2nd Grade Curriculum

Platform: Wetlands

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Curriculum Overview

Ocean Discovery Unit

Guiding Concept: Students will study why wetlands are important; how animals utilize the wetlands as wildlife housing; and how we can protect wetlands in the future.

Science Discovery Process Focus:

- Make a Difference
- Explore and Wonder

NGSS Alignment

Next Generation Science Standards:

LS4.D: Biodiversity and Humans

- There are many different kinds of living things in any area, and they exist in different places on land and in water.
  - *Performance Expectation:* *Students will be able to make observations of plants and animals to compare the diversity of life in different habitats*.

Overarching Responsibilities of Lead Instructor:

- Classroom management & timing of lesson
- Execution of all lesson material in this curriculum
  - *Italics* – utilize the exact language when teaching
  - Regular – content that should be covered using language of your choice
  - (Parenthesis) – Teaching notes and actions
- Lead discussions & ask guiding questions to get students thinking about science
- Use Belief and Science Discovery Process exploration language during lesson
- Provide rules for activities
- Encourage participation from all students to create an inclusive environment
- Determine floor management with team BEFORE the start of the lesson

Overarching Responsibilities of Assistant Instructors:

- During lead instructor's introduction and closing:
  - Prep supplies quickly then join the class
  - Participate in any kinesthetic movements
  - Sit with students and model good listening behavior
  - Sit or stand near any students struggling to pay attention
- During hands-on portion:
  - Mentor students in your floor area by asking questions, providing guidance, and providing positive reinforcement
  - Engage students who are struggling

2nd Grade Story

Internal – Staff and Teachers

Students learn the importance of wetland ecosystems and explore how living things utilize the wetlands as a habitat.

During the classroom day, students are introduced to the wetland ecosystem and the organisms that live there by building a classroom wetland and populating it with native plants and animals. Students build belief that they are unique individuals who belong to a community of scientists by learning what scientists do and creating an action that represents them as an individual scientist.

During the Exploration Day at Living Coast Discovery Center, students build on the belief that they can recognize and do science, as they explore a real wetland and use scientific tools to investigate how birds, underwater animals, and insects use the wetlands as a habitat.

During the Make a Difference Day at the Living Lab, students discover and explore wetlands located within their community. Students experience being a Wetland Biologist by using their imagination and dressing up to explore the local canyon and by collecting and studying microorganisms that live in pond water. Students share the importance of wetlands with their community by painting a stone and placing it along a trail in the canyon to communicate the importance of the ecosystem and their love of the wetlands. Students meet and talk with science leaders who share their career pathways, challenges, and obstacles they have faced along the way. Collectively, these experiences build students' belief that science is important and relevant, that a career in science is a possibility for them, and that they can make a difference in the world.

Throughout the program, students love becoming wetland biologists, exploring the outdoors, using scientific tools, getting to know real science leaders, and making a difference in the world!

Invertebrates Are Everywhere Story

External – Students

I am excited to continue my journey with Ocean Discovery Institute in 2nd grade by learning about wetlands and the plants and animals that live there. Over the years, Ocean Discovery has helped me believe that science is something I can do, and a scientist is someone I can be.

On our first day, I meet the Ocean Discovery staff when they come to our classroom. We work together to build a model wetland for our classroom and fill it with drawings of plants and animals that live there. I think it's pretty cool that I know what a wetland is now! Later on, we learn some fun dances that relate to all the things scientists do and I even get to create my own dance that represents me as a scientist.

I am so excited when we get to the Living Coast Discovery Center to explore a REAL wetland! We see so much cool stuff and spend the whole day talking about how different animals use the wetland as a home - wildlife housing! I discover that all kinds of animals, including invertebrates, birds, and sharks live in the wetlands. I even get to touch a shark! Pretty cool!

On our last day we go to the Living Lab and explore a wetland that is right in my own neighborhood- who knew? We dress up as wetland biologists and explore the wetland ecosystem in the canyon. We take a closer look at some of the animals that live there by using bug boxes and other tools. One of my favorite parts of the day is when we collect water from what looks like an ordinary puddle and bring it back to the lab to look at it under a microscope. Wow- there are all kinds of tiny things living in the water. I would never have guessed that! Before lunch, we get to meet a real science leader who tells us about how they got to be a scientist and lets us ask questions about their job and what kinds of things they do as a scientist. It got me thinking that I might want to be a scientist someday. After everything I've learned about how important wetlands are for plants and animals, I am excited that we get to paint a rock with a word and a drawing to express how much I love this place. Our rocks are placed along a trail in the canyon so other people can learn how important this place is too. I really like making a difference and helping my new wetland friends!

Community Building Day

In-School Experience

Goal: Students establish belief that they are a unique individual contributing to a community of science.

Visuals:

- Community Agreements poster
- Science Discovery Process poster w/ Velcro pieces
  - \\vmfile01.aquatic.com\Master Files\Curriculum\SI New
- Wetland Poster
  - \\vmfile01.aquatic.com\Master Files\Curriculum\SI New\Lower Elementary (K-2)\2nd Grade\Community Building Visuals
- Wetland Video (uploaded on teacher portal)
  - \\vmfile01.aquatic.com\Master Files\Curriculum\SI New\Lower Elementary (K-2)\2nd Grade\Community Building Visuals

Supplies:

- Chart paper
- Sharpies (3)
- Giant butcher paper drawing of wetland
  - Protocol for creation in SI Manual
- 6-8 Plastic Bins with minimal art supplies
  - Multiple pieces of colored & white paper in small squares (1 per student)
  - 20-30 markers of various colors
  - 2-3 safety scissors
- Laminated "Wetland Plant ID Card" (8)
- Laminated "Wetland Land Animals ID Card" (8)
- Laminated "Wetland Birds ID Card" (8)
- Laminated "Wetland Water Animals ID Card" (8)
- Rolls of tape (2)

Timing:

Time	Activity	Learning Cycle
0:00 – 0:15	Introduction & Discovery Dances	Engagement
0:15-0:20	Wetland Intro	Exploration
0:20-0:35	Create Wetland Animals	
0:35-0:50	Populate the Wetland	Guided Analysis
0:50 – 1:00	Reflection	Reflection

Lead Instructor Set Up & Teaching Notes:

- ☐ Introduce yourself and staff to teacher
- ☐ **Collect waivers from teacher**
- ☐ Ask teacher if they would prefer you to write on board or chart paper
- ☐ Invite teacher to participate throughout and explain when you and staff will need their help during the lesson:
  - Participate in Discovery Dances
  - Help students create animals during activity, organize students for self-reflection, etc.
- ☐ Discuss floor management plan with other staff
- ☐ Use attention getters whenever necessary. (i.e. transitioning from activity to activity, when giving a set of directions, when bringing the class together to share out, etc.)
  - Use the Scientist dances and their unique Be a Scientist movement as an attention getter

Assistant Instructor Set Up:

- ☐ Cue up Wetland video from teacher portal
- ☐ Write the word "Wetlands" on the board/chart paper
- ☐ Bring all visuals to front of classroom
  - Community agreements poster
  - Science Discovery Process poster
  - Wetland posters
- ☐ Tape butcher paper wetland near the front of the room.

Assistant Instructor Teaching Notes:

- ☐ During Lead instructor's introduction:
  - Prep supplies quickly then join the class
  - Help move students into a circle
  - Look for students who are struggling to come up with a unique What Scientists Do movement for themselves.
    - Ask them to describe what a scientist does and then help them come up with a corresponding movement.

<u>Introduction & Discovery Dances</u> (15 minutes)

- (Have students sit or stand in a circle.)
- Introduce Ocean Discovery Institute.
    - Give a very brief overview of the program (3 days, 1 class visit, 1 exploration day, etc.).
- All staff take one minute each to introduce themselves and share their story.
    - (Details for your story can be found in **SI Education Guide**)
- Introduce the concept of being a scientist with Ocean Discovery Institute. Potential questions include:
    - What are some things you think scientists do?
- Introduce Scientist Dances using the Science Discovery Process poster.
    - Go through each thing scientists do while providing a brief explanation and the movement associated with it.
    - Have students copy each movement.
        - Example: Scientists Explore and Wonder! (Add Explore and Wonder to the poster.) Scientists are always wondering about the world around them and asking questions- just like many of you said. They make observations about things they see and hear while exploring the natural world. To remember that scientists Explore and Wonder we cross our arms, rub our chins, and make a questioning face as we explore and wonder. Let's practice this. Can everyone say, "Explore and Wonder!" Great! Can everyone show me Explore & Wonder?
- Scientist Dances & Brief Descriptors of the Science Discovery Process:
    - <u>Explore and Wonder</u>*: Scientists are always wondering about the world around them and how it works. Scientists ask lots of questions and take time to explore.*
        - **Dance move**: Crossed arms/rub your chin/ make a questioning face.
        - **Sound**: Wonder!
    - <u>Investigate</u>*: Scientists like to make lots of observations and collect information when exploring. They can do this using any of their senses like seeing, hearing, touching, tasting and smelling.*
        - **Dance move**: Hands up to eyes like binoculars & look side to side.
        - **Sound**: Investigate!
    - <u>Analyze</u>*: Once scientists make some observations they like to look for patterns and try to come up with explanations for their questions.*
        - **Dance move**: Typing on keyboard.
        - **Sound**: Analyze!
    - <u>Communicate</u>*: Scientists know it is really important to share the things they learn with other people.*
        - **Dance move**: Turn to your left and give a high-five, continue high-fiving around the circle until the high-five returns to the first person. (This can be done in the future with smaller groups.)
        - **Sound**: Communicate (say it as they pass the high-five)!
    - <u>Make a Difference</u>*: Scientists work to make the world a better place with the things they learn.*
        - **Dance move**: Stand like a superhero with legs apart and hands-on hips.
        - **Sound**: Make a difference!

- Have students go through the series of Scientist Dances <u>while saying the words</u> a couple of times. (You can change it up by doing slow motion, speed up version, super quiet, super loud, etc.)
- Introduce uniqueness and have students create a dance move that represents them as a scientist. Be sure to include:
    - We are all scientists, but we are not all the same. We all think differently and have different ideas – that is what makes science exciting!
    - Students need to create their own dance move to represent themselves as an individual different from the rest of the scientists in the group.
    - The dance move can be anything, but it should be different from the ones they already learned.
    - Have students close their eyes for a moment and picture themselves exploring or investigating or analyzing, etc.
        - Create a dance movement that represents how you see yourself.
        - Example: I closed my eyes and pictured myself as a scientist studying lions. I realized I needed to be able to sneak up on lions if I want to study them so my movement will be me peeking through the bushes (demonstrate movement).
    - (Give students 30-60 seconds to think silently about how they want to represent themselves as a scientist.)
    - *In a moment, I will say the words "Be a scientist!" and you will show me your dance move while saying the words "I am a scientist!" Let's try it. "Be a scientist!"*
    - (Students should show their dance move and yell out "I am a scientist!". You may need to practice this a few times.)
    - (If time allows go through all Scientist dance moves again and add personal scientist movement in and say "Be a Scientist!".)
- Great job scientists!
- (Have students sit on the floor.)
- Since we are all scientists, we need to agree to certain rules in order to work together.
- Share community agreements with students.
    - (Show community agreements poster.)
    - (Have students read them out loud and ask what each one means to them.)
        - Be your best self: Responsible, helpful & kind, include others
        - Be safe: make good decisions to keep each other safe
        - Be respectful: staff, materials, classmates, each other, environment
        - Be curious: ask questions, support each other as we try new things
- Ask students if they can all agree to these community agreements since they are scientists with Ocean Discovery with a verbal "yes" or thumbs up, etc.
- Introduce the "Be a scientist!" cue as an attention getter for the day.
    - When I say "Be a scientist!" you say "I am a scientist!", show me your scientist dance, and wait quietly for instructions

<u>Wetland Intro</u> (5 min)

- Introduce wetlands. Be sure to include:
    - We will be Exploring and Wondering about a special ecosystem here in San Diego called wetlands.

        - (Point to Explore and Wonder on Science Discovery Process poster and do the "Explore and Wonder" scientist dance).
    - Introduce "Wetland Video".
        - Ask students to investigate the wetland by making observations while watching.
            - (Point to Investigate on Science Discovery Process poster and do the "Investigate" scientist dance.)
    - (Show "Wetland Video".)
        - (Show "Wetland Poster" if technology is an issue.)
    - Review video and define a wetland.
        - Ask students what observations they made.
        - Ask students to define wetland.
            - (Write "Wetland" on the board.)
            - Definition of a wetland: where water and land meet, wet-land
    - Brainstorm types of plants and animals that might live in a wetland.
        - Plants, scrubs (not a lot of trees), flowers
        - Insects, rays, birds, rodents, butterflies, fish, etc.
    - Plants and animals can be found all around the wetlands. In the water, on the land, or where the water meets the land.

Create Wetland Animals (15 minutes)

Assistant Instructor Set Up:

- ☐ Place laminated "Wetland Plant and Animal ID Cards" on table (1/student)
    - Try to get a variety of cards at each table.
- ☐ Place 1-2 art bins on the center of each table.
    - Add a small piece of paper for each student to the bin.
- ☐ Write these sentence frames on board/chart paper in large handwriting, "My plant/animal is a _____." "I think it lives _____ because _____."

Assistant Instructor Teaching Notes:

After the instructor intro:

- ☐ Walk around the classroom and help students decide which plant/animal to make.
- ☐ Help students create organisms, encourage students who are struggling to get started.
- ☐ As students are working stop and ask them the following questions so they are ready to place their organism in the wetland when it is time.
    - What plant or animal are you building? Why did you choose that?
    - Where do you think your plant/animal lives in the wetlands? Why?
    - What do you wonder about this plant/animal?
    - What questions do you have about this plant/animal?
    - What are you excited to explore in the wetlands?
- ☐ If a student finishes their plant or animal before time is up explain that they can create another plant or animal.
- ☐ Help students who are finished tape their organisms into the wetland.
- ☐ Throw away any old/used up art supplies.

