

**Time:**

(3) 45 minute sessions in the classroom

**Level:**

Grades 3-5

*A standard has been selected from 4<sup>th</sup> Grade*

**Goals:**

This lesson will provide students an opportunity to learn about the importance of the wetlands in Utah. Wetlands make a valuable contribution to the health of birds -- not only those residing in Utah, but also to those whose migration route requires them to pass through Utah. Wetlands need our protection.

**Objectives:**

Students will be able to –

1. Describe a wetland, naming at least three important facts about them.
2. Identify the percentage of Utah that is classified as a wetland.
3. Describe the importance of wetlands to local and migrating birds in two or three sentences.

*Materials listed with each individual activity.*

# Wild Wetlands

*by DeAnn Neal, Neicca Butts, and Mark Larese-Casanova, with a modified lesson from the U.S. Forest Service*

**Correlations to Core Curriculum:****4<sup>th</sup> Grade**

- Standard 5: Students will understand the physical characteristics of Utah's wetlands, forests, and deserts and identify common organisms for each environment.
  - Objective 1: Describe the physical characteristics of Utah's wetlands, forests, and deserts.
    - Indicator c: Locate examples of areas that have characteristics of wetlands, forests, or deserts in Utah

**Background Information:**What are Wetlands?

Wetlands, as the term might suggest, are areas where water covers the soil, or is present either at or near the surface all year or at least for substantial parts of the year, especially during the growing season. Some of our most valuable and productive wetlands are only seasonally wet. Wetlands are an important link between the land and water and are as productive as are rain forests and coral reef ecosystems. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. Generally, the prolonged presence of water creates conditions favoring specially adapted plants (hydrophytes). Wetlands vary widely because of regional and local difference in soils, topography, climate, hydrology, water chemistry, existing vegetation, and other factors, especially human disturbance.

<http://faculty.weber.edu/sharley/AIFT/wetlands.htm>

Types of Wetlands

In general we talk of two broad categories of wetlands: (a) *Coastal Wetlands* and (b) *Inland Wetlands*.

*Coastal Wetlands* are found along the oceans and closely linked to estuaries where seawater and freshwater mix. Grasses, sedges, and rushes that are salt tolerant take advantage of nutrients flowing into their environment once or twice daily (*tides*) resulting in *tidal salt*

*marshes* that are exceptionally high in total production of organic matter.

*Inland Wetlands* are found on floodplains along rivers & streams (riparian wetlands), in depressions surrounded by dry land, for example potholes, basins, and playas, along margins of lakes and ponds, and any other low-lying area where groundwater intercepts the soil surface. Inland wetlands include marshes and wet meadows dominated by herbaceous plants and swamps dominated by shrubs and trees. Near the Great Salt Lake we find inland saline and alkaline marshes.

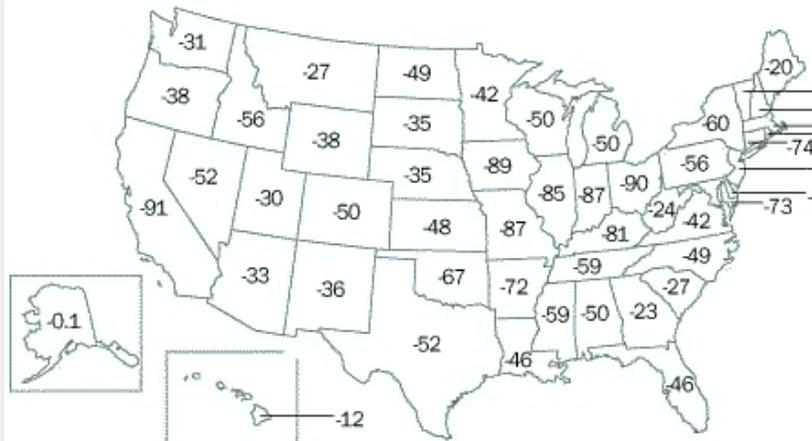
<http://faculty.weber.edu/sharley/AIFT/wetlands.htm>

### Did you know?

Between the 1780's and the 1980's, 22 states had lost over 50% of their wetlands. Seven states had lost over 80% of their wetlands. (See map to your right to see what percentage of their wetlands each state lost during this time period.)

