

The Research Side of Electronics

High-tech marine electronics are an essential tool for many fishery-related research projects, and biologists today rely on the most sophisticated of these electronics. Because of their expense, and sometimes size, electronic tools used in scientific applications are typically not used by the average recreational fisherman. However, recent advancements in electronic technology that were primarily designed with recreational users in mind, are finding their way into the hands of biologists.

Since its invention, side scan sonar has been used in fisheries and environmental research as a way to efficiently survey large areas of the seafloor. These sonar devices, which cost tens of thousands of dollars, are a vessel in itself, with transducers mounted inside a torpedo shaped “fish” that is towed behind a boat. Hardly a piece of equipment you would see being used on sportfishing boats.

However, advancements in fish finders have provided recreational anglers and boaters with similar side scan technology that is a practical and highly effective alternative. Today almost every electronic manufacturer now offers “side imaging” units, and researchers are finding ways to utilize these devices to conduct more efficient research. The low cost (comparatively), flexibility and convenience of this equipment, not to mention the quality of the sonar images, makes it extremely appealing from a practical standpoint. For example, scientists working with SCDNR’s Marine Resources Division are using these units to identify habitat association of striped bass, and in the process creating an underwater habitat map of a river. The units have also proven to be useful in locating submerged oyster beds. Working in relatively shallow water in areas with lots of snags, the use of a much larger sonar “tow fish” would be next to impossible.

Researchers and anglers both use electronic underwater cameras that allow them to see in real time exactly what is under the water. SCDNR’s artificial reef program and the MARMAP (Marine Resources Monitoring Assessment and Prediction) program have historically utilized underwater cameras for sampling and monitoring. Although they provided high quality images, older style cameras and associated underwater housing cost several thousand dollars. The development of high definition personal cameras such as the GoPro®, have provided these and other programs with a low cost alternative that doesn’t compromise quality, and they are proving to be exceptionally useful for offshore research.

By placing multiple cameras inside and outside of collection traps biologists have been able to document predation that sometimes occurs inside the trap, altering the data. Additionally, these cameras have proven excellent for documenting species diversity and relative densities of reef fish. DNR’s artificial reef program, which regularly utilizes large underwater cameras, has started using the smaller cameras and even going as far as attaching them to reef material as it’s deployed in order to record the speed and orientation of the objects’ descent to the seafloor.

Scientific research demands precision, which usually requires using the best (not to mention expensive) equipment available. However, scientists are always on the lookout for economic alternatives, especially inexpensive electronics that allow them to enhance their research, and they are taking full advantage of these new technologies as they become available. On the other hand, anglers are now getting a better understanding of what exactly is going on under the water.