- (Have students return to their seats.)
- Introduce creating wetland plants and animals. Talking points should include:
    - Students will be creating wetland plants and animals to fill a wetland that will stay in their classroom.
    - Each person has a wetland plant and animal key which shows several of the plants and animals that can be found in our local wetlands.
    - Each student can choose one plant or animal to create and place in their classroom's wetland.
    - Everyone will get a piece of paper and can use anything in the art bin to create their wetland plant or animal.
    - (Give students 30 seconds to look over their ID cards and pick a plant or animal they want to create.)
    - (Have students give a thumbs up when then have decided on an animal.)
    - Students will have 10 minutes to work.
    - Drawings do not need to be perfect but need to be complete when time is up. The goal is to have as many plants and animals in the wetland as possible.
    - If a student finishes early they can cut out their animal using scissors or create another plant or animal for the wetland.
- Ask students to reach into the art bin and make sure everyone at their table has a piece of paper to draw on.
- (Put a visual timer up on the board and tell students to begin working.)
- (Give students lots of verbal reminders of time.)
- (If a student finishes early remind them that they can create another plant or animal.)

Populate the Wetland (15 min)

Assistant Instructor Set Up:

- Quickly collect art supplies
- Give each adult a roll of tape.

Assistant Instructor Teaching Notes:

- Give each student a piece of tape and show them how to attach it to their plant/animal while the first group is putting their animals in the wetland so that they are ready to go when called.
- Help your group place their plants/animals in the wetland as quickly as possible so that all the groups have time to come up.
- Demonstrate with Lead Instructor what it looks like to make eye contact when sharing.

- Tell students time is up.
    - (Collect art supplies.)
    - (Have each adult in the room work with one table of students.)
- (Pair students up.)
- *Okay scientists! It is time to communicate your new knowledge!*
    - (Point to Science Discovery Process poster and high-five a student.)
- Introduce how to share information with a scientific partner. Talking points should include:
    - Everyone will share their new knowledge with a partner.

- Each student will tell their partner what plant or animal they drew and where they think it spends most of its time in the wetlands – the water, the air, the land, on a plant, etc.
  - (Direct students' attention to sentence frame on the board.)
    - My animal (or plant) is a _____.
    - I think it spends most of its time _(air/land/water)__ because _____.
    - For example, you might say something like:
      - My animal is a great white heron. I think it spends most of its time in the air because it is a bird and has wings to fly.
- (Give students one-minute to silently think about how they want to fill in their sentence frames on the board.)
- (Choose a partner to share first. Example: Partner with the shortest hair will go first.)
  - (Give the first partner 30 seconds to share.)
- Let students know it is time for the other partner to share.
  - (Give the second partner 30 seconds to share.)
- (While students are sharing, hand out a piece of tape to each student.)

- Introduce how to populate the classroom wetland:
  - Introduce 2D Wetland.
    - It will remain in their classroom- just needs plants and animals.
  - Invite one table at a time to place animals in the wetland.
  - Students will use their piece of tape to stick their plant or animal in in the wetland.
  - Students should place their plant or animal in the area they think it spends the most time.
  - Once a student has taped their animal they are to quickly return to their seat.
  - (Invite students up one table at a time to place organisms in wetland.)
- Once all animals are in the wetland:
  - *Look at your amazing wetland! Scientists, you have done a great job putting lots of plants and animals into your wetland.*
- Introduce the concept of diversity. Talking points should include:
  - Have students acknowledge the many different types of plants and animals they created = diversity of plants and animals.
  - Define diversity = lots of different types
  - Healthy wetlands have a diversity of plants and animals.

Self-Reflection (10 min)

Assistant Instructor Set Up:

- ☐ Collect and put away all art bins
- ☐ Collect visuals
- ☐ Collect Wetland Plant and Animal ID Cards

Assistant Instructor Teaching Notes:

- ☐ Help get students into two lines and join the line to yourself.
- ☐ While students are partner sharing help them be good listening partners.
- ☐ Make sure both partners are getting a chance to share.

- (Have students line up in two equal lines facing each other. Incorporate adults.)
    - (Have students line up by tables.)
    - (Have students reach out their hands to touch the person across from them and make sure everyone has a partner.)
- *Alright scientists we are going to communicate again. Communication is a way to share your thoughts with another scientist and then with the whole group. Communication is a great way to hear what other scientists are thinking!*
    - (Point to Communicate on Science Discovery Process poster and high-five a student).
- Lead students through a pair-share where they show the person across from them their "Be a Scientist" dance move and explain what they are doing.
    - (Choose a partner to share first. Example: Taller partner will go first.)
        - (Give the first partner 30 seconds to share their dance and explain it.)
    - Let students know it is time for the other partner to share.
        - (Give the second partner 30 seconds to share.)
- Talk about uniqueness and belonging.
    - Have all students show their "Be a scientist!" dance move and freeze.
    - Have students look around and notice the diversity of dances.
        - We are all scientists, but we are not all the same.
        - Just like a healthy wetland has many different types of plants and animals a strong scientific community has many different scientists.
- If time allows lead students through a think-pair-share for the following question:
    - We will be visiting a real wetland the next time you meet with Ocean Discovery Institute. What do you wonder about the wetlands?
- *Thank you for doing science with me today!*
- *You have explored wetlands and learned about some of the plants and animals that live there.*
- *I want to encourage you to share your "Be a Scientist!" dance move and everything you learned about wetlands with your friends and families tonight.*
- *Alright scientists, I want to share something all Ocean Discovery scientists do at the end of the day with you. Because we think science and learning about science is so awesome at Ocean Discovery Institute, we say "Go Awesome!" at the end of every day. Since you are all scientists let's say it together. One the count of three we will say "Go Awesome!" 1, 2, 3… Go Awesome!*

Exploration Day

Coastal Field Experience

Goal: Students build belief that they can recognize and do science.

Visuals:

- Community Agreements poster
- Science Discovery Process poster

Supplies:

- Ocean Discovery Institute Field Trip Volunteer Card print out (1/adult volunteer)
- Cover sheet (1/class)
- 1 visor (1/student + 1 adult)
    - 4 colors (so each group has their own color visor)
- Explorer Backpacks (1/student)
    - Binoculars
    - Hand lens
    - Wetland Animal ID Cards (Laminated)
    - Pencil
    - Science Notebook
    - Clipboard
    - Full water bottles
- Instructor backpacks (1/instructor)
    - Mini white boards
    - Dry erase markers (2)
    - Dry erase eraser (1)
    - 20-30 colored markers
    - Rubber bands so Community Agreements poster can be rolled up and carried in backpack
    - Hand sanatizer
- Manila folder (1/class)
    - To store student science notebooks to be returned on Living Lab day
- Tarps (2-4)
- Lens paper (1000 sheets total for program)

Timing:

On Time (Early Start Schools):

On Time	Group 1	Group 2	Group 3
9:30-9:40	Arrival		
9:40-10:00	Intro + Community Agreements **USFWS Breezeway**	Intro + Community Agreements **Overlook**	Intro + Community Agreements **Compost Garden**
10:00-10:40	Insects	Birds	Underwater Creatures **Shark & Ray Encounter** **10:25 -10:35AM**
10:40-11:10	Lunch + Bathroom **Outdoor Classroom**		
11:10-11:50	Underwater Creatures **Shark & Ray Encounter** **11:35 -11:45AM**	Insects	Birds
11:50-12:30	Birds	Underwater Creatures **Shark & Ray Encounter** **12:15 -12:25PM**	Insects
12:30-12:50	Self-Reflection **Overlook**	Self-Reflection **Compost Garden**	Self-Reflection **USFWS Breezeway**
12:50-1:00	Clean up + Goodbye + Load Buses		

A Little Late/Late Start Schools:

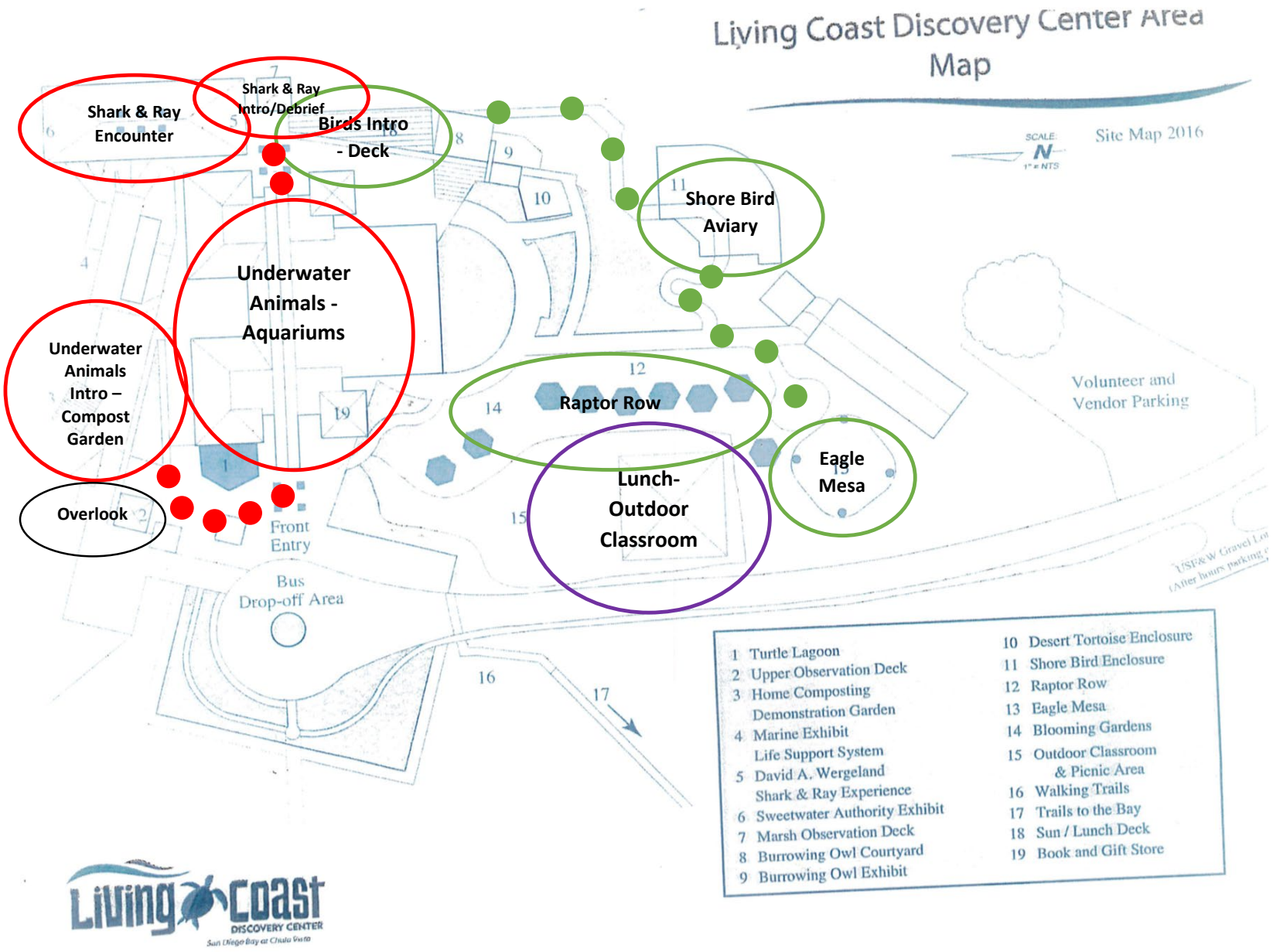
On Time	Group 1	Group 2	Group 3
9:45-9:50*	Arrival		
9:50-10:10	Intro + Community Agreements **USFWS Breezeway**	Intro + Community Agreements **Overlook**	Intro + Community Agreements **Compost Garden**
10:10-10:50	Insects	Birds	Underwater Creatures **Shark & Ray Encounter** **TBD** ***Ideal: 10:35 -10:45AM***
10:50-11:15*	Lunch + Bathroom **Outdoor Classroom**		
11:15-11:55	Underwater Creatures **Shark & Ray Encounter** **TBD** ***Ideal: 11:40-11:50AM***	Insects	Birds
11:55-12:35	Birds	Underwater Creatures **Shark & Ray Encounter** **TBD** ***Ideal: 12:20 -12:30PM***	Insects
12:35-12:55	Self-Reflection **Pollinator Garden**	Self-Reflection **Compost Garden**	Self-Reflection **USFWS Breezeway**
12:55-1:00*	Clean up + Goodbye + Load Buses		