[http://water.epa.gov/type/wetlands/vital\\_status.cfm](http://water.epa.gov/type/wetlands/vital_status.cfm)

**Percentage of Wetlands Acreage Lost, 1780's-1980's**



Twenty-two states have lost at least 50 percent of their original wetland. Seven states—Indiana, Illinois, Missouri, Kentucky, Iowa, California, and Ohio—have lost over 80 percent of their original wetlands. Since the 19 the most extensive losses of wetlands have been in Louisiana, Mississippi, Arkansas, Florida, South Carolina, and North Carolina.

Source: Mitch and Gosselink. *Wetlands*. 2nd Edition, Van Nostrand Reinhold, 1993

### Loss of Wetlands

In the 1600s, over 220 million acres of wetlands are thought to have existed in the lower 48 states.<sup>8</sup> Since then, extensive losses have occurred, and over half of our original wetlands in the lower 48 have been drained and converted to other uses.<sup>9</sup> The years from the mid-1950s to the mid-1970s were a time of major wetland loss, but since then the rate of loss has decreased. Between 2004 and 2009,

## Did you know?

Farmers used to be paid to drain wetlands and convert them into farmland.

Farmers are now paid to convert their farmland back into wetlands. Time sure changes things!

<http://www.wetland.org/101/WET101C.pdf>

an estimated 62,300 acres of wetlands were lost in the conterminous United States.

Human actions that promote major wetland loss include, but are not limited to, drainage, dredging and stream channelization, deposition of fill material, diking and damming, tilling for crop production, levees, logging, mining, construction, runoff, air and water pollutants, changing nutrient levels, releasing toxic chemicals, introducing nonnative species, and grazing by domestic animals.

Natural processes in our world that have contributed to the loss of wetlands include erosion, subsidence, sea level rise, droughts, and hurricanes and other storms.

[http://water.epa.gov/type/wetlands/vital\\_status.cfm](http://water.epa.gov/type/wetlands/vital_status.cfm)

### Migratory Birds

With 85% of Utah's wetlands situated around the Great Salt Lake, the ecosystem is incredibly important to migratory birds. Great Salt Lake is situated in between the Pacific and Central Flyways, but attracts birds from both. Throughout the year, the Great Salt Lake and its wetlands support millions of migratory birds.

Species	Population	Remarks
Wilson's Phalarope	500,000	Largest staging concentration in the world
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Black-Necked Stilt	65,000	Many times higher than any other wetland in the Pacific Flyway
Marbled Godwit	30,000	Single-day count
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White Pelican	18,000	Breeding adults, one of the three largest colonies in Western North America
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California Gull	160,000	Breeding adults, world's largest breeding population
Eared Grebe	400,000	Second largest staging population in North America
Peregrine Falcon	11	Active pairs of this endangered species
Bald Eagle	>500	Wintering Eagles associated with Great Salt Lake, one of top 10 winter populations in the lower 48 states
Bank Swallow	>10,000	In one flock. Great Salt Lake represents one of the largest migratory corridors in Western North America

<http://ut.water.usgs.gov/greatsaltlake/birds/>

## Activities:

### Day 1 (Classroom)

**Engage (15 minutes)** – Give students the short pre-test, “What is a Wetland?” This document is attached at the end of the lesson plan. After finishing the pre-test, have students give their test to you. You may choose to use the test for informal assessment, and to help you design/modify your future curriculum.

Show the students examples of types of wetlands in Utah and talk about what a wetland is. Tell students that only 1% of Utah is considered a wetland, and most of the wetlands in Utah are associated with the Great Salt Lake and the areas surrounding it.

*There are many great pictures of Utah Wetlands on the ‘Utah Reclamation, Mitigation, and Conservation Committee’ website. To view their photo gallery, follow this link:*

[http://www.mitigationcommission.gov/wetlands/wetlands\\_gallery/index.htm](http://www.mitigationcommission.gov/wetlands/wetlands_gallery/index.htm). *If Internet access is not available in your classroom,*

## Materials:

### Supplies--

- Wetlands Pre-test (1 per students, attached at the end of the lesson plan)
- Wetland Photo gallery OR Internet access (Photo gallery available as a PDF download on [www.utahnatureexplorers.com](http://www.utahnatureexplorers.com))
- Science journals
- Writing Utensils

