

Full-Lesson #9: Aspiring Naturalists

Overview of Outcomes

This lesson may serve as an effective method of introducing Hawaiian forest bird species to middle/high school students. Teachers will show their classes a slideshow of Hawaiian forest bird images (photographs, sketches, museum specimens). Students will play the role of naturalists, making observations about the characteristics of the birds they see, and will make hypotheses about the life history of the birds. In many cases, real world naturalists have had to rely on scant resources to categorize and characterize species. This lesson is designed to encourage students to access pre-existing knowledge of the functionality of morphological features and to make educated guesses of how these species lived. This activity will benefit from the diversity of adaptations possessed by endemic Hawaiian avian fauna. At the end of the activity, student hypotheses will be compared to current scientific understanding of these species.

Materials

Photo resources with species information (http://kauaiforestbirds.org/wp-content/uploads/2019/11/Lesson9_supp.pdf)

Double Entry Journal (see Appendix F)

Activity Directions

- 1) Teachers will provide an introductory direct instruction (10 minutes) that frames the lesson as an exercise in scientific observation and hypothesis development. Early naturalists often had to rely on sketches and preserved specimens to taxonomically classify species. The students will have access to high-resolution photographs to create their own hypotheses for these forest bird species.
- 2) Classes will be divided into small groups, and each group will be provided with a photograph of a Hawaiian forest bird species (4-5 groups is ideal). Using the Double Entry Journal, students will be instructed to make and write careful observations of the physical characteristics of their species (e.g. beak morphology, coloration, size) and make inferences about that species' life history (diet, reproductive strategy, etc.). This discussion should last ~10 minutes.
- 3) Groups will present their species to the class and talk about their hypotheses. Teachers should prompt their students to talk about certain adaptations possessed by the birds (e.g. beak morphology for the nectivores), and the reasoning behind their hypotheses.
- 4) Teachers will give a presentation on the Hawaiian forest birds discussed previously. Similarities and differences between hypotheses and actual behavior/adaptations should be drawn.

Appendix F

Double Entry Journal For Aspiring Naturalists

Please complete a Double Entry Journal (DEJ) using a two-column format for each photo.

Collect Information	Personal Reactions
<p><u>On this side of your journal:</u></p> <p>Make careful observations of the physical characteristics of their species (e.g. beak morphology, coloration, size) and make inferences about that species' life history (diet, reproductive strategy, etc.). Write down these observations.</p>	<p><u>On the personal side of your journal:</u></p> <p>Relate the information to your experiences; put the ideas into your own words, draw conclusions; make connections to other readings; create visuals; ask questions, record examples.</p>