

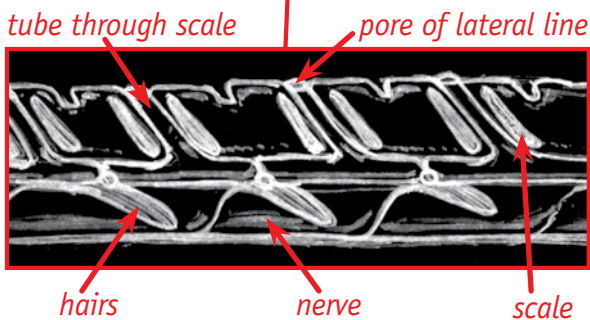
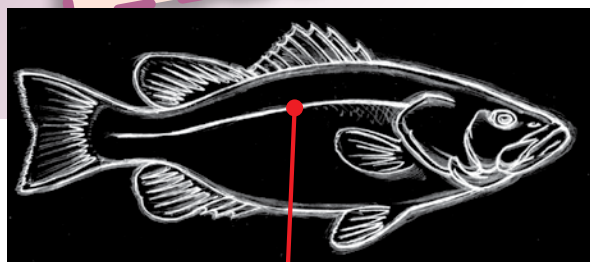
Collecting and Analyzing

- ✓ Date and time
- ✓ Location
- ✓ Effort
- ✓ Catch per effort (number of fish caught and time spent sampling)
- ✓ Water quality
- ✓ Water temperature
- ✓ **Abundance**
- ✓ **Diversity**
- ✓ Length (nose to tail)
- ✓ Weight
- ✓ **Scale** or **otolith** sample
- ✓ Origin (if it's a wild or stocked fish)

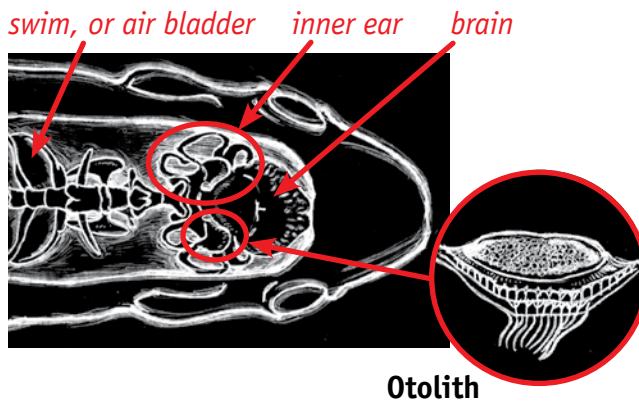
Collecting and Analyzing the Data

Our fisheries biologists must first gather information before they can manage fish **populations**. There are many rivers, lakes and streams in Pennsylvania. It's impossible for biologists to catch, count and learn about every fish in all of these waterways. In order to investigate a waterway, biologists have a few tricks up their sleeves.

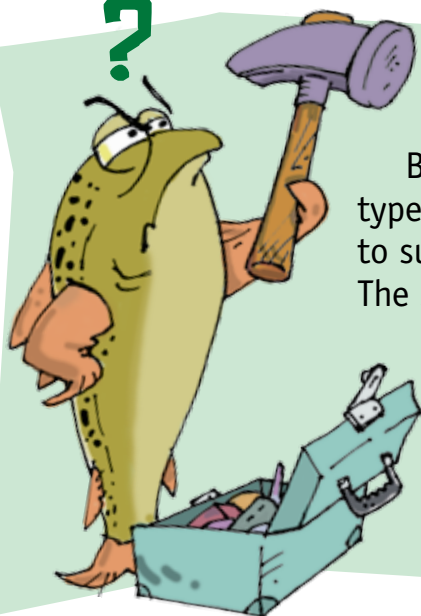
Biologists will **survey** a waterway to catch a **representative sample** of all the fish living there. **Data** from the **survey** is collected, recorded and later analyzed. The analysis results in estimates of the **population, abundance** of certain species or size at that point in time. The estimates from that sampling are compared to estimates made when it was sampled before. This helps to show trends in the **population**.



Inner Ear (view from top of head)



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Tools of the Trade

Biologists use different types of tools and methods to survey our waterways. The selection of tools and methods used depend on the type of waterway (flowing or lakes and ponds), depth and fish species under investigation.



Commission biologists conduct a survey.