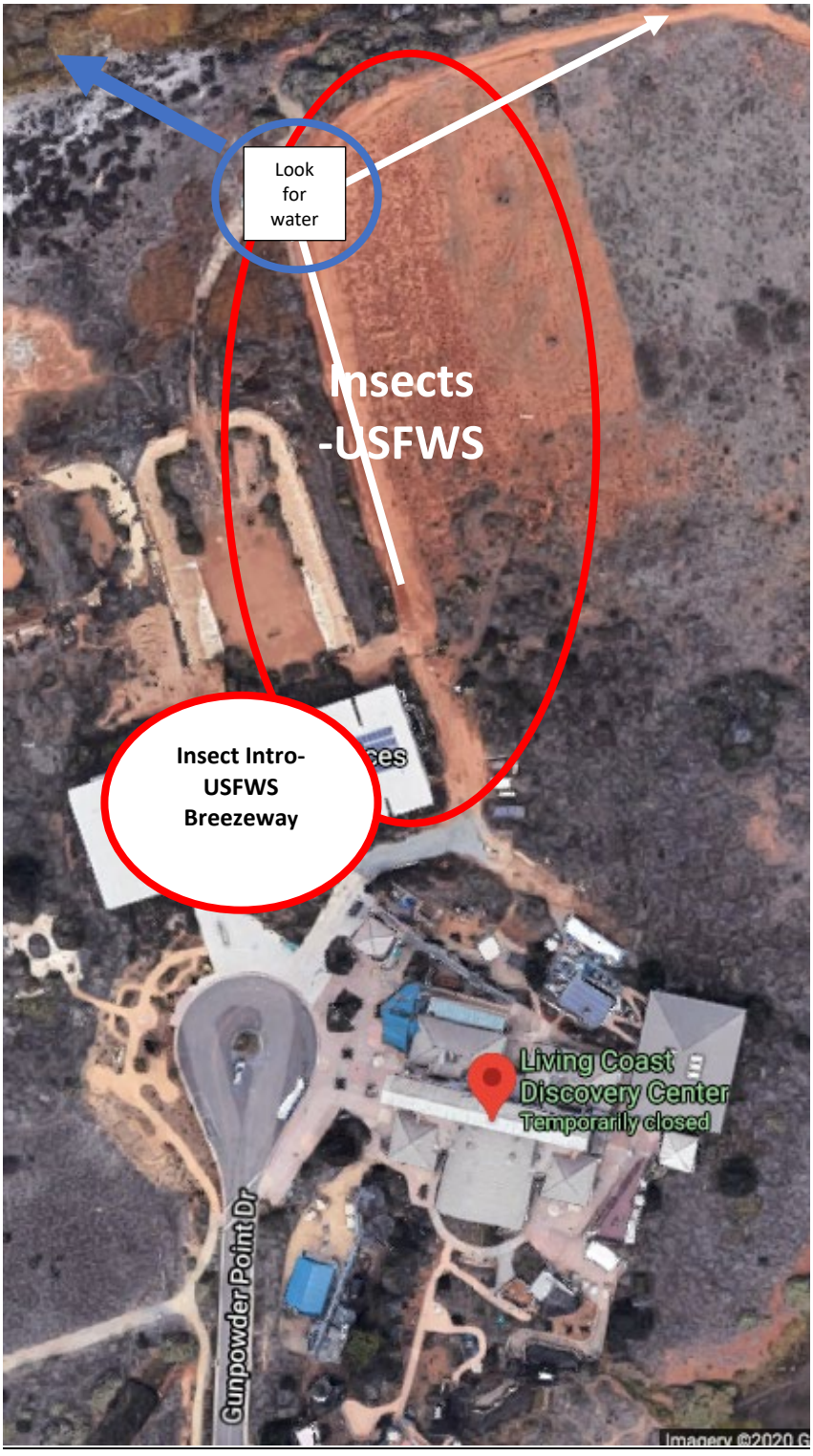
*5 minutes less time at this station

A Lot Late:

On Time	Group 1	Group 2	Group 3
9:50-10:00	Arrival		
10:00-10:20	Intro + Community Agreements **USFWS Breezeway**	Intro + Community Agreements **Overlook**	Intro + Community Agreements **Compost Garden**
10:20-11:00	Insects	Birds	Underwater Creatures **Shark & Ray Encounter** **TBD** ***Ideal: 10:45 -10:55AM***
11:00-11:25*	Lunch + Bathroom **Outdoor Classroom**		
11:25-12:00*	Underwater Creatures **Shark & Ray Encounter** **TBD** ***Ideal: 11:45-11:55AM***	Insects	Birds
12:00-12:35*	Birds	Underwater Creatures **Shark & Ray Encounter** **TBD** ***Ideal: 12:20-12:30PM***	Insects
12:35-12:55	Self-Reflection **Pollinator Garden**	Self-Reflection **Compost Garden**	Self-Reflection **USFWS Breezeway**
12:55-1:00*	Clean up + Goodbye + Load Buses		

*5 minutes less time at this station


Living Coast Discovery Center Area Map
Site Map 2016
SCALE: N 1" = NTS
Shark & Ray Encounter
Shark & Ray Intro/Debrief
Birds Intro - Deck
Shore Bird Aviary
Underwater Animals - Aquariums
Underwater Animals Intro – Compost Garden
Overlook
Raptor Row
Eagle Mesa
Lunch-Outdoor Classroom
Volunteer and Vendor Parking
Front Entry
Bus Drop-off Area
1 Turtle Lagoon
2 Upper Observation Deck
3 Home Composting Demonstration Garden
4 Marine Exhibit Life Support System
5 David A. Wergeland Shark & Ray Experience
6 Sweetwater Authority Exhibit
7 Marsh Observation Deck
8 Burrowing Owl Courtyard
9 Burrowing Owl Exhibit
10 Desert Tortoise Enclosure
11 Shore Bird Enclosure
12 Raptor Row
13 Eagle Mesa
14 Blooming Gardens
15 Outdoor Classroom & Picnic Area
16 Walking Trails
17 Trails to the Bay
18 Sun / Lunch Deck
19 Book and Gift Store
Living Coast DISCOVERY CENTER


Look for water
Insects -USFWS
Insect Intro- USFWS Breezeway
Living Coast Discovery Center
Temporarily closed
Gunpowder Point Dr

<u>Arrival</u> (10 min)

Trip Lead Notes:

- ☐ Make sure all staff know how they are getting into the Living Coast Discovery Center facility.
  - Carpool – Everyone meet/park in the bus lot and take 2-3 cars into the Living Coast Discovery Center staff lot. We can also use the CVNC spots that are in the FWS lot.
  - Make sure everyone knows the speed limit inside the preserve is 15 MPH.
- ☐ Discuss with Ocean Discovery staff who will take on each of the **Arrival Tasks** (see below).
- ☐ Decide where each group will meet when students get off the bus.
- ☐ Go inside the LCDC Education Office and confirm lunch spot (should be outdoor classroom), confirm Shark and Ray times (should be as listed on curriculum but communicate any changes to staff), and look at board for any updates.

Program Set Up:

- ☐ Have Ocean Discovery Institute Field Trip Volunteer Cards at bus meeting location
- ☐ Set out by group meeting area:
  - Explorer backpacks (1/student)
  - Water bottles (1/student)
- ☐ At Insects Station:
  - Place tarps down in a square so that students can sit on them
- ☐ At each station (Birds, Insects and Underwater Creatures):
  - Community Agreement poster (1)
  - Visors (1/student+ 1/adult)

- Trip Lead: Meet buses, introduce yourself to teachers, and assign instructors to groups before they get off the bus.
  - Each group will be one full class.
- (Begin Arrival Tasks.)
  - (Note: The below should take place <u>simultaneously</u> so students are unloading, meeting their group and having a bathroom break, while the Trip Lead and classroom teachers are dealing with rosters and another of the lead instructors is meeting with adult chaperones.)
  - <u>Trip Lead</u>
    - Take teachers aside and have them note any students absent on the roster and sign a cover sheet stating they've collected all waivers to the best of their ability.
  - <u>Lead Instructor</u>
    - Take adult chaperones aside and discuss expectations for the day.
    - Provide each one with an "Ocean Discovery Institute Field Trip Volunteer Card" and explain how they can be most helpful today:
      - No cell phones unless snapping a quick picture.
      - Interact with the students. Ask them questions. Don't be worried if you don't know the answers to things, that is okay!
        - On your card there is a short list of some questions you can ask students.

- Participate with the group. Sit in the circle with the students. Do dances, answer questions, be a partner with a student during pair-shares.
- Please no side conversations while the instructor is talking.
- Have fun!

▪ Have chaperones help take lunches from the bus and <u>place them in the sheds</u> in the outdoor classroom area.

- <u>Lead Instructor (Different from above)</u>
  - ▪ Dismiss students off the buses and send them to meet their assistant instructor.
  - ▪ Once all buses are dismissed help with bathroom break.
- <u>Other Assistant Instructors</u>
  - ▪ Meet students in their group as they get off the bus. Distribute:
    - Backpacks
    - Water bottles
    - Lunches into backpacks
  - ▪ Send students for bathroom break once Lead Instructor has dismissed all buses.
    - Look at turtles while you wait for everyone to return from bathroom.
    - Play ice breaker games.
  - ▪ As soon as your group and Lead Instructor is ready, walk to your Intro and Community Agreements area and begin.

Introduction & Community Agreements (20 minutes)

Assistant Instructor Teaching Notes:
- Distribute visors (1 color/group)
- Sit with students during community agreements intro
- Wear a visor! Students love to do what you do!
- Help students develop a team cheer w/ a science focus

- (Have students sit or stand in a circle.)
- All staff + volunteers take one minute each to introduce themselves and share their story.
    - Details for story can be found in **SI Education Guide.**
- Introduce Living Coast Discovery Center.
    - We are next to San Diego Bay.
    - Surrounded by Sweetwater Marsh which is a protected wetland.
    - The Living Coast Discovery Center was founded in 1987 but it was called the Chula Vista Nature Center back then.
    - Over 300 people work and volunteer here. The LCDC's goal is to inspire people to learn about and visit this natural environment.
    - This is a place where we can discover the different animals that live in the wetland up close.
- Review Scientist Dances:
    - We will be scientists investigating the wetlands here at LCDC.
    - Review what scientists do using the Scientist Dances.
        - Go through motions a few times, you can change it up by doing slow motion, speed up version, super quiet, super loud, etc.
- Introduce scientific visors:
    - Scientists work as a team.
    - Look around you- these are your fellow scientists.
    - We will all have the same color visor to signify our unity as a team.
    - Adults will have visors as well because they are part of the team so feel free to ask them questions throughout the day!
    - Pass out visors to students and adults.
        - Have students write their name on visor (not too large because they will decorate later today).
- Remind students that although they belong to a group of scientists (point to your visor) each of us is a unique scientist who has their own thoughts, ideas, and questions.
    - (Have students do their Be a Scientist! dance move from the Community Building Day.)
- Review community agreements:
    - (Show community agreements poster.)
    - Scientists who work together must have a set of agreements they adhere to.
    - What does each of these mean to you?
        - Be your best self: Responsible, helpful & kind, include others
        - Be safe: make good decisions to keep each other safe, always stay with the group
        - Be respectful: staff, materials, classmates, each other, environment, other guests of the discovery center

        - Be curious: ask questions, support each other as we try new things
    - Ask students to abide community agreements with a verbal "yes" or thumbs up, etc.
- Introduce explorer backpacks:
    - All scientists need tools to do science and explore and wonder.
    - Each backpack has tools and a science notebook.
    - You may use any tool at any point today.
    - Tools should be used to explore and try to answer some wonders.
    - You are responsible for your backpack all day.
    - (Give students time to look through backpack.)

<u>Intro:</u>

- Review wetlands. Talking points should include:
    - Review the definition of a wetland – where land and water meet.
- Introducing the Living Coast as a wetland. Potential questions could include:
    - Do you think you are in a wetland?
        - Yes, even though students can't see water right now they will at some point today.
    - Do you remember any of the plants or animals you put in your wetland habitat back in your classroom?
    - Do you think you will see any of those plants and animals today?
- *Last time we met we learned that lots of plants and animals make the wetlands a home.*
    - *What are some things you do at home?* (Eat, sleep, watch tv, hang out with family, etc.)
    - *Many animals do the same kinds of things here in the wetlands because this is their home!*
    - *Animals find food to eat, live with their families, sleep, rest, etc. here in the wetlands. The wetlands are wildlife housing for animals.*
        - (Introduce Wildlife Housing dance move.)
        - (Have students practice wildlife housing a few times.)
- *Throughout the day we will look at how different types of animals use the wetlands as wildlife housing.*

Insects (40 minutes)

Assistant Instructor Teaching Notes:

- Use "Wildlife Housing" and "Be a scientist!" movement as attention getters through your time at this station.

Timing for this station:

- Intro (5 min)
- Walk along path towards water (12 min)
- Stop at bend in trail where you can look at water (6 min)
- Return walk along pathway back to start area (12 min)
- Debrief (5 min)

Intro:

- *Today we will be using one of our most important tools as scientists- a science notebook.*
- *Remember that scientists Explore and Wonder. (*Do the Scientific Dance for Explore and Wonder.*) Scientists need a place to write down their questions and thoughts while they are exploring.*
- *Scientists also Investigate which means they make observations about what they see.* (Do the Scientific dance for Investigate.*) It's important for scientists to write down the things they observe so they don't forget them -therefore we have a science notebook.*
- *Science notebooks are a great tool for recording things you see, and questions and thoughts you have. These notebooks can be used anywhere- in the lab, in the field, at your home. At the end of this program your science notebook will be yours to take home.*
- *At this station we will explore how the wetlands are used as wildlife housing by insects.*
  - (Do the Wildlife Housing dance move.)
- *While we walk along this trail your job is to explore and investigate (*Do the Explore and Investigate Scientists Dances) and *to write down two observations and one question in your science notebook that the wetlands are wildlife housing for insects and one question you have while exploring*.
  - (Show student the page they will write on "Wildlife Housing – Insects".)
  - Share an example with students (i.e. you see a spider web on a bush- that is evidence that a spider is living here in the wetlands.)
- *You can use any of the tools in your backpack to help you. You will have 20 minutes to explore while we are walking.*
- *Remember that one of our community agreements is to Be Safe! so while we are exploring you need to stay between myself and (Assistant instructor's name). You may stop and look and anything you want as long as you don't get ahead of me or behind (Assistant instructor's name).*
- *Any questions?*

Walk:

- (Have students open to "Wildlife Housing – Insects" page in their science notebook.)
- (Begin the walk.)
- (The Lead Instructor and assistant instructor should spread out and give students lots of space to explore.)

- (Lead and Assistant instructors should interact with students as much as possible. Remember the goal is for students to feel like they **recognize and do science** so phrase questions accordingly!)
- Potential questions to ask students include:
    - How are you using science to look at this?
    - What are you wondering about?
    - What evidence are you finding of insects living in the wetlands?
    - Why do you think these insects would want to live here?
    - What tool(s) are you using to help you explore?
    - What have you written in your scientific notebook?

<u>At the Bend in the Trail:</u>

- (When you get to the bend in the trail stop the group and have them look for the water.)
    - Once they find it, remind them they are in a wetland.
- Let students know you will be walking back to where they started and that by the time you get back they must have at least <u>two</u> observations that the wetlands are wildlife housing for insects and one question in their science notebook.

<u>Debrief:</u>

- (Once you have returned to the tarps have students put all tools back into backpacks and sit in a circle on the tarps.)
- Debrief with students.
    - Must ask questions:
        - *What evidence did you find that the wetlands are wildlife housing for insects?*
            - Actual insects, holes, webs, scat, etc.
        - *How do insects use the wetlands?*
            - Food, avoid predation, place to sleep/live, etc.
    - Additional questions if time allows:
        - While you were doing science which tools did you use from your backpack and why?
        - Were there any other types of animals you saw evidence of besides insects?
- *Great job scientists! It's time to explore another area!*

Underwater Animals (40 minutes)

Assistant Instructor Teaching Notes:

- Use both "Wildlife Housing" and "Be a scientist!" movement as attention getters through your time at this station.

