer under the cover of darkness. While fish move shallow at night mainly to feed, they also succumb to the electricity better there than they do in deeper water.
- 3) **Capture Efficiency** – biologists manning the dipnets at the front of the boat can actually see the stunned fish in the water much better when lit with floodlights. During the day, bright skies and sun cause a glare on the water's surface making it more difficult for biologists to see stunned fish several feet down.



Some “Words of Warning”

Department biologists have occasionally been approached while under power by curious spectators during both day and nighttime electrofishing activities. People sometimes paddle up to the electrofishing boat in canoes or kayaks not outfitted with nighttime navigation lights, and because department staff are very focused on the tasks of navigating the electrofishing boat and netting fish, they may not notice people approaching. Additionally, the noise of the generator makes it very difficult for those onboard to hear the calls of interested observers who are attempting to get their attention. If you see department staff conducting an electrofishing survey, please stay clear of the area when they are underway. Watch from a distance, and only approach after the boat has stopped and you no longer hear the generator running. Department biologists are generally happy to talk to you when they have finished, and may even show you some fish!!

Watch a Video!

To see nighttime boat electrofishing in action, watch this clip from a recent episode of Vermont Public Television’s Outdoor Journal. In the segment, fisheries biologists conduct an electrofishing survey of largemouth and smallmouth bass in Lake St. Catherine, Rutland County. <http://www.vpt.org/clip/838>



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