

Fish Scale Lab

When a fish is hatched, it is covered with tiny scales. The center of an older fish's scale, called the **focus**, represents the scale of the newly hatched fish. As the fish grows, the scales develop circular growth rings around the focus. Each growth ring is called a **circulus** (plural: **circuli**). Like a tree, the fish grows faster during the summer when the temperature is warmer and there is more food available, and the circuli are spaced farther apart. During the winter, growth slows down and the circuli are very close together. When the circuli are close together, they form a dark ring called an **annulus** (plural: **annuli**). Each annulus represents a year's growth, so by counting the annuli, it is possible to estimate the fish's age.

The screenshot displays two windows side-by-side. The left window is Adobe Acrobat Reader DC, showing a PDF document titled 'The Tale of a Scale.pdf'. The text in the PDF reads: 'grows, the scales develop circular growth rings around the focus. Each growth ring is called a circulus (plural: circuli). Like a tree, the fish grows faster during the summer when the temperature is warmer and there is more food available, and the circuli are spaced farther apart. During the winter, growth slows down and the circuli are very close together. When the circuli are close together, they form a dark ring called an annulus (plural: annuli). Each annulus represents a year's growth, so by counting the annuli, it is possible to estimate the fish's age.' Below the text is a diagram of a fish scale with three labels: 'Annulus', 'Circulus', and 'Focus'. The 'Annulus' label points to a dark, dense ring; the 'Circulus' label points to a single growth ring; and the 'Focus' label points to the central point of the scale. At the bottom of the PDF is the logo for the Maryland Department of Natural Resources.

The right window is Microsoft Word, showing a document titled 'Document1 - Word'. The document has the title 'Fish Scale Lab' and a paragraph of text that matches the text in the PDF: 'When a fish is hatched, it is covered with tiny scales. The center of an older fish's scale, called the focus, represents the scale of the newly hatched fish. As the fish grows, the scales develop circular growth rings around the focus. Each growth ring is called a circulus (plural: circuli). Like a tree, the fish grows faster during the summer when the temperature is warmer and there is more food available, and the circuli are spaced farther apart. During the winter, growth slows down and the circuli are very close together. When the circuli are close together, they form a dark ring called an annulus (plural: annuli). Each annulus represents a year's growth, so by counting the annuli, it is possible to estimate the fish's age.'

Procedure:

1. Using a forceps or scalpel, scrape against the grain of the fish scales to remove a few scales.
2. Place the scales on a slide in a single layer.
3. Add a small drop of glycerin on the scales and put a cover slip over them. Gently press down on the cover slip to remove any air bubbles.
4. Starting from the center or **focus** of the fish scale, count the **annuli**. Record your data on the table below.
5. Age at least three scales from each fish and record your data in the table below.

	Scale #1	Scale #2	Scale #3	Scale #4	Average Age
Fish #1					
Fish #2					
Fish #3					
Fish #4					

What were some complications or issues you had during the experiment that might have affected your data and how could those be corrected or eliminated if this lab was repeated?