Mōlī Life Cycle Program

Kilauea Point National Wildlife Refuge

Updated 10-2025

**Lesson 1:** Build A Bird (Seabird Basics)

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| Key Concepts | Adaptations and Physical Characteristics Overview |
| Grade Level | 3 |
| Next Generation Science Standards (NGSS) | [LS4.C: Adaptation](http://www.nap.edu/openbook.php?record_id=13165&page=164):  [For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.](http://www.nap.edu/openbook.php?record_id=13165&page=164) |
| Bullseye outlineStudent Learning Target | Students can explain how seabird **adaptations** help mōlī to survive in their habitats. |
| Materials | * Al the Albatross (Taxidermy/mounted bird) (*if available)* * Mōlī Skull * Mōlī Bones * Mōlī eggs * Feathers -- down, contour and flight feathers * 10 mōlī puzzles * Student Albatross Journal (1 per student) * Measuring tape * Squid lure *(optional)* * Index cards *(optional)* |
| Set up | * Pull up the slide deck from the library section of the KP website. * Place Al (taxidermy Laysan albatross) in a location where students can see it. Let students know that they can’t touch it because oil and dirt from their hands will deteriorate and discolor Al’s feathers. |
| Introduction and Building Background Knowledge(10 minutes) | Instructor introduces themselves and KPNWR.   * *“A* ***refuge*** *is land that has been set aside to protect habitat for animals and plants. Kaua‘i has 3 refuges. Kīlauea Point National Wildlife Refuge protects habitat for seabirds and nēnē. A* ***habitat*** *is a home for wildlife and plants. A place for them to get everything they need: food, water, shelter, and space.”*   Pass out student ornithologist Journals.   * *“An* ***ornithologist*** *is a scientist that studies birds. What is an ornithologist? -ologist: scientist that studies something. Ornithology: the study of birds. Together, a scientist who studies birds. Since you will be studying albatross, you will be student ornithologists over the next few weeks and will observe sea birds at the refuge during your field trip.*   Have them open to the first page and fill out the “What they Know” and “Want to know” about albatross sections of their journals.   * Instruct them to list at least two things in each section. Give students about 5 minutes to work on this section. * Ask students to share with a partner or the class. |
| Whole Group Lesson(15 minutes) | Review **learning target** and clarify vocabulary in the target.   * I can explain how seabird **adaptations** help them to survive in their **habitats.**   **(**Adaptations are any structure (body part) or behavior that helps a plant or animal sustain themselves.)  **Build a Bird:**   * Prompt students to identify mōlīʻs two primary habitats (out at sea for most of their lives and on land for courting through chick rearing). * Give the puzzle to pairs of students. Have the students discuss with a partner about what they think all the pieces are. They can use their best guess to put the puzzle together as best they can. * Have the students raise their hand to share one piece of the puzzle and what they think it is. Discuss mōlī adaptations with each one.  1. **Feathers**    1. *“Sea birds do not have shelter in their habitat but have adapted to have feathers that protect them from the elements. Feathers are what make a bird different from any other animal. Birds are the only animals that have feathers.”*    2. ***“Down feathers*** *keep the bird warm. They are like the bird’s underwear, or long underwear. The down feathers are soft and fluffy.”*    3. ***“Contour feathers*** *give the bird color and help keep the down feathers dry. Contour feathers are waterproof, like a rain jacket.”*    4. ***“Flight feathers*** *are stronger and stiffer than contour feathers and down feathers. Okay, so our bird has feathers that keep it warm, give it color, and help it fly.”* 2. **Wings**    1. *“Albatrosses have long pointed wings. Their wingspan is almost 7-feet! A wingspan is the distance from wing tip to wing tip. Can opt to use the measuring tape and a student volunteer to demonstrate wingspan.”*    2. *“Mōlī adapted to have long wings to help them cover great distances and find food in their enormous habitat. They can fly for miles and miles and hardly flap their wings. They use the air currents to cruise and soar around above the Pacific Ocean.”* 3. **Hollow Bones**     1. *“Most seabird bones are very light, because they are hollow.**Hollow bones help the bird fly and make the bird’s body very light compared to its size. Albatross only weigh about 6 lbs. on average.”* 4. **Air Sacs**     1. *“Air sacs are located throughout the bird’s entire body, and they get filled up with air, so the bird gets even more oxygen each time it breathes in. This helps the bird fly for long distances and without getting ‘out of breath’ like we do when we run for a long time. Air sacs really help when the albatross is flying around for miles.*    2. *Air sacs also cushion the albatross’s body when it lands hard on the ground or in the water.”* 5. **Beak**    1. *“Birds that eat different foods have different shaped beaks.”*    2. *“An albatross has a sharp, hooked beak that is perfect for catching slippery food like squid and fish eggs which can be found abundantly in their habitat (can use squid lure to demonstrate).”* 6. **Feet**    1. *“Albatross have webbed feet meaning that there is membrane between the toes. Webbed feet are very useful for paddling, which is important for when albatross want to take off from the ocean. They paddle hard and almost run on the surface of the water to take off back into the air.”* 7. **Salt Gland**    1. *“The* ***salt gland*** *filters the salt out of the sea water that the albatross drinks, and the water goes into the albatross’s stomach and the salt comes out through two holes in the albatross’ beak. These holes are the bird’s* ***tube nose****.”* 8. **Oil Gland**    1. *“The* ***oil gland*** *is located on the bird’s back. It will reach back with its beak, touch the oil gland, and then rub the oil onto its wings and body to spread it around. This is important for the bird to do, because it keeps their feathers clean and waterproof, which will keep them warm and dry and remain light enough to fly.”*   Briefly introduce the notion of a scientific illustration and the components of a **title** and **label.** |
| Independent Work(10 minutes) | Students fill out the mōlī diagram using the word bank of all the parts they just learned as a group.  Ask teachers to do before the next lesson:   * Students make a scientific drawing of a bird of their choice in their student ornithologist journals. They should include as many of the parts of the bird discussed earlier as possible. If there is not time ask the teacher if they can give students class time to work on it. |
| Closing:(5 minutes) | Come together as a group. Go back to the learning target.   * I can explain how seabird **adaptations** help them to survive in their habitats.   Ask students to explain one sea bird adaptation albatross have to a partner. Have students self-assess if they met the learning target by giving a thumb up, thumb sideways, or thumb down. |

Optional Addition for KWL Chart: After the students wrote 1 thing in each box, we asked them to decide between the two of them which answer they would want to write on a card. Then we passed out 3x5 colored cards and had 1 student write one (what you know) and the other student write the other (what you want to know). Add them to chartpaper and to refer to them throughout the lesson cycle.