



# Scale Tales

## Extension Activity for "Fantastic Fish"

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### Objectives:

Students will be able to:

1. explain in their own words why fisheries biologists want to know the age of a fish;
2. determine the age of a fish by counting the number of annuli on the student handout;
3. label correctly a diagram of a fish scale showing the focus, circuli, and annuli;
4. distinguish between cycloid and ctenoid scales.

### Method:

Students observe photocopies of magnified fish scales and practice counting annuli to determine a fish's age.

### Time:

30 minutes

### Materials:

transparency or handout of scale diagrams

optional: fish scales or scale impressions, microscopes or microfiche reader, rulers, pencils, and drawing paper

### Procedure:

1. Begin the discussion by asking students, "Why would a fisheries biologist want to know the age of a fish?" Refer to the Background on Aging Fish to help you cover the major points. (Fisheries biologists need to know the age of fish in a population so that they can check growth rates and determine the age structure in the population.) You can relate this to human populations. For example, could a doctor who knew your height and weight make accurate conclusions about how fast you are growing without knowing your age?
2. Once students are familiar with reasons why fisheries biologists want to know the age of a fish, ask them to guess how they figure out the age of individual fish. Explain to your students how biologists interpret a fish scale to determine the age of a fish.

That Fish? Point out the focus, circuli, and annuli on one of the scale diagrams. Also, ask students to compare the cycloid and ctenoid scales in the diagram by orally describing similarities and differences.

3. Show the students how to count accurately the annuli to estimate the fish's age.

### Extension:

Obtain fish scales or fish scale impressions.

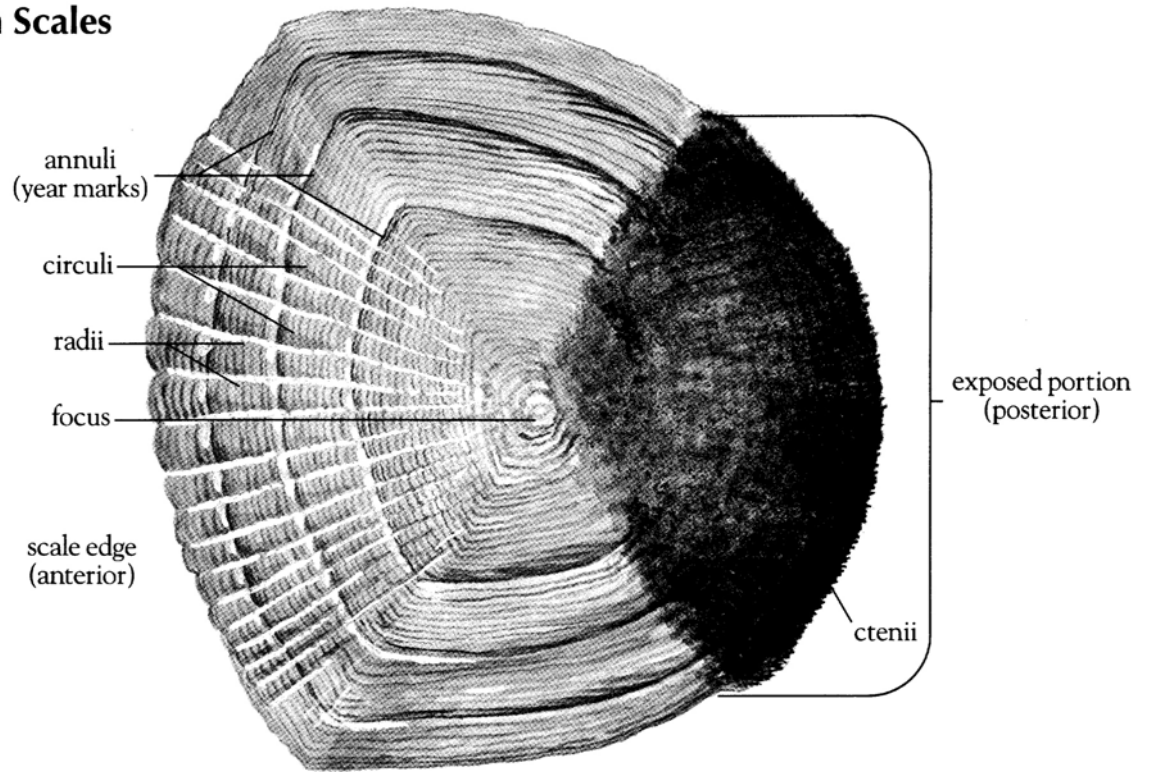
Have students use microscopes and study the scales or impressions under low power. Microfiche readers can also be used if they are available. The students should draw a diagram of one of the scales they observe, label the major parts, and count the number of annuli. The students also should be able to tell you whether the scale is cycloid or ctenoid.

