NAC 1301\_3 - **Technology in Conservation** (V2)

***On Cam Caroline – statement:*** Like in any field of science, today’s technology has changed how biologists study fish.

***Caroline Question:*** But what technology do they use and how has that changed from let’s say 50 years ago?

In the past, biologists didn’t have much technology to help them study fish in wild environments. They either caught them in nets, on hook and line, or observed fish by looking into the water. Sometimes, biologists would observe captured fish in a tank, but that prevented fish from behaving naturally in their ecosystem.

Fortunately, new technology has changed how scientists can study fish. Plus, scientists often combine several technologies to give them more information.

For instance, biologists can selectively capture a certain species and size of fish using a technique called “electro-fishing”. A gas-powered generator sends an electrical current into the water that makes fish swim toward the current. They’re stunned enough to scoop them into a net and only affects them for a few minutes. Biologists then take them to another site for examination and recording of data.

Using this data, fish biologists can research and publish new information on the Internet. This open exchange of scientific information can also help blend different fields of study. For example, meteorologists can provide weather radar maps to fish biologists to show large insect hatches that affect fish populations. An Internet search on “fish parasites” will give you a small idea of what’s available to fish scientists online.

Once scientists capture a fish, they can use other new technologies for monitoring them. For years, biologists “marked” captured fish by either clipping a fin or attaching a metal tag. But the tags can pull out and clipping fins didn’t provide much information.

Nowadays, biologists can tag captured fish using a PIT tag. It stands for Passive Induction Transponder. It’s a little microchip that they inject underneath the fish’s skin. Though PIT tags were developed to study fish, they’re now commonly used to mark people’s pets. Using a PIT scanner, biologists can quickly determine where and when a particular fish was first tagged.

Today’s fish technology also uses a combination of passive sonic listening devices and acoustic pinging implants. First off, you need a big fish to handle this level of electronics. That’s why it’s sometimes used in sturgeon conservation projects.

The fish are placed on an operating table and fresh water is pumped over their gills to keep them “breathing” properly. You knew that fish breathe using the dissolved oxygen in the water, right?

Next, biologists use sterile operating procedures to cut and insert an electronic pinging device inside the body cavity of the fish. They stitch up the incision and treat it with antiseptic. Sometimes the fish are released back into their native habitat, and sometimes they are transplanted in new habitat to help repopulate other water systems. The acoustic pinging devices emit a unique sound that’s identified with that particular fish for up to 10 years.

For instance, in Wisconsin’s Lake Winnebago water system they’ve installed 35 passive listen devices in the Wolf River. As each of over 200 implanted fish travels throughout its yearly lifecycle, the listening devices automatically record fish movements. This data helps biologists map yearly fish migration patterns and spawning cycles. Then they use that data to develop fish management plans that help ensure the health of sturgeon populations.

Even though modern technology has given fish scientists powerful tools to help study and manage fish, much of their work still involves good old get your hands wet while working with real fish. It also involves working cooperatively with other scientists and technicians on projects that help conserve and restore fish populations.

So if you like science, technology, fish conservation, and making a difference in our planet, consider becoming a fish biologist someday. We could use some more skilled minds and hands out there to help handle big fish like these.