Timing for this station:

- Intro (5 min)
- Walk through aquarium (15 min)
- Shark & Ray Intro (5 min)
- Shark & Ray Encounter (10 min)
  - ***Please note your time slot for the Shark & Ray Encounter on the schedules above. You must be in and out of the exhibit during this timeframe.***
- Debrief (5 min)

If this is your first station:

- *Today we will be using one of our most important tools as scientists- a science notebook.*
- *Remember that scientists Explore and Wonder. (*Do the Scientific Dance for Explore and Wonder.*) Scientists need a place to write down their questions and thoughts while they are exploring.*
- *Scientists also Investigate which means they make observations about what they see.* (Do the Scientific dance for Investigate.*) It's important for scientists to write down the things they observe so they don't forget them -therefore we have a science notebook.*
- *Science notebooks are a great tool for recording things you see, and questions and thoughts you have. These notebooks can be used anywhere- in the lab, in the field, at your home. At the end of this program your science notebook will be yours to take home.*

Intro:

- *Remember the wetlands are wildlife housing for lots of plants and animals. Show me Wildlife Housing!*
- *At this station we will explore how the wetlands are used by underwater creatures. Remember wetlands are where water and land meet so the water is part of the wetlands.*
- *While we walk through the exhibit your job as a scientist is to explore and wonder and use tools in your backpack and to make one observation in your science notebook that the wetlands are wildlife housing for underwater animals and one question you have while exploring. You will have 10 minutes to explore.*
  - (If this is your first station – show students the page they are working on and do an example.)
- *We are going to walk through the aquarium together. Remember that one of our community agreements is to Be Safe! so while we are exploring you need to stay between me and (Assistant instructor's name). You may stop and look and anything you want as long as you don't get ahead of me or behind (Assistant instructor's name).*
- *Another of our community agreements is to Be Our Best Selves! We want to make sure we are respectful of the Living Coast Discovery Center so we will walk inside and use indoor voices. Any questions?*

LCDC Aquariums:

- (Have students open to "Wildlife Housing – Underwater Animals" page in their science notebook.)
- (Walk students into the aquarium. The lead and assistant instructors should spread out so that the students can use the majority of the aquarium.)
- (Lead and Assistant instructors should interact with students as much as possible. Remember the goal is for students to feel like they **recognize and do science** so phrase questions accordingly!)
- Potential questions to ask students include:
    - How are you using science to look at this?
    - What are you wondering about?
    - What evidence are you finding of underwater creatures living in the wetlands?
    - Why do you think these animals would want to live here?
    - What tool(s) are you using to help you explore?
- (When you are down to the last two minutes of time, call the group together so that you can leave the aquarium space together.)

Shark & Ray Intro:

- Review behavior for Shark and Ray Exhibit. Talking points should include:
    - Student will see lots more underwater animals here be able to touch some of them.
    - Rays will not bite or sting but no one has to touch them if they don't want to.
    - Review two finger scientific touch.
        - (Hold up fingers to demonstrate how.)
        - (Have students practice petting the back of their hand using science fingers.)
    - Place all scientific tools inside backpacks (including binoculars and hand lenses).
        - (Pause and make sure all binoculars and lenses have been put away and backpacks are securely on backs.)
    - Use indoor voices.
    - Walk inside the exhibit.
    - You must stay inside the exhibit.
    - When students hear their team name they must come to the front door as quickly as possible without running.
- Do a series of Checks for Understanding:
    - Should we use any tools in our backpack inside?
    - How many fingers can we use to touch the rays?
    - What do you need to do when you hear me call our team name?
    - How can we be our best selves?
- (Walk students inside and ask them questions as they explore.)
- (Be sure one ODI adult is always monitoring the touch tanks and helping students.)
- (When there is two minutes left in the station call the group together.)

Debrief:

- Once you are back outside find a quiet (and if possible shady spot) and have students stand in a circle.
- Debrief with students.
    - Remind students to use appropriate volume and to speak slowly and clearly when addressing their classmates.

  - Must ask questions:
    - *What kinds of underwater animals use the wetlands as wildlife housing?*
    - *How do you think underwater animals use the wetlands as a home*?
      - Food, avoid predation, place to sleep/live, etc.
  - Additional questions if time allows:
    - What do you wonder about sharks and rays?
    - What other questions did you have about anything you saw in the aquarium?
- *Great job scientists! It's time to explore another area!*

<u>Birds</u> (40 min)

Assistant Instructor Teaching Notes:
- Use both "Wildlife Housing" and "Be a scientist!" movement as attention getters through your time at this station.

***Please see Instructor Supplement for information on birds found at Living Coast Discovery Center.*

Timing for this station:
- Intro (5 min)
- Explore Shorebird Aviary (10 min)
- Explore Eagle Mesa (5 min)
- Explore Raptor Row (10 min)
- Debrief (5 min)

<u>If this is your first station:</u>
- *Today we will be using one of our most important tools as scientists- a science notebook.*
- *Remember that scientists Explore and Wonder. (*Do the Scientific Dance for Explore and Wonder.*) Scientists need a place to write down their questions and thoughts while they are exploring.*
- *Scientists also Investigate which means they make observations about what they see.* (Do the Scientific dance for Investigate.*) It's important for scientists to write down the things they observe so they don't forget them -therefore we have a science notebook.*
- *Science notebooks are a great tool for recording things you see, and questions and thoughts you have. These notebooks can be used anywhere- in the lab, in the field, at your home. At the end of this program your science notebook will be yours to take home.*

<u>Intro:</u>
- *Remember the wetlands are wildlife housing for lots of plants and animals. Show me Wildlife Housing!*
- *At this station we will explore how the wetlands are used by birds.*
- *While we walk through the exhibit your job as a scientist is to explore and wonder and use tools in your backpack and to make <u>two observations</u> in your science notebook that the wetlands are wildlife housing for birds and <u>one question</u> you have while exploring. You will have 20 minutes to explore.*
  - (If this is your first station show students the page they will work on and do an example.)

- *We are going to walk through the bird areas together. Remember that one of our community agreements is to Be Safe! so while we are exploring you need to stay between me and (Assistant instructor's name). You may stop and look and anything you want as long as you don't get ahead of me or behind (Assistant instructor's name).*
- *As scientists we need to be respectful and use quiet voices around the birds. Can anyone think of a reason why it is important to stay quiet around the birds?*
- *Any questions?*
- (Have students open to "Wildlife Housing – Birds" page in their science notebook.)

Shorebird Aviary:

- (Walk students to the Shorebird Aviary. Tell students to stay within the aviary. Give them time to explore the birds.)
- (Main and assistant instructors should interact with students as much as possible. Remember the goal is for students to feel like they **recognize and do science** so phrase questions accordingly!)
- Potential questions to ask students include:
    - How are you using science to look at this?
    - What are you wondering about?
    - What evidence are you finding of birds living in the wetlands?
    - Why do you think these birds would want to live here?
    - What tool(s) are you using to help you explore?
- (Repeat at Eagle Mesa & Raptor Row.)
    - (The Lead Instructor and Assistant should each stand at one end of raptor row and let students explore.)
- Reminds students that if they haven't drawn a bird yet they should stop now and choose a bird to draw.

Debrief

- (Once you back on the patio find a quiet (and if possible shady spot) and have students stand in a circle.)
- Debrief with students.
    - Remind students to use appropriate volume and to speak slowly and clearly when addressing their classmates.
    - Must ask questions:
        - *What kinds of birds use the wetlands as wildlife housing?*
        - *Why do you think birds would want to live in the wetlands?*
            - Food, avoid predation, place to sleep/live, etc.
    - Additional questions if time allows:
        - What do you wonder about any of the birds you saw?
        - While you were doing science which tools did you use from your backpack and why?
- *Great job scientists! It's time to explore another area!*

Lunch & Bathroom Break (25-30 min) – Outdoor Classroom

Assistant Instructor Teaching Notes:

- Monitor noise level throughout lunch.
- Walk around and monitor students while they eat lunch – ask them questions about their experience.
- Hand out hand sanitizer.
- Supervise and encourage clean-up of surrounding area when clean-up begins.

- Before lunch have students take a bathroom break and refill water bottles.
- Students need to keep volume down because they are very close to the bird aviaries.
- Pass out hand sanitizer to each student before lunch.
- Give students a five-minute warning before clean-up.
- Remind student that we strive to leave an area cleaner than when we found it.
    - Have students take two minutes to walk around and clean up their area.

Self-Reflection (20 minutes)

Lead Instructor Notes:

- Take markers out of instructor backpack and put in small piles for students to use.

Assistant Instructor Teaching Notes:

- Sit with students and model good listening behavior during intro.
- Help students decide what to draw on their visor if they are struggling. Ask questions like:
    - When do you remember being a scientist today? What were you doing?
    - Do you remember using a tool in your backpack today? What were you doing with it?
- Encourage students not to get bogged down by creating a perfect drawing.
- When students are sharing make sure they are making eye contact with their partner.

- Have students sit down in a circle.
- You have done a lot of science with Ocean Discovery today!
- Lead them through a **think-pair-share** for the following prompt.
    - Describe to your partner a time when you were doing science today. Describe what you were doing, any tools you were using, and what you were thinking about.
- Now we are going to take our visors and draw a picture of ourselves as scientists doing science. You can draw yourself doing what you just described to your partner or you can draw another picture of yourself when you were doing science today. It's up to you.
    - Remind students that their pictures do not have to be perfect.
    - Hand out markers.
    - Give students 5-7 minutes to draw on their visors.
    - Collect and put away markers.
- If time allows invite students to share their drawing with the group.

Clean up + Goodbye + Load Buses (10 min)

**** If using the "A Little Late" or "A Lot Late" schedule skip this entirely, but have kids line up backpacks in that way that will make it easier for you during clean up (straight line, multiple lines of a few, etc.) and do "Go Awesome!" cheer.**

- Have students sit in a circle and take out their field notebooks.
- Have student hold notebooks up and make sure everyone has a first, last and teacher's name on their science notebook.
- Collect notebooks and let students know they will get them back when they come to the Living Lab.
- Collect all notebooks and place in folder with school and teacher's name on it.
- Collect water bottles.
- Clean out explorer packs.
    - Have students empty out their backpacks onto the grass.
    - Have students make sure they have each of the following:
        - Binoculars (1)
        - Hand lens (1/pack)
        - Pencil (1/pack)
        - Wetland Animal ID Card (1)
    - If anyone has extras of anything collect them. If anyone is missing something replace it.
    - Have students throw any garbage from their explorer packs into the plastic bins.
    - Have students clean binoculars and hand lenses:
        - Give each pair of students a piece of lens paper to clean off eye pieces of binoculars and hand lens. Demonstrate.
        - Throw all used lens paper into garbage bin.
        - Make sure these go in the correct bags.
    - Have students replace everything into their bags.
- Have students sit and remind them you will see them one final time when they come to the Living Lab where they will continue to do science and learn more about the wetlands.
- *Great job today scientists! As usual after an awesome day of doing science we at Ocean Discovery like to say "Go Awesome!" One the count of three let's all say "Go Awesome!" 1, 2, 3… Go Awesome!!*
- Walk students back to bus area with a stop at the restrooms if time allows.

Clean Up & Return to Lab (Instructors/Volunteers Only):

- Place folders with field notes into file box in SciTech Lab.
- Empty garbage and paper into recycling can.
- Throw away and replace any dried-up white board and regular markers.
- Clean all white boards with dry erase cleaner.
- Drain/open water coolers for drying.
- Restock:
    - Visors
    - Pens
    - Dry erase markers
    - Markers
    - Extra science notebooks
- Place new science notebooks in explorer backpacks.
- Organize explorer packs (if there wasn't time for students to do this).

Make a Difference Day

Living Lab Experience

Goal: Students build belief that science is important and relevant, that they can make a difference, and that a career in science is a possibility for them.

Make a Difference Actions:

- (Today) I use art and literacy to share my love for the canyon with my community.
- (Tomorrow) I am a wetland biologist who studies the animals that utilize the canyon as a wetland habitat.
- (Imagination Station) I imagine I am a wetland biologist who explores and loves the wetlands.

Visuals:

- Community Agreements poster (1)
- Science Discovery Process poster (3)
- Emotions Poster (1)
- K-2 Curiosity Poster (3)
- Ocean Leader Video
- Rain in the Canyon video
- Wetland video
- Art & Literacy Rock Pathway photo

Supplies:

- Ocean Discovery Institute Field Trip Volunteer Card (1/adult volunteer)
- Cover sheet (1/class)
- Instructor backpacks (1/instructor)
    - Binoculars
    - Mini white boards
    - Dry erase markers (2)
    - Dry erase eraser (1)
    - Extra pencils (10)
    - Clipboard
        - Field trip protocol
        - Laminated time table
    - Portable 1st Aid Kits (1/instructor)
- Science notebook (1 per student)
- Water coolers (filled w/ water) (2)
- Water bottles (1/student)
- Tarps (3-4)
- Foldable tables covered in butcher paper (5)
- Paint pens (50)
- Art bins (5)
- Laminated Word Banks (10)
- Microscopes (25)

- Videoscope (1)
- Protoslo (1 bottle)
- Eyedroppers (6)
- Petri dishes (25)
- Nature boxes (25)
- Camo bandanas (25)
- Tent (1)
- Speaker + iPod (with multiple kids ocean songs, like *Baby Shark* and *Under the Sea*) (3)
- Laptops (3)

Timing:

Time	Group 1	Group 2	Group 3
9:30-9:40	Arrival Watershed Plaza		
9:40-10:00	Intro + Community Agreements Group 1: SciTech Lab Group 2: The Commons Group 3: Ecolab		
10:00-10:35	MAD Tomorrow SciTech Lab	MAD Today Ocean Alcove/The Commons	Imagination Station Ecolab
10:35 – 10:55	Science Leader Student Connection Sci Tech Lab	Science Leader Student Connection Ocean Alcove	Science Leader Student Connection Ecolab
10:55-11:20	Lunch + Bathroom Break The Commons and Rocky Amphitheater		
11:20-11:55	Imagination Station Ecolab	MAD Tomorrow SciTech Lab	MAD Today Ocean Alcove/The Commons
11:55-12:30	MAD Today Ocean Alcove/The Commons	Imagination Station Ecolab	MAD Tomorrow SciTech Lab
12:30-12:50	Reflection + Teacher Survey Group 1: The Commons Group 2: Ecolab Group 3: SciTech Lab		
12:50-1:00	Clean Up + Goodbye		

Arrival (10 min)

Trip Lead Notes:

- ☐ Discuss with Ocean Discovery staff who will take on each of the **Arrival Tasks** (see below).
- ☐ Ask Jo details about next upcoming camp to share with students.
  - Share these with lead instructors.