### Equipment

- Internet access
- Ability to

- show/project video clips
- Whiteboard/SmartBoard

*please download and view in advance the attached PDF document named 'Utah Wetlands Gallery.' This document shows pictures of Utah Wetlands, and can be printed for classroom use. You may choose to also show pictures of wetlands in your area (if available), or wetland areas that your students may be familiar with.*

Ask students to list reasons why they believe wetlands are important to have in our world today. List their ideas on the board. *(Wait to correct wrong answers until the 'explain' section of the lesson. For now, let students make predictions.)*

**Explore (15 minutes)** – Watch the short video clip “What is a Wetland” by the Discovery Center at <https://www.youtube.com/watch?v=5RSNY0Vun3s>. The video time is 5:43. This video clip has students explaining what wetlands are and their importance. While students are watching the video, ask them to write down at least three purposes of wetlands from the video clip in their science journal. *(As an alternative to this 'Discovery Center' video clip, you may choose to use the Bill Nye Video listed in the extensions section. The time for the Bill Nye Video is 23:01.)*

After the video clip has finished, divide students into small groups (about 4 people each). In small groups, encourage students to discuss why wetlands are important.

*\*Ideas for your list of why wetlands are important include, but are not limited to:*

- *Wetlands recharge ground and surface waters*
- *Wetlands filter contaminants that would flow into rivers, streams and lakes*
- *Wetlands help control flooding*
- *Wetlands provide natural buffers to protect us from storm damage*
- *Wetlands provide habitat for wildlife, including birds, fish, and shell fish, that live in or around wetlands*
- *Wetlands are beautiful areas of open space that provide enjoyment and increase property values*

**Explain (15 minutes)** – As a whole class, share ideas of why wetlands are important. You may choose to list ideas on the whiteboard, create an anchor chart, or encourage students to keep a running list in their science notebook. If there are any reasons above that were not mentioned by the students, you may choose to bring them up and discuss them.

**Materials:**

Supplies --

- *Here is the Wetland* by [Madeleine Dunphy](#)
- Utah Migratory Birds List (attached at the end of the lesson plan)
- 'Bird Adoption Request' Packets (1 per student, attached at the end of the lesson plan)
- Markers, crayons, glue, scissors, etc.

Equipment –

- Research books about migratory birds of Utah OR Internet access available to students

**Day 2–**

*The following activity has been modified from a lesson from the U.S. Forest Service. For the original lesson plan, follow the link under the 'resources' section.*

**Engage (10 minutes)** – Start by reading, *Here is the Wetland* by [Madeleine Dunphy](#). After reading the book, hold a class discussion in which the students can share what kinds of plants and animals they saw living in the wetland. Discuss why having a healthy wetland is so important to these plants and animals.

Focus the discussion on how wetlands provide a habitat for birds. You could ask the following questions:

Question – What do you think birds need and want in their ideal habitat? Why?

Question – What types of birds live in, or pass through Utah?

**Explore (35 minutes)** – Tell the students that for the activity, they will get to look into 'adopting a bird.' Remind the students that they will not *actually* be adopting a bird, but rather, just using their imagination. They need to determine which bird they would like to adopt, and then find out facts about the bird's needs and wants so that they can know how to take care of their bird.

Students will need to find out facts, see pictures, and learn about the habitat and needs of their bird. It would be the easiest to provide computers/lpads for students to use for research; however, the local school or public library may also have resources that you can use.

Students will first choose which migratory bird they would like to adopt. (Students may choose to adopt a bird individually, or work with a group.) Students can choose the bird that they want to adopt from the list of 'Migratory Birds' attached at the end of the lesson plan.

After they have determined which bird they will adopt, they will do the following activities as they fill out their 'Adoption Request Packet,' which is also attached at the end of the lesson plan.

1. On the first page of the packet, 'Get to Know Your New Friend,' students will list the name of their bird, and 5 characteristics of this bird. If desired, students can decide what name they will call their bird by. (For instance, Shaylyn

- may be the name that they choose for a Mallard Duck.)
2. On the next page of their packet, students will draw a picture of their bird. As an alternative, they can find and print a picture from the internet and glue the picture onto the page.
  3. On the third page, students will draw the path their bird takes when migrating. Students should use a star or another appropriate symbol to show both the winter and summer grounds that the bird lives in.
  4. Students will describe the habitat that their bird lives in by writing 3 or more sentences about it. If desired, students can also draw a picture of the habitat.
  5. Students will list at least 3 ways that the area around their school or neighborhood could be improved to better suit the needs of their bird. Students will list at least one thing that they could do this week to improve the area.

