

Biology II: Unit 11 Study Guide

BioIIU11SG (Ichthyology)

Learning Objectives

1. Use the biological species concept to decide whether two populations represent separate species.
2. Identify morphological differences in 6 stickleback fish and create a dichotomous key for identifying them.
3. Explain how natural selection may act to favor divergent morphologies and favor the evolution of reproductive isolating mechanisms. (Wow! What a mouthful!)
4. Interpret data and understand how data may be used to support or reject hypotheses.
5. Apply systematics to two featured sticklebacks answering the questions of form, time, and space.

Web Resources

Fishbase <http://www.fishbase.org>

Otolith Packet <http://mreclassroom.blackriversleds.com/otolith.pdf>

Tree of Life <http://mreclassroom.blackriversleds.com/treeoflife.pdf>

Strange Fish http://mreclassroom.blackriversleds.com/strange_fish.pdf

Assignments

- Readings: Systematics pg 341-345; Case Study "Something's Fishy . . . "; "Tree of Life"; "Otolith Packet"
- Morphometrics of Two Sticklebacks (individual/**notebook**)
- Comparative Table/Dichotomous Key **10pts** (group/quiz)
- Video: "Farming the Seas" (individual/**notebook**)
- Case Study: "Something's Fishy in Paxton Lake" (group/**notebook**)
- Lab: Fish Dissection - "A practical anatomical look at the morphology of a fish along with the collection of the Otoliths" (group)
- Ichthyology Test - from "Something's Fishy in Paxton Lake" **10pts** (individual/test)
- Extension/Extra Credit: "Strange Fish - the case of the Coelacanth" **4pts** (individual)

Ichthyology Test Review (individual/**notebook**)

After examining all the data related to the two Sticklebacks from the Canadian Lake, students will put all their observations together to answer the questions:

- Form
 - Is this a new species? Why?
 - Which characters distinguish it from the other stickleback?
 - Which characters are similar to the other stickleback?
- Time
 - How are the species related to each other?
 - How old are they?
 - What do the characters they share tell us about their relatedness?
 - What do the characters that they don't share tell us about their relatedness?
- Space
 - Where does each stickleback live and why?