Program Set Up:

Ocean Discovery Outdoor Amphitheater:

- ☐ Community Agreements Poster
- ☐ ODI Field Trip Volunteer Cards

Ecolab, SciTech lab, The Commons

- ☐ Science Discovery Process poster
- ☐ Curiosity Posters (1 per lab)
- ☐ Wetland Poster
- ☐ Student science notebooks (one class at each location)
- ☐ Fill water bottles (25/start location)
- ☐ Large Smart Board with "Ocean Leader video" loaded up (2nd grade folder on Papi)
  - Connect the speaker (test volume).
  - Write on the board for Reflection: "One thing I enjoyed about being a scientist today was…"
- ☐ Set up iPod + speaker with fun song cued up.
- ☐ Set up 3 laptops with teacher surveys.

MAKE A DIFFERENCE TODAY

The Commons

- ☐ Gather rocks from pre-gathered rock pile for painting (1/student + 1/adult)
- ☐ Place folding tables w/butcher paper in the commons
- ☐ Place 1 art bin on each table filled with ~10 paint pens and 5 pencils
- ☐ Laptops opened to Google (1)

Ocean Alcove

- ☐ Emotions Poster
- ☐ Cue up photo: Art & Literacy Rock Pathway photo (2nd grade folder on Papi)
- ☐ Cue up video: Rain in the Wetland (2nd grade folder on Papi)
- ☐ Cue up video: Wetland video (2nd grade folder on Papi)
- ☐ Laminated Word Banks (20)
- ☐ Curiosity Poster

MAKE A DIFFERENCE TOMORROW

SciTech Lab

- ☐ Set up and test microscopes (13)
- ☐ Microscopic Organism Key (13)
- ☐ Protoslo (1 jar)
- ☐ Eyedroppers for Protoslo (2-3)
- ☐ Slides w/ dip for water sample (20)
- ☐ Eyedroppers for pond sample (10-12)
- ☐ Videoscope plugged in and tested (1)
- ☐ Pond organism ID card (25)

Next to Pond

- ☐ Water sample collector + cap (1)

Program Set-up Continued:

IMAGINATATION STATION

In Tents

- ☐ Nature boxes (27)
- ☐ Camouflage head bands (1/student)
- ☐ Sage (2-3 large stalks)
- ☐ Extra pencils (20)
- ☐ Tarps next to tent (for students to sit on)

SCIENCE LEADER STUDENT CONNECTION

In each space

- ☐ SMART board
- ☐ Speaker
- ☐ Microphone
- ☐ Microphone stand
- ☐ Camera
- ☐ Curiosity cubes (4/group)
  - Make sure they have the correct questions (see curriculum below)

- If walking with school, Trip Lead:
  - Introduce yourself to teachers and volunteers.
  - Take teachers aside and note any students absent on the roster.
  - Sign cover sheet stating they've collected all waivers to the best of their ability.
- (Meet buses or students walking.)
- (Begin Arrival Tasks.)
  - (Note: The below should take place simultaneously so students are getting an intro while the classroom teachers are dealing with rosters.)
  - Trip Lead (1)
    - For bus schools only: Take teachers aside and note any students absent on the roster.
    - Sign cover sheet stating they've collected all waivers to the best of their ability.
  - Lead Instructor (1)
    - Take adult chaperones aside and discuss expectations for the day.
    - You will be asked to introduce yourself – name, how you got involved with Ocean Discovery, etc.
    - Provide each one with an "Ocean Discovery Institute Field Trip Volunteer" card and explain how they can be most helpful today:
      - Be your best self: be present- no cell phones; sit & participate in activities with students; be a partner with a student during pair-shares.
      - Be safe: help students make good choices concerning their safety
      - Be respectful: don't have side conversations when instructors are teaching

- Be curious: ask questions of students and try to engage students who seem disengaged.
    - On your card there is a list of questions you can ask students.

- <u>Lead Instructor (Different from above) + Assistant Instructor (1)</u>
    - Working as a team of scientists – we will continue to use these community agreements.
    - Review community agreements:
        - Show community agreements poster.
        - Ask students what each one means to them.
            - Be your best self: responsible, helpful & kind, include others
            - Be safe: make good decisions to keep each other safe
            - Be respectful: staff, materials, classmates, each other, environment
            - Be curious: ask questions, support each other as we try new things
        - Ask students to abide community agreements with a verbal "yes" or thumbs up, etc.
    - Introduce Living Lab
        - Let students know that even though they will be passing by offices and people that they do NOT need to be quiet. They are welcome to talk in a normal voice.
        - The Living Lab is theirs & should be a place they feel comfortable being themselves & exploring.
- <u>Assistant Instructors (2)</u>
    - Take lunches to the Achievement Alcove.

- Students high five ODI statue on the way past.

Introduction & Community Agreements (20 minutes)

Assistant Instructor Teaching Notes:
- Help students find their science notebook and take a seat
- Help to hand out water bottles
- Sit with students during introduction and model good listening skills
- Participate in Discovery Dances

Timing for this station:
- Bathroom Break (5 min)
- Enter, find science notebook, get water bottle (3 min)
- Staff and volunteer intros (3 min)
- Scientist Dances/Science Notebooks (4 min)
- OL Video + Discussion (5 min)

Intro:
- As students enter the space have them find their science notebook and then take a seat.
  - The Commons area -have students sit/stand in a circle
- Pass out water bottles to each student
- Staff introductions:
  - All staff take one minute each to introduce themselves and share their story.
  - Details for story can be found in **SI Education Guide**
- Review Scientist Dances:
  - We will be scientists investigating the wetlands here at the Living Lab.
  - Review what scientists do using the Scientist Dances.
    - Go through motions a few times, you can change it up by doing slow motion, speed up version, super quiet, super loud, etc.
- Review Science Notebooks:
  - You have one of the most important tools of a scientist in your hand- a science notebook.
  - Used to write down or draw thoughts, questions and observations.
  - We will use the notebook as a group at certain times throughout the day but remember you can write things down in your notebook at ANY time.
- Introduce Ocean Leader Video:
  - Introduce you to someone who grew up in City Heights and worked with Ocean Discovery just like you who is now a scientist and uses a science notebook everyday.
  - Meet (xx) who is a (career).
  - (Play video.)
- Debrief Ocean Leader Video.
  - Potential whole group questions include:
    - In what ways is (xx) like you?
    - Is (xx) a scientist? How do you know?
    - What are somethings he/she does as a scientist?
  - Think-Pair-Share for the following question:

- Do you think you COULD be a scientist if you wanted to? Why or why not? You don't have to want to be a scientist. The question is simply if you wanted to, could you if you wanted to?
- Have 2-4 students share their thoughts. Follow up questions could include:
  - What kind of scientist would you like to be?
  - What would you like to study as a scientist?
  - Why don't you think you could be a scientist?
    - (Help students make connections between things they enjoy and are good at to show them that science is relevant for them still)

Make a Difference Today (35 minutes)

Objective: I use art and literacy to share my love for the canyon with my community.

Assistant Instructor Teaching Notes:

- ☐ Spread out, sit and model good listening behavior during intro.
- ☐ Help student choose a word that is meaningful to them.
- ☐ Give laminated Word Banks to students who are struggling to find words.
- ☐ Check that words are appropriate and help translate words when necessary.
- ☐ Supervise painting area.
- ☐ Throw away used paint pens.

Wetland Intro & Imagery (15 min)

- Start in Ocean Alcove
- If this is your 1st station:
  - Review the definition of a wetland – where land and water meet.
    - (Visual: Wetland poster)
  - There are ecosystems in your neighborhood similar to wetlands you visited at the Living Coast Discovery Center.
    - (Have students look out into the canyon.)
  - Although the canyon is not exactly the same as the Living Coast (where there is water from the San Diego Bay present all the time) water can collect in the canyon when it rains making a wetland environment.
    - (Show students "Rain in the Canyon Video".)
  - Even when it is dry, the canyon environment is like a wetland.

- If this is your 2nd or 3rd station:
  - *Now that we know there are wetlands right here in our neighborhood and we know how important wetlands are – provide wildlife housing for many animals, we are going to have the opportunity to share that knowledge with others.*
- (Have students stand in a circle.)
  - Explain to students that they will be working to create a piece of art to share with the community that explains the importance of the wetlands.
  - (Have students turn to the "I Care About the Wetlands" page in their science notebook.)

- Brainstorm Wetland Words:
    - Remember our last experience in the wetlands by watching a video.
        - (Play "Wetland Video".)
    - Brainstorm.
        - While watching and listening to the video, write down words that come to mind about wetlands.
        - Focus on single words or short phrases.
            - For example: Brown, birds, lots of light, etc.
        - The goal is to write as many words as possible.
        - There are no wrong words.
        - Words do not have to be in English.
    - (Play video a few times until students have had about 2 minutes to write.)
        - (Halfway through if you see any students who haven't written any words yet, give them a laminated word bank to help them. Explain that they do not need to copy all the words but they can choose some from the list.)
- Brainstorm Wetland Feelings:
    - Brainstorm.
        - While watching the video one final time, write down words that describe how they feel when they are in the wetlands.
        - Give examples of feeling words: happy, sad, excited, afraid, etc.
        - (Show "Emotions" poster.)
        - There are no wrong words.
        - Words do not have to be in English.
        - (Play "Wetland Video".)
        - (Turn off video and have students sit in a circle.)
- Introduce Artwork to Make a Difference:
    - *A moment ago, we learned that we have a wetland right in our own neighborhood, in the canyon behind the Living Lab. It turns out that there are many canyons in City Heights which are wetlands, not just this one. Do you think people who live in City Heights know that these canyons are wetlands?*
        - (Allow students to respond.)
    - *One thing scientist can do to make a difference in the world is share their knowledge with other people.*
        - (Have students show you Scientist dances for Communication and Make a Difference.)
    - Share knowledge of the wetlands with other people in the community to let others know how important and special this place is.
    - Each person will design their own rock to express the importance of the wetlands. The rocks will be placed along a path in the canyon where people walk every day.
        - (Show students Art and Literacy Rock Pathway photo.)
- Choosing Words:
    - Rocks are small so think about how to express yourself in just a word or two.
    - Take your list of words that describe the wetlands and how the wetlands make you feel to decide what to write on your rock.
    - Students will have 60 seconds to look over the list they have created and circle <u>FOUR</u> words they would want to share with the community.
    - (Give students 60 seconds to work.)

    - Ask students to share with a partner.
- Choosing One Word:
    - Students must now choose one word to share with the community.
    - This is the world you will paint on a rock for people in the community to see.
    - Many people in City Heights speak languages other than English. You may choose to write your word in another language.
        - Staff can help with translation if you need help.
- Rock Painting:
    - Once a student has chosen a word, they must call an adult over to look at their word and approve it.
    - If a student would like to write their word in another language and need help with that, they can ask an adult who will help them use Google translate.
    - Once a student's word is approved they will cross the hallway and meet (lead instructor) on the tarp to paint their rock.
- (While students are working, adults should:
    - Help students who are struggling to choose a word.
    - Translate any words students need help with.
    - Check spelling of words.)

<u>Paint station</u> (10 min)

- Have students share their word with you.
- (Provide them with a rock and a pencil.)
- Explain:
    - Sketch your word on the rock using the pencil first.
    - When ready select a paint pen color.
    - Only get one rock and it's okay if it's not perfect.
    - Will not be able to erase or start over.
    - If they have additional time, they may add art to their rock.
        - Example drawings of the wetland or plants or animals.
    - Once they are done, they should return the paint pen.

<u>Rock Pathway</u> (5 min)

- We are going to add our rocks to a pathway in the canyon so that when people are walking in the canyon or visiting the living lab they will see all the words that make us think of the wetlands.
- (Walk students down and help them place rocks along the pathway.)
- (Return to the Commons.)

<u>Reflection</u> (5 min)

- Think-Pair-Share for the following question:
    - Why do you think it is important for scientists like us to share what we know and love about the wetlands with other people?
- Close station by thanking students for making a difference today by sharing their knowledge of the wetlands with other people.
- Let students know they can come back and share their rock with family or friends anytime.

Make a Difference - Tomorrow (35 minutes)

Objective: I learn what a wetland biologist does while studying how microscopic organisms use the wetland habitat.

Note: *Timing on this station is VERY tight and the debrief is the most important part as it ties all the pieces together. There is a lot of movement so set a timer for yourself for each station so that you don't run out of time.*

Assistant Instructor Teaching Notes:

- ☐ Model good listening behavior during introduction.
- ☐ Sit next to students who are struggling to pay attention.
- ☐ Help students focus microscopes.
- ☐ Help students find and identify microscopic organisms under microscopes.
- ☐ Set up videoscope.
- ☐ Put example organisms under videoscope for students to see.
- ☐ Remind students to draw a picture of an organism they see.
- ☐ Break down water collection tool after use.

Intro (5 min)

- If this is your first station:
  - Review the definition of a wetland – where land and water meet.
    - Visual: *Wetland poster*
  - Have students look out into the canyon.
  - *There are wetlands here in your neighborhood just like the wetlands you visited at the Living Coast Discovery Center.*

- If this is your 2nd or 3rd station:
  - *Today we are going to learn how to Make a Difference in the future. This means thinking about how you can help the wetlands when you are older. One way you can do this is by becoming a scientist who studies the wetlands and learns more about the plants and animals that live there. As a scientist you can then tell other people about the wetlands and why it is important to protect them. Today we are going to become wetland biologists!*
  - Explain what a wetland biologist studies. Be sure to include:
    - A breakdown of the words wetland biologist.
      - *Wet-land: Wet- land- where water and land meet*
      - *Bio ology: bio – life ology – study of*
      - Wetland biologists study the living parts of a wetland.
    - Review what living things they have seen that use the wetlands as wildlife housing.
      - (Remind students of their trip to the Living Coast Discovery Center if they need help.)