Creating this adoption packet will likely take 2 days. Allow students enough time that they can research their bird thoroughly and create a quality 'Adoption Request Packet.'

#### **Materials:**

Supplies --

- 'Bird Adoption Request' Packets (1 per student, attached at the end of the lesson plan)

Equipment --

- Bulletin board/portfolios

#### **Day 3 --**

If time permits on the third day, allow students to share their adoption packet with a partner, or if time is available, allow students to share their work with the whole class.

After the packets have been completed, students can display their work in a hallway or bulletin board, or may choose to put this packet into their yearly portfolio of work.

#### **Assessment:**

Students should be assessed on their 'Adoption Request Packet.' All pages should be completed, and the work within should be high quality in nature. For a rubric, see the end of the lesson plan.

#### **Extensions:**

- Take a field trip to a wetland. Have students use qualitative observations (visual/auditory) to describe the wetland quality in terms of its suitability as a habitat for birds. Then have students make quantitative observations (measuring temperature of air and water, dissolved oxygen, nitrogen, macroinvertebrate identification, etc.), and discuss how

## Did you know?

Not all wetlands are wet year-round. Some wetlands are only wet during certain seasons or times of the year.

<http://www.tracyaviary.org/development-v2/pdf/kwie/wetlandspamphletfinal.pdf>

these measurements could also indicate the quality of the wetland resources. To learn more about how to make quantitative observations, see the background information section.

- Visit Tracy Aviary in Salt Lake City (or have a representative come to you)! They have lots of educational, exciting programs that you can choose from. They have a program specifically on migration and wetlands. Their site reads: "Migration can be tough, so why do birds do it, and what helps them along the way? This program turns participants into migratory birds and sends them on a journey that reveals the importance of wetland stopover zones. Along the way, we'll also have up-close encounters with migratory and wetlands birds. This program may be presented to groups of up to 25 participants." There is a cost for these programs. Pricing, along with more information, can be found at <http://www.tracyaviary.org/school-and-community-outreach/>.
- Watch Bill Nye the Science Guy: Wetlands at the following link: <https://www.youtube.com/watch?v=3oGymnSJ4Ek&feature=kp>. The clip time is 23:01.

## Resources:

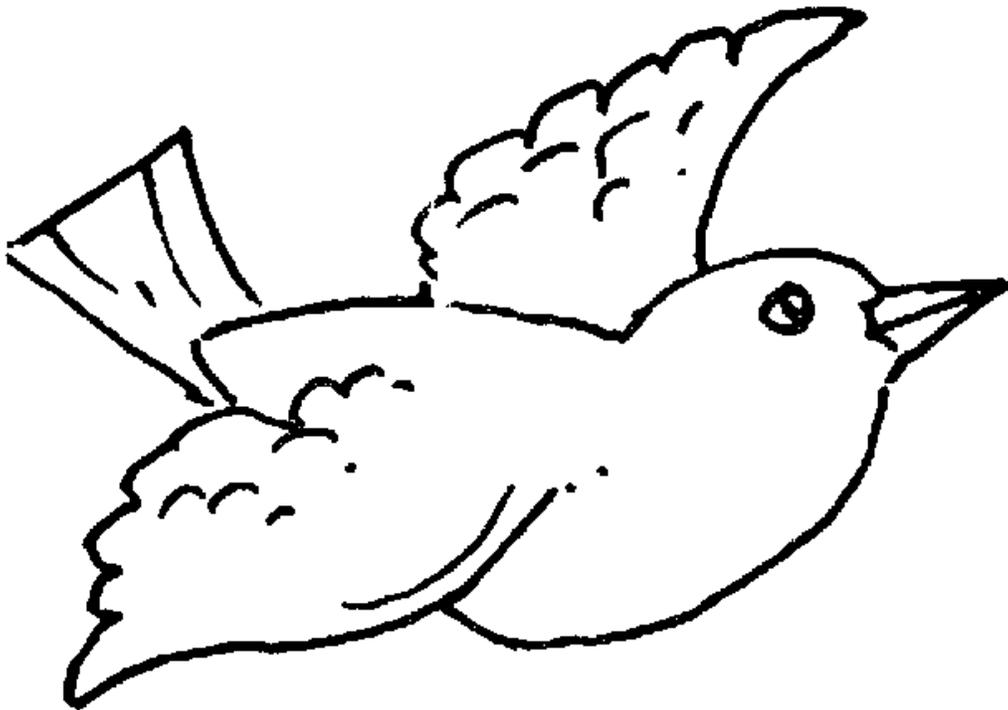
### Books

- *National Geographic Kids Bird Guide of North America: The Best Birding Book for Kids from National Geographic's Bird Experts* by Jonathan Alderfer
- *Wetlands* by Pamela Hickman
- *Here is the Wetland* by [Madeleine Dunphy](#)