### Evaluation:

Provide outlines of the studied scale types on the board or overhead screen. Ask the students which scales are cycloid and which are ctenoid. Give students an unlabeled diagram of a scale and ask them to label the focus, circuli, and annuli. They should also tell you the age of the fish by reading this unlabeled scale diagram. Ask students to explain in writing or orally why biologists want to know the age of fish.

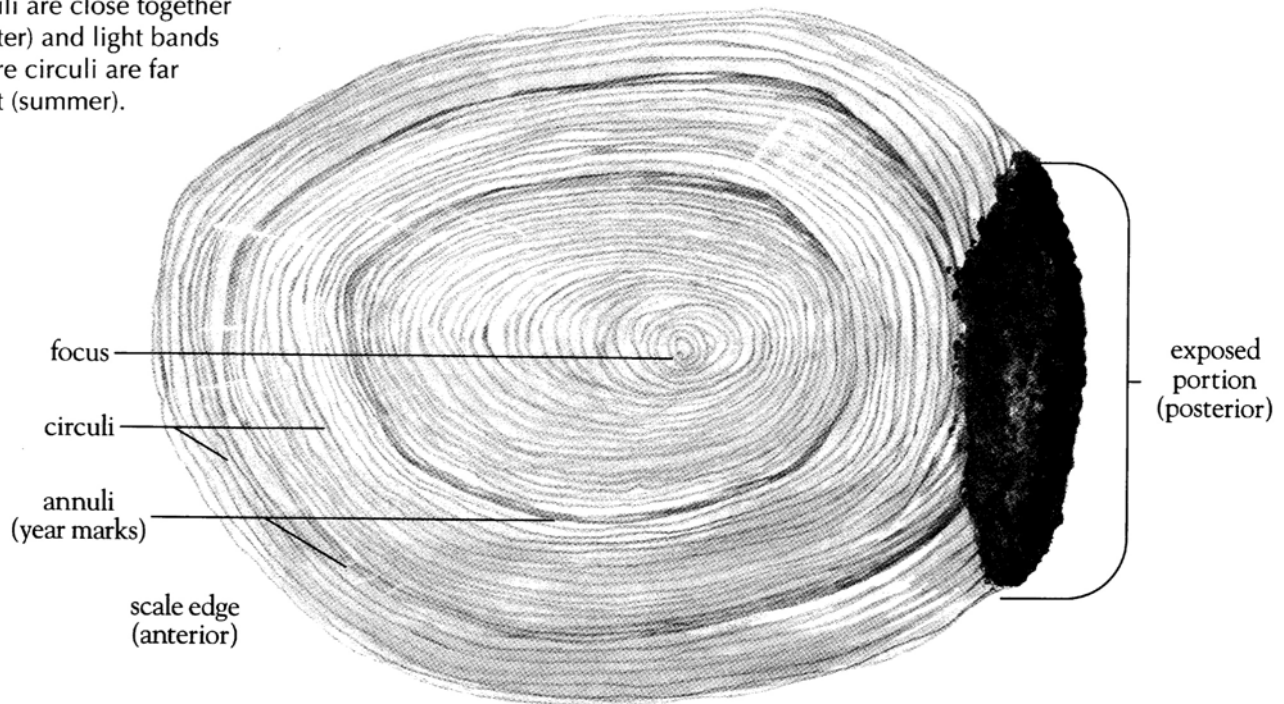
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## Fish Scales



ctenoid scale (bluegill)

Notice dark bands where circuli are close together (winter) and light bands where circuli are far apart (summer).



cycloid scale (rainbow trout)

ILLUSTRATION BY DUANE RAVER