- Explain that students will be studying the wetland right here in the canyon. Be sure to include:
  - Although the canyon looks dry now when it rains lots of water collects.
  - There is a small pond right outside the lab that has water even when most of the canyon is dry.
  - Today we will be wetland biologists and investigate this mini wetland to see if any animals are using it as wildlife housing.
    - (Have students show the wildlife housing movement.)

- <u>Pond Water Collection</u> (10 min)
  - (Walk students outside to storm drain pond.)
  - *Wetland biologists, how could we figure out if there is anything living in this wetland?*
  - Allow students to first simply look at the water with their own eyes.
    - Can you see anything?
    - What could that be?
    - Is it alive or not alive?
  - The goal is to get students to come up with idea to collect some pond water and take it back to the lab to look at under the microscope. Potential questions include:
    - If students don't see anything ask them if there might be things living in the water that are too small to see with our eyes?
      - What could we do to see them better?
    - If students see some things moving ask them how we can see them better?
      - What scientific equipment could we use?
      - How do we get the pond water to the microscopes?
  - Tell students that we will collect a sample of the water and take it back to the lab to look at under the microscope.
    - Assign students as many jobs as possible to collect the water sample.
      - Collect sample.
      - Put cap on sample.
      - Carry sample back to lab.
      - Give out samples for each pair of students, etc.

<u>Microscopes</u> (12 min)

- *Alright wetland biologists! Scientists use lots of different tools in their jobs and one of them is a microscope. Today we will each get some of the pond water we collected to look at under the microscope so that we can see if there are any animals using the wetland as wildlife housing.*
- Explain to students that they will each get a sample of pond water.
- They are to look through the microscopes to see if they can find anything.
- Draw a sketch of at least one organism they find in their science notebook.
  - (Have students open "Under a Microscope I Saw…" page in science notebook.)
  - (Distribute pond water with Protoslo to slow down organisms.)
- Give a brief description of how to use the microscopes.
  - Use one eye to look through eye piece.
  - Don't get your eye too close or you will see your eye lashes.
  - SLOWLY turn knobs to bring things into focus.
  - You will need to constantly turn the knobs as things will go in and out of focus.

  - Have students ask the person next to them for help with their microscope before asking an adult. If that person can't help they can raise their hand.
  - There will be a key next to your microscope. Can be used to learn the names of some of the things you see. (Point to Microscopic Organism Key).
- (Give students time to use microscopes.)
  - Reminds students to draw one animal they are seeing when there is 2-3 minutes left in the station
  - While students are working the assistant instructor should set up the videoscope and make sure they can find something to show students. (Do not draw their attention to the videoscope at this time- you want them focused on their own microscope).

<u>Videoscope & Debrief</u> (8 min)

- Have students return to seats for debrief.
- *Okay wetland biologists, it's time to communicate what we have learned (have students do Scientist dance for Communicate)! Another tool you may use if you become a scientist in the future is a video microscope. This microscope is cool because you can use it to project images to share and you can record what you are seeing – like a movie!*
- Take 2 minutes and show some examples of pond creatures under videoscope. Ask students to identify what they see on the videoscope using their key. – **DO NOT LET THIS GO LONGER THAN TWO MINUTES OR YOU WON'T HAVE TIME FOR DEBRIEF.**
  - *Do you think this is alive or not?*
- Take 2 minutes and ask students to share what they drew in their science notebooks with you. Be sure to ask each student who shares:
  - *Do you think this is alive or not?*
- *Do we think there are living animals in the pond water?* -Yes!
- *Yes, there are lots of microscopic animals that live in the wetlands. Microscopic means an animal that is so small it can only be seen with a microscope*.
- *Think back to our visit to the Living Coast Discovery Center. Are there any animals that you saw there that you think might want to eat tiny microscopic animals from a pond?*
  - If students struggle ask: What animals did we see at the Living Coast that were eating in the water? – Birds, fish, etc.
  - Do you think birds that fly around here might like to eat some of the tiny animals in the pond?- Yes!
- *How many of you liked exploring the pond water today*? (Let students raise hands).
- *If you did enjoy it you might want to be a wetland biologist when you grow up. Wetland biologists study all kinds of plants and animals in the wetlands, from the small microscopic animals in the water to the bigger animals like birds and fish and sharks.*
- Do a quick Turn and Talk w/ a partner: Do you think you might want to be a wetland biologist when you grow up? Why or why not?
- Great job wetland biologists! Remember if you want, you can make a difference in the future by becoming a scientist and sharing your knowledge with others!

Imagination Station (35 min)

Objective: I imagine I am a wetland biologist who explores and loves the wetlands.

Assistant Instructor Teaching Notes:

- Help students analyze and wonder about the things they place in their nature boxes. Potential questions:
  - What do you think that is?
  - Why do you think it lives in the wetlands?
  - What kind of science are you using right now?
  - How does it feel to be a wetland biologist right now?

Intro (7 min)

- If this is your first station – do this intro:
  - Review the definition of a wetland – where land and water meet.
    - Visual: *Wetland poster*
  - Have students look out into the canyon.
  - There are wetlands here in your neighborhood just like the wetlands you visited at the Living Coast Discovery Center.
  - Whenever it rains here water collects in the canyon making a wetland. It's dry now but we are still looking at a wetland.

- If this is your 2nd or 3rd station, start here:
  - *Today you are going to imagine that you are a wetland biologist who explores wetlands and the plants and animals that live there*.
  - **(Note: if you have already visited the Make a Difference Tomorrow station you can review this briefly).**
    - Explain what a wetland biologist studies. Be sure to include:
      - A break down of the words wetland biologist.
        - *Wet-land: Wet- land- where water and land meet*
        - *Bio ology: bio – life ology – study of*
        - Wetland biologists study the living parts of a wetland.
      - Review what living things they have seen that use the wetlands as wildlife housing.
        - (Remind students of their trip to the Living Coast Discovery Center if they need help.)
  - Explain activity. Be sure to include:
    - A wetland biologist is a type of scientist.
    - Review Discovery Dances and individual Be a Scientist move.
    - When working in the field it is important for scientists to blend in so that they can study the animals.
    - How can we prevent animals from noticing us?
      - Being quiet.
      - Walking slowly.
      - Camouflaging (blending in).

- (Have students open to "When I Was a Wetland Biologist…" page in their science notebooks).
- *In a moment we will go over to the tent to get our field gear on so that we can become wetland biologists. Once we leave the tent your job will be to explore and wonder about the wetlands just like a wetland biologist.*
- *You will have a nature box in which you can put things you find to look at more closely.*
- *Your job when you return here is to have at least one question written down in your science notebook. A question is something that you are wondering about and don't know the answer to. You can have more than one question but you must have at least one.*

Tent (5 min)

- Walk students over to tent and introduce each piece of gear:
  - Give everyone a camouflage band to tie around their upper arm.
  - Have students rub themselves with sage.
    - Note: some students may not like the scent and will not want to rub it on themselves and that's okay. They can just smell it and decide.
    - *How can this help us as wetland biologists*?
  - Give each student a nature box.
    - *How can this help us as wetland biologists?*
  - Make sure everyone has their notebook open to the right page and a pencil.
    - *How can this help us as wetland biologists*?
  - Remember, your job when you return here is to have at least one question written down in your science notebook that you are wondering about.

Exploration Hike (15 min)

- Walk students along the trail and allow them to explore.
- Ask them questions as they go.
- Remind students half-way through and when there is 2 minutes left that they need to have at least one question they are wondering about.
- Before returning to the tent have students empty out their nature boxes.

Return to Tent (3 min)

- Return gear to Imagination Tent.
- (Make sure students do this in an organized manner as it will be used by the next group.)

Debrief (5 min)

- Have students sit facing you on the tarps.
- Ask students what kinds of things they put in their nature boxes.
- Ask students to share questions they are wondering about.
  - Allow other students to try and answer some of these questions or make a hypothesis about them if it is reasonable. – Explain that scientists often share ideas to figure things out.
- If time allows, ask students to share in response to the questions:
  - What did you enjoy about begin a wetland biologist?
  - How did it feel to be a wetland biologist?

Science Leader-Student Connection (20 min) – Eco Lab/SciTech Lab/Ocean Alcove

Objective of Station: Students will meet a science leader, hear about their pathway to becoming a science leader, and have an opportunity to ask questions.

Assistant Instructor Set Up:

- ☐ Load any picture or other audio/visual the visiting scientist has brought

Assistant Instructor Teaching Notes:

- ☐ Walk around and monitor students.
- ☐ Sit with any students who are struggling to help keep them focused during show and tell and the Q & A portion.

- Provide an overview of the Science Leader Student Connection portion of the program.
    - Today we will meet virtually with a science leader.
        - Learn about their passion for the ocean and wetlands.
        - Learn about their pathway to becoming a science leader and what they do in their work.
    - You will also have the opportunity to ask the scientist questions.
        - Brainstorm questions they could ask the scientists ahead of time.
        - Give students curiosity cubes.
            - They can use these questions or ask one of their own questions.
- Introduce Science and Conservation Leader.
    - Tell the students who they are about to meet (scientist's name) a scientist who (describe what they do in 1-2 sentences).
    - (Connect Zoom Call).
    - (Welcome the Science Leader.)
    - (Conduct the interaction as one would an interview.)
        - Interview tips:
            - You may change the order or modify the questions based on the Science Leader's responses.
            - If a Science Leader is answering a question that may need to be wrapped up, you can move to the microphone which will signal them that you want to speak.
            - After the Science Leader answers a question, in a sentence or two, reaffirm the point they are making or acknowledge how it ties to the students' experience.
        - Interview questions (~10 min):
            - (Asked by Lead Instructor)
                - Can you please introduce yourself and tell us a little bit about your job and what you love about it? (2 minutes)
                - Tell us about your pathway to your current job. For example, what got you interested in science, your education, etc. (2 minutes)

        - Have you ever faced an obstacle or challenge in your life that you were able to turn into an opportunity? How did you do that? (2 minutes)
        - Students are investigating the wetland ecosystem and human impacts. Why do you think this work is important? (2 minutes)
    - Student questions (~5-10 min):
        - Give two or three students the chance to ask questions.
        - If needed, remind them about the questions they came up with earlier or the Curiosity Cubes/ cares.
- (Have students say "Thank you!" and all clap for the science leader.)
- (Disconnect Zoom call.)

Lunch & Bathroom Break (20 min)

Assistant Instructor Teaching Notes:

- Walk around and monitor students while they eat lunch – ask them questions about their experience
- Hand out hand sanitizer
- Monitor water cooler and help students refill water bottles
- Walk around with trash bag when you see students starting to finish up
- Supervise and encourage clean- up of surrounding area when clean up begins

- Before lunch have students take a bathroom break.
- Refill water bottles.
- Give hand sanitizer to each student before lunch.
- Give students a five-minute warning before clean up.
- Remind student that we are connected to the ocean through the canyon watershed and that any trash that ends up on the ground here can end up in the ocean so we need to be careful.
- Have students take 2 minutes to walk around and clean up their area.
- Refill water bottles.

Self-Reflection (20 minutes)

Assistant Instructor Teaching Notes:

- Help pair up students who don't have partners when the music turns off.
- High five students and have a conversation with them about the question being asked.
- Help classroom teachers sign onto laptops so they can take the Teacher Survey.

High-Five Reflection (15 min)

- Activity:
    - Music will play and students and adults will walk around the classroom.
    - When the music stops, high-five the nearest person, hold the high-five and create a two-person bridge.

- Will hear a question. Everyone will have 20-30 seconds to think about their answer. Then the lead instructor will say who of the pair will go first. For example:
  - The person with the longest hair will go first.
  - The shorter person will talk first.
  - The person with the most brothers and sisters will talk first, etc.
- After the first person responds the lead instructor will prompt the second person to speak.
- Choose 2-3 students to share their thoughts with the group.
- Turn on the music again and students must walk around.
- When music stops they must high five someone NEW and face them.
  - Walk around and help pair up any students who don't have a partner.
- Repeat until you run out of time.
- Questions:
  - What was something you enjoyed about being a scientist today?
  - Do you think you could be a scientist if you wanted to? Why or why not?
  - Talk to your partner about a time you did science with Ocean Discovery. What were you doing?
  - Tell you partner the word you chose to paint on your rock- explain to them why you chose that word.
  - What is one thing you want to tell your family about the wetlands?
  - Who would you want to bring to visit the Living Lab with you?
- Have students return to their seats and sit down.

Five-Minute Quick Write (5 min)
(Have Assistant Instructor direct teachers to complete teacher survey on laptops.)

- Explain activity to students. Be sure to include:
  - They are going to have the opportunity to write one final sentence about their day being scientists at Ocean Discovery.
  - They can only write ONE sentence and no more.
  - They will have a couple of minutes to think about what their sentence might be before they start to write.
  - They MAY use the sentence starter on the board but can choose not to.
    - (Show students the sentence starter. "One thing I enjoyed about being a scientist today was……")
- Think Time:
  - Give students one minute to think about the sentence they want to write. There is no right or wrong answer – it is personal to each person.
  - Students will have one minute of silent think time so they can be ready to write.
  - (Set a timer for 1 minute.)
- Write Time:
  - (Have students open to "My Day As a Scientist" page in their science notebooks).
  - They will have two minutes to write their sentence. If they finish early they may add some artwork to their sentence.
  - (Set a time for 2 minutes.)
- If time allows have some students share or do a pair-share.

Clean-Up & Goodbye (5 min)

- Invite students back to Living Lab for next upcoming camp.
- Have students turn in water bottles
- Collect science notebooks and give them to classroom teacher.
- Look around you on table and floor – pick up any trash you see.
- Note: While clean-up is happening also do a quick bathroom break before student begin walk or get on buses.
- Push in chairs at tables.
- Walk students to watershed plaza.
- Today, we tried new things, and made new discoveries. Whenever we do that, we have an Ocean Discovery cheer to send us off. We say "Go Awesome!" Say it with me on the count of 3. 1, 2, 3… Go Awesome!!
- Have staff line up next to ODI and high five students on their way out.

