Exploring Underwater Habitats and Environments

Overview
In this lab, the students will make a hydrophone and attach it to their Sea Perch ROVs. They will use the hydrophones in conjunction with the underwater cameras on the ROVs to explore their local aquatic environments.

Grades: 8th – 12th

Time: 3 45-minute periods

National Science Education Standards
Content Standard A - Science as an Inquiry
- Abilities necessary to do scientific inquiry
- Crosses disciplines and grade levels

Content Standard C – Life Science
- Interdependence of organisms
- Matter, energy, and organization in life systems
- Behavior of organisms

Content Standard E – Science and Technology
- Abilities of technological design
- Understandings about science and technology

Content Standard F – Science in Personal and Social Perspectives
- Natural resources
- Environmental quality
- Natural and human-induced hazards

Content Standard G – History and Nature of Science
- Nature of scientific knowledge
Lesson

Scenario
In order to understand the health of your local marine environment, you need to observe the environment. Use the camera to see how the fish and other marine animals interact with their environments and each other. Try to observe the diversity of the marine life. Using the hydrophone, listen to what can be heard within the environment. Are the noises more organic or mechanical? *Hint: Check around pilings to get better results.*

Materials:
Sea Perch with underwater camera attached
Hydrophone – constructed as per instructions from
  [http://omp.gso.uri.edu/dosits/teacher/activity/hydrophone_instruc_w_image.pdf](http://omp.gso.uri.edu/dosits/teacher/activity/hydrophone_instruc_w_image.pdf)
Monitor to attach the camera to
Pen and paper to write down observations

Procedure
1. Construct the hydrophone
2. Attach the hydrophone on your Sea Perch in a secure place
3. Run the wire from the hydrophone with the tether from your Sea Perch. Attach the two wires together at periodic intervals in order to keep them neat.
4. Take the Sea Perch to a local water source, along with the hydrophone and the camera.
5. Launch the Sea Perch into the water and observe the local population.
6. Record your observations.

Assessment:
- Compare the behaviors of the sea creatures to expected behaviors.
- Analyze the sounds in the water, and where they might be coming from.
- Write up a formal report with your observations.