Age and Growth of Fishes

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**Wednesday, December 6 (0800-1700 hrs):**

1. Introduction
   1. Overview of fish population dynamics
   2. Bried history of age and growth analysis
2. Sampling for A&G analysis
3. Terminology
4. Age estimation approaches
5. Suggested structures for A&G
6. Overview of scales
7. Overview of otoliths
8. Overview of fin rays and spines
9. Overview of “other” structures
10. Structure processing
    1. Removal
    2. Mounting

**Thursday, December 7 (0800-1200 hrs):**

1. Structure processing (cont’d)
   1. Cutting structures
   2. Reading structures
      1. Bring your own structures for specific help!
2. Data summarization and analysis
   1. Age data
      1. Age-frequency histogram
      2. Age length keys
   2. Growth data
      1. Back calculation length-at-age
      2. Growth models
3. Verification and validation
4. Discussion and questions

**Thursday, December 7 (0100-1600 hrs):**

1. RStudio interface and basic R syntax
2. R data types and creating new variables
3. Functions and R packages
4. Exercise 1
5. Data exploration in R
6. Summarizing data
7. Exercise 2

**Friday, December 8 (0800-1600 hrs):**

1. Age-length keys
2. Size structure
3. Weight-length relationship
4. Exercise 3
5. Condition factors
6. Mortality
7. Individual growth
8. Stock-recruitment models
9. Exercise 4