

Lesson 2 – The Neighbors, Who Lives on the Refuge

Key Concepts

- Adaptations – behavior and structure
- Migration
- Nocturnal, diurnal, crepuscular
- Bird ID Basics – an observation and field guide primer

Materials

- Pacific County Bird Checklists
- Lesson 2 Workbooks – *Adaptations Edition*
- Bird drawing
- Peterson Western Bird Guides – 1 per station
- Station boxes with samples, Fast Fact sheets, laminated bird photos
- Timer
- Volunteer nametags

Set-up

- Give workbook to teacher
- Ask teacher to turn on camera projector for bird drawing
- Students divided into 5 groups and tables/desks cleared
- Each instructor has the box of props for their station and picks a location to start
- Instructors have bird checklists to hand out

1. Intro (10 minutes)

1. Welcome and introductions – Explorers in Training will acquire additional skills today
2. Recap of Refuge and Habitat lesson – What is a refuge, L.A.W.S., what are the five habitats?
3. Overview of today's lesson – learning about the animals that live at the refuge. Being able to identify different animals (and know the population) is important to determining the health of the habitat and if the Refuge is doing its job to protect the homes for plants and animals.

2. Lecturette (20 minutes)

- **Intro to Adaptations (10 minutes)**

Adaptations – how an organism's structure or behavior allows it to survive in a particular ecological niche/habitat include behaviors and structures. Remember the various amounts of L.A.W.S. create different habitats. Adaptations help an organism find and get food, water, shelter and space from a habitat.

Behaviors include how an organism gets food, water, and shelter. What time of a day an organism is most active and seasonal movements (migration) are behavioral adaptations.

Examples: Feeding and traveling at night (nocturnal) or dawn & dusk (crepuscular) helps animals hide. Much of Willapa's wildlife is either nocturnal or crepuscular, including: bats, beaver, porcupine, flying squirrels, owls, cougar, deer and elk. **Migration** (yearly or twice yearly animal movements) maximizes food and minimizes



competition with other organisms. Shorebirds, such as the Red knot, travel through Willapa Bay each spring on their way to the arctic from Mexico and Central America. Some Red knots travel from the southernmost tip of South America to the arctic and back each year - a distance of 9,300miles (15,000km).

Structures are how the organism is shaped or how parts of an organism function.

Examples: Kinnickinnick grows low and long with leathery leathers to help it cope with strong winds and sun of dunes. Many adaptations can be seen. They can help us identify the organism. For example, birds have different shaped bills, legs and feet that help us know a Great blue heron (long legs and toes, and slender, long bill) from a Green-winged teal (short legs, webbed feet, and a wide flat bill).

- **Bird ID based on adaptations (10 minutes)**

We can use structural and behavioral adaptation to get to know the birds that nest, rest and winter on the refuge

Bird Parts Project the bird drawing and guide the students through naming the following parts: Nape, Chin, Crown, Breast, Shoulder, Belly, Legs, Back, Throat, Wings, Rump, Bill (Mandibles)

Field Marks are stripes and spots, caps, crowns, rump patches and wing, tail, bill markings that are unique to a specific species.

Shape Look at its silhouette. Is it tall and thin, or compact and plump? Long legs or short? Is its body longer than it is tall? What shape is the bill? the feet? the tail?

Behaviors can help us, too – Does it climb trees, wade, swim, fly, perch? How? Does it twitch or bob? How does it feed?

3. Bird Adaptations Learning Stations (50 minutes, 9 minutes for each rotation)

Each station is based on a habitat (has bird mounts, study skins, skulls, photos, feathers, and/or nests). *see attached information sheets for each station. Split students into 5 groups and direct each group to one station.

1. Students examine bird parts and identify adaptations for that habitat. Students can use field guide to try to identify the bird (I suggest using the mount or study skin first, then move on to photos or parts next). The station instructor will provide novel information about the bird species, directs student observations to note specific adaptations. What body parts are important to observe, where might it live, what might it eat, what time of day is it active?
2. Rotate after 7 minutes at a station until students have been to all five stations.

4. Closing (10 minutes)

1. Review what adaptations are – you can ask students to share a few. Diverse habitats (like Willapa NWR has) = diverse wildlife. Over 200 species of birds use this refuge.
2. Review how adaptations can help you ID a bird – students can share what they identified.
3. Get out and see some birds (pass out bird checklists)
4. On our next visit you'll learn about how all the plants and animals use their adaptations to have specific jobs and are all connected in the web of life.
5. Until then – keep a look out for birds and adaptations because you are a “Refuge Explorer in Training”.

