

Application of underwater light traps in multi-taxon surveys

Application

Underwater light traps of various designs have been used for years to collect fishes and invertebrates (particularly their larvae and other zooplankton) at night. Most light traps designs were used in marine environments where target taxa include various planktonic crustaceans such as mysids, cumaceans, isopods, but have also been deployed to collect aquatic insect larvae.

Many planktonic organisms navigate by and are attracted to light, and this method takes advantage of that fact. Predatory organisms are caught secondarily simply because they follow their prey which is attracted by the light. Light traps can be deployed by tying them to any other structure that is going to be in the water at night or they can have their own bottom weight.

Method Overview

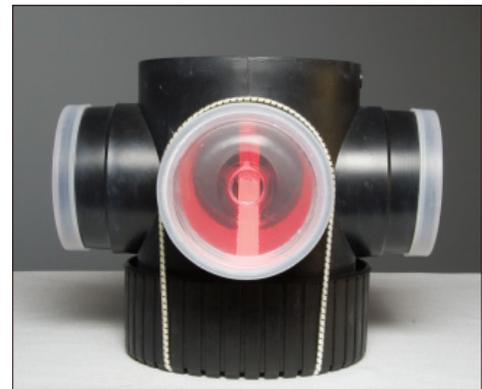
Although a large variety of designs have been used successfully over the years, we've used a simple design based on commercially available components. The basic setup consists of a black PVC body with four openings lined by plastic funnels. Lighting was achieved by inserting either disposable cyalume "light sticks" or a small underwater flashlight into the trap. Plankton enter via the wide end of the funnel and become trapped within the PVC body. A very cheap alternative is a so-called bottle trap.

In the framework of our barcode efforts in the sub-polar region of Churchill we conducted comparative tests in order to test the success rates of underwater light traps in marine and freshwater environments. Total numbers of catches over a five-day period are illustrated as bar graphs. Each night the light traps were deployed at the same positions for 10 h. Control traps without light were placed in the same habitat. Specimens were removed and individuals counted every day.

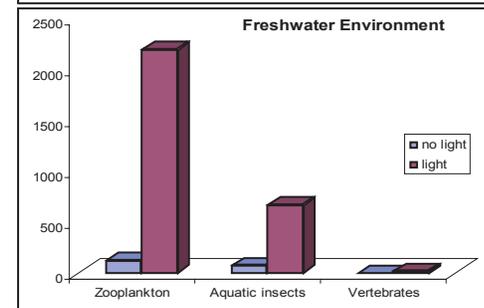
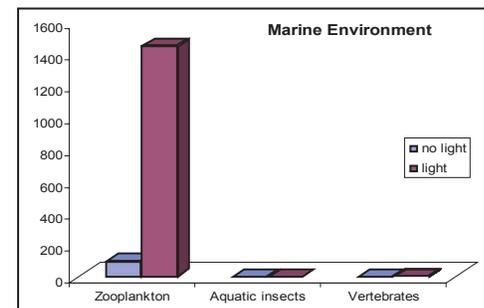
The tests in both environments clearly demonstrated the potential of the method. The variety of animals taken is large; virtually every aquatic insect order present in the selected freshwater environment is represented. Similar results were retrieved with planktonic crustaceans in both environments. However, the traps in the described setup are not very selective. The diversity of taxa makes it necessary for the investigator to sort through great numbers of organisms to select those that he or she may want.

At a glance

» Inexpensive and highly effective



A PVC light trap illuminated by a "light stick".



A wide variety of organisms were caught in both environments using light as an attractor.

Materials:

- Bioquip light trap
- Cyalume light sticks
- Alternative: Bottletrap