Staff Clean-Up (30 min)

- See protocol below.

Staff Clean Up (30 min)
Team Lead: Determine who will do each of the below activities. Check when complete.

1 GENERAL ITEMS - IMMEDIATE

- ☐ Run water bottles through dishwasher and move to Transitional Storage
- ☐ Mop student bathrooms, take out trash and place "Caution Wet Floor" sign up

2 SCI TECH LAB

- ☐ Put away all supplies in designated storage location
- ☐ Return pond water
- ☐ Sweep tables, chairs, and floor (mop as necessary)
- ☐ Turn off SmartBoard
- ☐ Take out trash as necessary
- ☐ Return room to default setting (tables, chairs, rolling cabinets, and specimens)

3 THE COMMONS & ROCKY AMIPTHEATER

- ☐ Put away all supplies in designated storage location
- ☐ Clean up any spilled paint
- ☐ Empty water coolers
- ☐ Sweep trash and food waste
- ☐ Empty trash and replace bags
- ☐ Ensure rope fence is up
- ☐ Close back gate

4 ECO LAB

- ☐ Put away all supplies in designated storage location
- ☐ Sweep tables, chairs, and floor (mop as necessary)
- ☐ Turn off SmartBoard
- ☐ Take out trash as necessary
- ☐ Return room to default setting (tables, chairs, rolling cabinets, and specimens)

5 GENERAL ITEMS – POST TRIP

- ☐ Turn in completed rosters and waivers to Program Manager or Program Coordinator
- ☐ Turn in Believe surveys to collection box
- ☐ Debrief with Program Manager
    - Report any broken or missing supplies
    - Report any supplies with low inventory remaining
    - Share good student stories
    - Report any issues/coaching to avoid these in the future
- ☐ Do a final check of all areas to ensure everything is properly cleaned, put away, and reset for after school programming

Rainy Day Plan
Floor Manager will determine when rainy day plans need to be utilized.

Additional supplies:

- Umbrellas (1 per 2 students)
- Large plastic bins w/ lids for storing/transporting umbrellas (4)
- Butcher paper
- Blue tape (2 rolls)
- Canopies (6)
- Binoculars (30)
- Broom and pan (2 of each)

1 Pre-Arrival

- ☐ Place "Caution Wet Floor" sign in the Ocean Discovery Gallery.
- ☐ Place umbrella receptacles right inside the entrance to receive used umbrellas.
- ☐ During Heavy Rain events – all activities labeled "The Commons" will take place in the Kitchen.
- ☐ For Make a Difference Today station:
  - During light rain:
    - Set up four canopies in the Commons for rock painting activity.
  - During heavy rain:
    - Cover all tables in Kitchen with butcher paper.
    - Move all supplies from the Commons to Kitchen for rock painting.
- ☐ For Make a Difference Tomorrow station (during heavy rain):
  - Collect sample of pond water before students arrive.
- ☐ For Imagination Station:
  - During light rain:
    - Set up two additional canopies so students can all be under the canopies when preparing for the field.
  - During concerns for canyon flooding:
    - Set up canopies in the hallway outside the Ecolab.
    - Have binoculars ready to hand out in the Ecolab.
  - During heavy rain: xx
- ☐ Place a broom and pan in each location where lunch will be eaten.

2 Arrival

- ☐ Take out umbrellas and bring them to the bus stop.
- ☐ Greet students and teachers on bus:
  - Tell students that there will be one umbrella per two students.
  - Give each pair of students an umbrella as they step off the bus.
  - Have two staff members stationed at the entrance to the lab to take and close the umbrellas and place them in the receptacles.

- ☐ Take students to their Intro location and go through Community Agreements there.
  - The Commons = The Kitchen
- ☐ Floor manager:
  - Walk to both intro stations and take teachers aside and note any students absent on the roster.
  - Sign cover sheet stating they've collected all waivers to the best of their ability.
  - Take adult chaperones aside and discuss expectations for the day (see curriculum above).
- ☐ For lighter rain days, divide umbrellas and take:
  - a third to the Commons to be used for walking to the trail to place their painted rocks,
  - a third to the EcoLab for exploring the canyon,
  - and a third to the SciTech Lab to be used to walk out and collect pond water.

3 MAKE A DIFFERENCE TOMORROW

- ☐ For Light Rain:
  - Use umbrellas to go outside and collect pond water. Show students how to collect sample rather than having them figure it out.
- ☐ For Heavy Rain:
  - Pre-collect water sample. Use extra time for observing/drawing microorganisms and for using the videoscope/debrief.

4 MAKE A DIFFERENCE TODAY

- ☐ Light Rain:
  - Students will paint rocks under canopies in the Commons and use umbrellas to place rocks along trail.
- ☐ Heavy rain:
  - Students will paint rocks in the Kitchen, and rocks will be placed on the trail by staff when rain permits.
  - Use additional time for painting of rocks and a more in depth debrief.

5 IMAGINATATION STATION

- ☐ Light Rain:
  - Proceed with station as is giving each pair of students an umbrella to use in the canyon.
- ☐ Canyon Flooding Concerns:
  - Have students prepare "for the field" in tents set up in the hallway outside the EcoLab.
  - Take students up to the Living Roof and have them look amongst the plants there and use their binoculars to make observation about the canyon from the roof.
- ☐ Heavy Rain/
  - Have students prepare "for the field" in tents set up in the hallway outside the EcoLab.

-

6 LUNCH

- [ ] Student will eat in the location where they finish their first activity.
- [ ] Make sure students clean-up trash and use broom and pan to sweep up before starting the next activity.

7 DEPARTURE

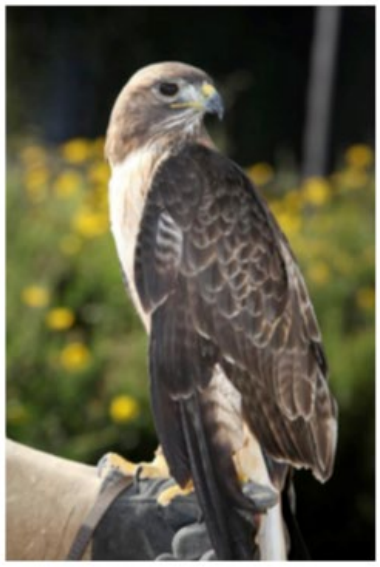
- [ ] Hand each pair of students an umbrella to walk to the bus.
- [ ] Have two staff members standing at the bus to take umbrellas, close them, and place them in the receptacle.
- [ ] Bring umbrellas back to lab.

8 CLEAN UP – POST TRIP

- [ ] See Clean Up Protocol above.
- [ ] Open umbrellas and leave them out to dry in Ecolab and SciTech lab.

INSTRUCTOR SUPPLEMENT

Raptor Row Interpretive Guide



Hawkeye
Gender: Male
Date Acquired: 10/30/1997
Approximate hatch date: 1996
Reason for Non-Release: Blind in left eye and has slight wing injury that keeps him from soaring properly
Lifespan: ~20 years in the wild

Common Name: Red Tailed Hawk

Scientific Name: Buteo jamaicensis

General Species Information

Appearance:

- Large hawks with very broad, rounded wings and a short wide tail
- Adults – rich brown above and pale below with a streaked belly and a dark bar between shoulder and wrist. The tail is usually pale below and a cinnamon-red above
- Juveniles – brown tails crossed by darker horizontal bars

Habitat/Range:

- Found throughout North America, north to central Alaska and northern Canada, and as far south as Panama.
- Common in open country, along fields and perched on telephone poles, fence posts, or trees.

Diet:

- Small to medium sized mammals, reptiles, and sometimes carrion. Prey items can range from less than an ounce to more than 5lbs!

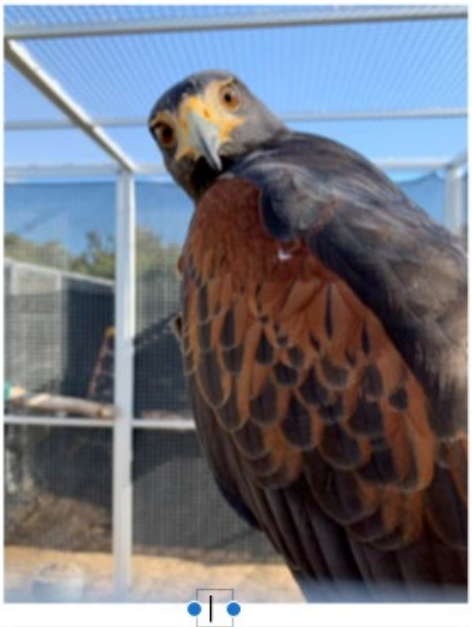
Predators:

- Great Horned Owls, raccoons, red fox (mainly on eggs/nestlings)

Conservation Status: Species of Least Concern

- Numbers have increased since 1966

Fun Fact: Whenever a hawk or eagle appears onscreen, no matter what species, the shrill cry is almost always a red-tailed Hawk.



Freja
Gender: Female
Date Acquired: 2019
Approximate hatch date: 2017
Reason for Non-Release: Ex-falconry bird
Lifespan: 10 – 12 years in wild; 20-25 years in captivity

Common Name: Harris Hawk

Scientific Name: Parabuteo unicinctus

General Species Information

Appearance:

- Medium-large bird with dark brown plumage, chestnut shoulders and white on the base and tip of the tail.
- Have bright yellow legs and beak
- Females are larger than males by about 35%

Habitat/Range:

- Found in southwestern US, Chile, Argentina, & Brazil
- Semi-open desert lowlands, often among cactus, and in some savannah and wetland habitats

Diet:

- Mostly medium-sized mammals (hares, rabbits, squirrels), but also may take quail, medium-sized birds and reptiles.
- They are agile flyers that, when hunting, may also take to the ground, running and hopping to seize prey.

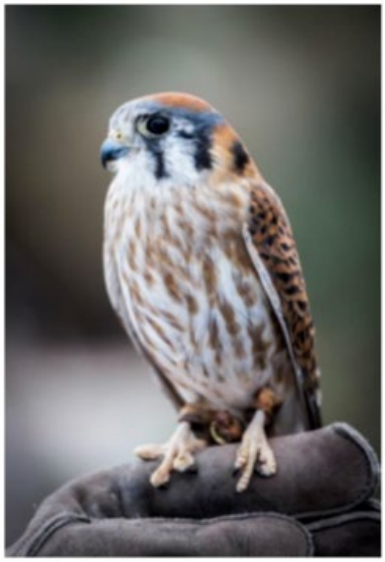
Predators:

- Coyotes & bobcats go after nests.

Conservation Status: Species of Least Concern

- Vulnerable to habitat loss due to urbanization and oil and gas development that reduces habitat quality and prey availability

Fun Fact: One of the only raptors known to hunt in groups to increase their hunting success rate. These gregarious hawks employ some of the most sophisticated cooperative hunting strategies known in birds, and they feed according to dominance hierarchies within the group.



Mariah
Gender: Female
Date Acquired: May 2010
Approximate hatch date: Unknown
Reason for Non-Release: Imprinted on humans (someone tried to hand raise her as a pet)
Lifespan: ~5 years in the wild; into the low teens in captivity

Common Name: American Kestrel

Scientific Name: Falco sparverius

General Species Information

Appearance:

- Has the typical falcon body shape; a short neck, and a small head with a black and white pattern and dark, vertical, black stripes under the eyes
- Both Males and females are rust-colored; however the males have blue-gray wings and an unbarred (not striped tail), while the female sports a barred (striped) tail and lack the blue-gray wings

Habitat/Range:

- North America and most of southern South America
- Prefer open habitats, including meadows, grasslands, deserts, parkland, agricultural fields, urban and suburban areas

Diet:

- Large insects, small mammals, reptiles, amphibians, & small birds

Predators:

- Raccoons, cats, and snakes can prey on nesting kestrels

Conservation Status: Species of Least Concern

- Populations declined by about 66% between 1966 and 2014
  Main threats: habitat destruction and pesticide use on their prey

Fun Fact: Unlike humans, kestrels can see ultraviolet light. This enables kestrels to make out the trails of urine that voles, a common prey animal, leave as they run along the ground. Like neon diner signs, these bright paths may highlight the way to a meal!

Common Name: Red-Shouldered Hawk

Scientific Name: Buteo lineatus

Romeo (male) & Athena (female)
Dates Acquired: 11/1999 & 2017
Approximate hatch dates: 1999 & Unknown
Reason for Non-Release: Both have wing amputations due to injury
Lifespan: 10-12 years in wild

General Species Information

Appearance:

- Medium-sized with broad, rounded wings and medium tails that they fan out when soaring.
- Adults - colorful hawks with dark-and-white checkered wings and warm reddish barring on the breast. The tail is black with narrow white bands.
- Juveniles - brown above and white below streaked with brown

Habitat/Range:

- Found in the eastern half of the US & in western CA
- Considered forest raptors . In the west, they live in riparian and oak woodlands, and also in eucalyptus groves and some residential areas.

Diet:

- Eat mostly small mammals, lizards, snakes, and amphibians

Predators:

- Incubating adults, nestlings and eggs are vulnerable to predation by great horned owls and raccoons.
- Non-incubating adults are not usually vulnerable to predation

Conservation Status: Species of Least Concern

Fun Fact: Although crows often mob red-shouldered hawks to try and steal food, they may also both attack a great horned owl and join forces to chase the owl out of the hawk's territory.

Cuzco
Gender: Male
Date Acquired: 03/07/2017
Approximate hatch date: Unknown
Reason for Non-Release: Unknown
Lifespan: ~17 years in the wild

Common Name: Crested Caracara

Scientific Name: Caracara cheriway

General Species Information

Appearance:

- Large, long-legged raptor. Black cap with short crest at back. Pale sides of back and neck. Bare red skin on face. Black body. White tail with wide black tip.

Habitat/Range:

- Found through Central America, very small section of central Florida & southeast Texas
- Open country, including pastureland, cultivated areas and semi-desert, both arid and moist habitats but more commonly in arid.