### Websites

- Original 'Adopt-A-Bird' Lesson Plan and Resources -- <http://www.fs.fed.us/outdoors/naturewatch/implementation/Wildlife/Migratory-Bird-Day-Educators.pdf>
- Tracey Aviary Pamphlet "Wetlands" -- <http://www.tracyaviary.org/development-v2/pdf/kwie/wetlandspamphletfinal.pdf>
- Utah Birds (information on the birds found in Utah, which ones migrate, photos, etc.) -- <http://www.utahbirds.org/>
- What is a Wetland Video -- <https://www.youtube.com/watch?v=5RSNY0Vun3s>
- Bill Nye the Science Guy: Wetlands -- <https://www.youtube.com/watch?v=3oGymnSJ4Ek&feature=kp>

# Bird Adoption Request Packet



Name \_\_\_\_\_

Date \_\_\_\_\_

# Step 1: Get to Know Your New Friend

In order to adopt a bird, it's important that you know a lot about them. This will help you take better care of them, and will help you to know what their needs are. To start, list 5 basic characteristics or facts about the bird you are hoping to adopt. Also include the name of the bird (such as 'Eagle'), and the name you would like to call your bird (such as 'Kate').

1.

2.

3.

4.

5.

Name of bird species \_\_\_\_\_

Name I want to call my bird \_\_\_\_\_

## Step 2: A Portrait of my Bird

What does your bird look like? Remember to be detailed in your drawing, color neatly, and overall, present a great picture of what your bird looks like!



## Step 3: Migration Path

Where does your bird live in the summer? Where does it live in the winter?  
What path does your bird take when it migrates? Draw the migration path  
of your bird on the map below. Put a yellow star in your bird's summer  
home location and a blue star in your bird's winter home location.



# Step 4: My Bird's Habitat

What type of habitat does your bird live in? Write 3 complete sentences about your bird's habitat, and then draw a picture (or glue in a printed picture) of what your bird's habitat looks like.

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Step 5: What Can I Do?

Now that you know all about the habitat of your bird, its characteristics, its needs, and its wants, you may realize that your local wetland needs some help to provide a better home for your bird. List 3 things that could be done to make your local wetland a better home for your bird. Make sure one of your ideas is something that you can do!

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Congratulations! It looks like you qualify to adopt your  
new bird! 😊

## Bird Adoption Request Rubric

Each page of the packet is fully completed <i>(20 points)</i>	At least 3 pages of the packet are fully completed <i>(12 points)</i>	At least 1 page of the packet is fully completed <i>(4 points)</i>	No pages in the packet are fully completed <i>(0 points)</i>
The packet has been completed neatly and the work in the packet is consistently high quality work <i>(10 points)</i>	The packet has been completed neatly and the work in the packet is almost always high quality work <i>(6 points)</i>	The packet has been completed neatly and the work in the packet is occasionally high quality work <i>(3 points)</i>	The work in the packet is rarely or never high quality, neat work <i>(0 points)</i>

Student Name:

Score:        /30

Name \_\_\_\_\_

Date \_\_\_\_\_

## **Wetlands: What do you know?**

*Answer the following questions to the best of your knowledge. If you don't know the answer to a question, take your best guess!*

1. What is a wetland? \_\_\_\_\_

\_\_\_\_\_

2. How much of Utah's land is considered wetlands? \_\_\_\_\_

\_\_\_\_\_

3. What kinds of plants and animals live in wetlands? \_\_\_\_\_

\_\_\_\_\_

4. Why are wetlands important? \_\_\_\_\_

\_\_\_\_\_

5. Where are the wetlands in Utah located? \_\_\_\_\_

\_\_\_\_\_

# Utah's Migratory Wetland Birds List

<b>Species</b>	<b>Population</b>	<b>Remarks</b>
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