

## Lesson 2 Slides Narrative

**Slide 1** Intro to topic

**Slide 2** (5 minutes) Begin the class period with opportunity for individuals to share a bird observation made at home. Have them share each section of information for the observation. The teacher may want to go first as an example. There is room for discussion here- Did anyone see a similar bird? Does anyone know the name of the bird? There are bird identification books and online identification tools available for birders. Let's take a look at one of the simplest ones available.

**Slide 3** (5 minutes) *Follow the provided link to use the Bird ID tool called Merlin. Walk students through the simple process of narrowing down the species observed...The teacher could use a bird he/she is familiar with that lives in the area. Have students make note of the website address and encourage them to use it in the future as they continue daily observations for class.*

**Slide 4** In Zion's natural history collection you will find archived field study notes and letters like you learned about in the last lesson. You'll also find fossils, herbarium (plant) specimens, and **zoological specimens** of organisms that inhabit or have inhabited the local area. Our focus will be of zoological bird specimens and how to study and "read" the specimens for meaning.

**Slide 5** (3 minutes) Zion has over 32,000 specimens! You may be curious as to why Zion has so many specimens that have been taken from nature...Natural history specimens are important because...

- Helps researchers learn about the organism in a close, uninterrupted environment as compared to field study of a live organism.
- Specimens can be displayed in museums or other spaces for visitors to see more closely
- Park managers and scientists can use specimens to see how things have changed over time

**Slide 6** (4 minutes) Let's get a behind the scenes look at the collections found in Zion. Rangers Penelope and Janice will explain one way scientist study and use specimens for research. \*Pay close attention and make mental notes of what you learn from seeing these specimens and the information shared by the rangers. We'll discuss what is shared in this video.

**Slide 7** (5 minutes) *Whole class discussion or a talk to your neighbor activity using guiding questions found on slide.*

**Slide 8** (1 minute) We'll now learn a bit more about Zion. As mentioned briefly in the previous lesson, Zion is a place of great diversity due to the elevation differences. You can see all of the major ecosystems in this photo taken from the canyon floor. We will take a closer look at

these 4 major ecosystems now and you'll use this information in the next activity to decide where a bird we'll study most likely lives.

**Slide 9** (5 minutes)

Desert- On the left is a typical scene within the low desert ecosystem of Zion. Note features you'd expect to see in a desert. Short, scrubby plants; cactus; grasses; no tall trees; sandy soil. Small mammals and reptiles inhabit the area. Elevation ~ 2400 to 4000 ft.

Riparian- In the middle is a photograph of the riparian ecosystem found along the major waterway found in the canyon- the Virgin River. The Riparian/Wetland community consists of springs, seeps, hanging gardens, and riverine systems. These areas are critical oases in an arid environment, providing productive and unique habitats for wetland plant species and a high diversity of aquatic invertebrates, amphibians, resident and migratory birds, fish, native pollinators and other organisms that create ecological balance. Elevation varies along the riverside.

Pinyon-Juniper Forest- The first forest type found in Zion is the Pinyon-Juniper forest, sometimes called a pygmy forest because the pinyon and juniper trees within are quite short and sparse due to their lower elevation and the hotter and drier conditions. Elevation ~ 4500 to 6500 ft

High Plateau Forest- Forests at highest elevations that feature tall Ponderosa Pines, Quaking Aspens, and some oak trees. This forest type receives the most precipitation on an annual basis...including snow in the winter. Elk enjoy this high area in the heat of the summer. Elevation ~6500 + ft.

As you know, birds and all other living organisms are best adapted and suited to live in particular ecosystem types. Today we'll explore those physical adaptations of Zion's birds through the study of actual specimens held in Zion National Park's museum collection. Please note to students that all of these specimens were collected in accordance to law for scientific research.

**Slide 10** (15 minutes) Now we will practice using a zoological specimen for study- this is often referred to as "reading" a specimen or object. We'll use the link found at the bottom of the page to visit a virtual exhibit of a bird from Zion's collections.

*Work together as it suits your situation by viewing linked specimen via classroom projector or individual laptops. There are online resources available for student research and background information about how beak shapes, etc. are adapted for specialized purposes.*

**Slide 11** *This is the end of class activities. Remind and encourage students to do their 15 minute bird observations to share tomorrow and if you assigned it, work on the observation writing assignment of the Northern Flicker.*