Diet:

- An opportunist, hunting and scavenging in a variety of ways.
- Insects; small and occasionally large vertebrates, including fish, reptiles, amphibians, birds, and mammals; eggs; and carrion.

Predators:

- Has few natural predators once full grown. Habitat destruction is the main cause of decline in the species.

Conservation Status: Species of Least Concern

- The Northern crested caracara is considered threatened in Florida. Loss of habitat, particularly due to development and the expansion of citrus orchards, is negatively affecting caracara populations in this state.

Fun Fact: One of the few raptors that will hunt on foot. They walk on the ground along roads, searching for food.

Shadow
Gender: Female
Date Acquired: 03/2020
Approximate hatch date: Unknown, but adult when acquired.
Reason for Non-Release: Injured wing
Lifespan: Oldest recorded was ~6 years old in wild

Common Name: White-tailed Kite

Scientific Name: Elanus leucurus

General Species Information

Appearance:
- Narrow wings and a long, white tail with black shoulders and red eyes

Habitat/Range:
- Along the entire west coast of the US and into Texas and central America
- Found in savannas, woodlands, marshes, and grasslands

Diet:
- Small mammals, birds, lizards, and insects on rare occasions

Predators:
- Few predators, but does compete with hawks & harriers

Conservation Status: Species of Least Concern
- Urban development is impacting nesting sites and prey availability.

Fun Facts:
- They get their name "kite" because of the way the hunt - scans and hovers like a kite at up to 80 feet in the air and then dives down and grabs prey with feet.
- Males will offer females prey to begin courtship displays
- They roughly resemble an angry sea gull

Common Name: Great Horned Owl

Scientific Name: Bubo virginianus

Pico
Gender: Unknown
Date Acquired: 2003
Approximate hatch date: Unknown
Reason for Non-Release: Break in right wing, came from Project Wildlife
Lifespan: ~13 years in wild

General Species Information

Appearance:

- Large, thick-bodied owls with two prominent feathered tufts on the head and yellow eyes.
- Feathers are a mottled gray-brown, with reddish brown faces and a near white patch on the throat

Habitat/Range:

- Found all across North America - often in woods, particularly young woods interspersed with fields or other open areas.
- The broad range of habitats they use include deciduous and evergreen forests, swamps, desert, tundra edges, and tropical rainforests, as well as cities, orchards, suburbs, and parks.
- Found throughout N. America & parts of S. America

Diet:

- They have the most diverse diet of all North American Raptors.
- Their prey range in size from tiny rodents and scorpions to hares, skunks, geese, and other raptors.

Predators:

- They are an apex predator, but face threats from humans

Conservation Status: Species of Least Concern

- Populations rise and fall in cycles along with prey populations. They adapt well to habitat change as long as nest sites are available.

Fun Facts: When clenched, their strong talons require a force of 28lbs to open. The owls use this deadly grip to sever the spine of large prey.

Common Name: Turkey Vulture

Scientific Name: Cathartes aura

Walter
Gender: Male
Date Acquired: 1999
Approximate hatch date: 1997
Reason for Non-Release: Brought into a rehab facility in LA as a juvenile with an injured right wing that had to be amputated (hit by car)
Lifespan: 16 years (wild) 30 years (captivity)

General Species Information

Appearance:

- Large, dark birds with long, broad wings. Bigger than raptors except eagles and condors, they have long 'fingers' at their wingtips and long tails that extend past their toe tips in flight.
- They appear black from a distance but up close they are a dark brown with a featherless red head and pale bill.
- While most of their body and forewing are dark, the undersides of the flight feathers are paler, giving a two-toned appearance.

Habitat/Range:

- Found year round across the southern US, central America and south America. In breeding season (summer), they can be found in the northern US & southern Canada.
- Found in open areas like mixed farm land, forest, and rangeland. They roost in trees, on rocks, & other high secluded spots.

Diet:

- Carrion (dead animals) – use excellent sense of smell to find

Predators:

- Has few natural predators - may fall prey to large eagles or owls.

Conservation Status: Species of Least Concern

- They were threatened by side-effects of DDT, but today they are among the most common large carnivorous birds in N. America.

Fun Fact: Often defecate on their legs, using the evaporation of the water in the feces/urine to cool itself, a process known as urohidrosis

Wayne
Gender: Male
Date Acquired: 12/21/2017
Approximate hatch date: 2006
Reason for Non-Release: Damaged right wing (cause unknown)
Lifespan: 20 years in wild

Common Name: Swainson's Hawk

Scientific Name: Buteo swainsoni

General Species Information

Appearance:

- Large with broad wings and a short tail. Most have a light belly with a dark or reddish-brown chest and brown or gray underparts.
- Although not a true sexual dimorphic species, most males have gray heads and females tend to have brown heads.

Habitat/Range:

- Mainly found in western US, but also can be found in western Canada and northern Mexico, and Argentina in winter months.
- Favor open habitats for foraging – prairies, grasslands, farms.

Diet:

- Mainly mammals and insects

Predators:

- Great horned owls. At times coyotes, bobcats & golden eagles

Conservation Status: Species of Least Concern

- Overall, Numbers are stable with a slight increase since 1966. Historically declines of this species occurred when farmers shot them in belief that they harm livestock.

Fun Fact: They have a variety of hunting methods similar to other raptors. Like the Crested Caracara, they can often be seen on foot running after insects and small mammals with their wings partially outstretched. They will also hover like kites as they scan open fields for prey and soar low over prairies and pastures while hunting.

Winter
Gender: Male
Date Acquired: 11/2015
Approximate hatch date: 2005
Reason for Non-Release: Originally from Wisconsin. He was acquired from Sky Hunters, where he was used as an educational bird. Unsure of why he was there to begin with. He has a chronic case of bumble foot.
Lifespan: ~16 years in wild

Common Name: Ferruginous Hawk

Scientific Name: Buteo regalis

General Species Information

Appearance:

- Large *Buteo* hawks with relatively long wings and large heads. The wings are narrow to form more pointed tips than is typical for other buteos.
- Light-morphs have strikingly white underparts and rusty legs and upperparts with pale heads. Rarer dark morphs are mostly a deep rufous-chocolate.

Habitat/Range:

- Found in western US and most of Mexico. The species winters here in San Diego (how he got his name)
- Prefer open country - semiarid grasslands with scattered trees, rocky mounds or outcrops, and shallow canyons that overlook open valleys. They may occur along streams or in agricultural areas in migration.

Diet:

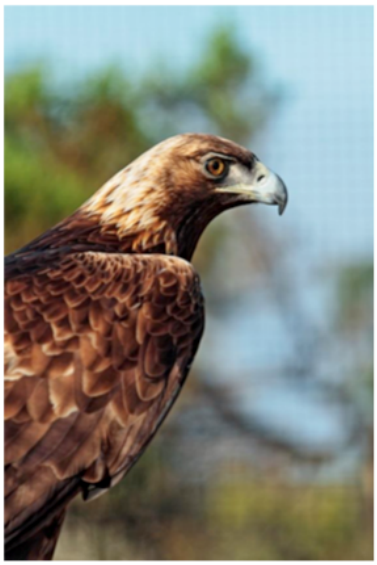
- Small to medium sized rodents, birds, reptiles, & some insects

Predators: They are an apex predator, but face threats from humans.

Conservation Status: Species of Least Concern

- Threats include cultivation, over grazing and fire degrading habitat throughout its range, and the controlling of small mammal populations limiting food resources.

Fun Fact: When bison still roamed the west, Ferruginous Hawk nests contained bison bones and hair along with sticks and twigs.



Dorado
Gender: Male
Date Acquired: 10/5/2002
Approximate hatch date: Est. to be 5-10 when acquired.
Reason for Non-Release: partial left wing amputee. Hit by car near Palm Desert, CA
Lifespan: ~30 years in wild

Common Name: Golden Eagle

Scientific Name: Aquila chrysaetos

General Species Information

Appearance:

- One of the largest birds in North America. The wings are broad like a red-tailed Hawk, but much longer.
- Adult Golden Eagles are dark brown with a golden sheen on the back of the head and neck

Habitat/Range:

- Found from Mexico through much of western North America as far north as Alaska; they also appear in the east but are uncommon. Also found in Asia, Northern Africa, and Europe.
- Prefer open habitats. Found primarily in mountains up to 12,000ft, canyonlands, rimrock terrain, and riverside cliffs and bluffs. Nest on cliffs and steep escarpments in grassland, chapparal, shrubland, forests, and other vegetated areas.

Diet:

- Primarily feeds on small to medium-sized mammals, including hares, rabbits, ground squirrels, prairie dogs and marmots.

Predators: They are an apex predator, but face threats from humans.

Conservation Status: Species of Least Concern

- Most recorded deaths are from collisions with vehicles, wind turbines, & other structures or electrocution at power poles.

Fun Fact: They are capable of taking out larger prey such as wild ungulates, cranes, and domestic livestock. However, they will feed on rabbits, hares, ground squirrels, and prairie dogs more often.

Betsy
Gender: Female
Date Acquired: 2018
Approximate hatch date: 2014
Reason for Non-Release: Injured left wing. Acquired from Fund for Animals Wildlife Center in Ramona
Lifespan: ~25 years in wild

Common Name: Bald Eagle

Scientific Name: Haliaeetus leucocephalus

General Species Information

Appearance:

- Adults- white heads and tails with dark brown bodies and wings. Their legs and beaks are bright yellow.
- Juveniles have mostly dark heads and tails; their brown wings and bodies are mottled with white in varying amounts. Mature around age 5 and receive adult coloration.

Habitat/Range:

- Found throughout The U.S., Parts of northern Mexico, and throughout most of Canada (as far north as Alaska).
- Commonly found near lakes, reservoirs, rivers, marshes and coasts. (Locally found near Lake Henshaw)

Diet:

- Opportunistic feeder. Eats fish, birds, mammals, and carrion.

Predators: They are an apex predator, but face threats from humans.

Conservation Status: Species of Least Concern

- Was on Endangered Species List from 1978-2007, but due to conservation efforts, the global population has increased greatly!
- It became rare in the mid-to-late 1900's due to trapping, shooting and poisoning as well as pesticide caused reproductive failure. The bird's main threat was a pesticide, DDT. DDT was banned and has led to a dramatic resurgence.

Fun Fact: Ben Franklin originally wanted the wild Turkey to be our National Symbol because he thought Bald Eagles were dishonorable.

Common Name: Western Screech Owl

Scientific Name: Megascops kennicottii

Captain
Gender: Male
Date Acquired: 2018
Approximate hatch date: Unknown
Reason for Non-Release: Injured Eye (missing right eye)
Lifespan: 13 years in wild, 19 years in captivity

General Species Information

Appearance:

- Small owls with stocky bodies. They have somewhat square heads, almost no neck, and conspicuous ear tufts. They are superbly camouflaged birds and can by gray, brown, or reddish-brown. They have yellow eyes.

Habitat/Range:

- Found in the western US, Mexico, and parts of western Canada
- Common in open woodlands, forested stream sides, deserts, suburban areas, and parks

Diet:

- Mostly feed on arthropods, reptiles, amphibians, small mammals, and occasionally birds
- They are a predator to be reckoned with; they occasionally take prey bigger than their own body, including cottontail rabbits

Predators:

- Hawks, snakes, raccoons, skunks, weasels or even larger owls

Conservation Status: Species of Least Concern

- High-density development and clear-cut forestry have a negative impact on screech owl habitat. They are also dependent on standing dead trees containing cavities for their nest sites

Fun Fact: They don't really screech. They make an accelerating series of hollow toots. The 'screech' part of its name better suits the closely related Eastern Screech Owl, who makes a descending whine sound.

Common Name: Burrowing Owl

Scientific Name: Athene cunicularia

Denver
Gender: Male
Date Acquired: 10/2019
Approximate hatch date: 04/2015
Reason for Non-Release: Raised under human care at Pittsburg National Aviary
Lifespan: ~8 years in the wild

General Species Information

Appearance:

- The burrowing owl is smaller than a pigeon and has distinctive long legs and a short tail. It does not have ear tufts, and has very serious-looking eyes.
- Its feathers are a sandy brown color above, while the breast area is beige with spotted bars.

Habitat/Range:

- They range from the western portions of North America to the arid regions of Central and South America.
- Burrowing Owls are found in open, dry grasslands, agriculture lands and desert habitats.

Diet:

- They eat mostly insects, small rodents and occasionally birds, which they hunt either by day or night.

Predators:

- Badgers, skunks, snakes, domestic cats and dogs, weasels and some other birds of prey species

Conservation Status: Species of Least Concern

- Populations are declining due to development decreasing the number of burrowing animals that they use the burrows of.

Fun Fact: As a defense mechanism, owlets (baby owls) can perfectly mimic the rattling sound of a prairie rattlesnake. Adults can mimic the hiss of a rattlesnake

Chevy
Gender: Male
Date Acquired: 03/19/2015
Approximate hatch date: 03/30/2014
Reason for Non-Release: Came from The Living Desert (Palm Desert, CA), hatched and imprinted on humans
Lifespan: 7-8 years

Common Name: Greater Roadrunner

Scientific Name: Geococcyx californianus

General Species Information

Appearance:

- Long legs, a very long straight tail, and a long neck. The head has a short crest and the bill is long, heavy, and slightly down-curved. They are a tan or bran with extensive blackish streaking on the upper parts and chest. The crown is black with small, pale spots, and they have a patch of bare, blue skin behind the eye. The wings are dark with white highlights.

Habitat/Range:

- Found in the southwest US and northern Mexico
- Prefer semi-open, scrubby habitat from below sea level to nearly 10,000ft.

Diet:

- Eat mostly animals, including small mammals, reptiles, frogs, toads, insects, centipedes, scorpions, and birds. They kill rattlesnakes by pecking them repeatedly in the head.
- In winter, fruit, seeds and other plant material make up about 10% of the roadrunner's diet.

Predators:

- Occasionally preyed upon by hawks, house cats, raccoons, rat snakes, bullsnakes, skunks and coyotes.

Conservation Status: Species of Least Concern

- Habitat loss is biggest threat.

Fun Fact: Prefer walking or running and attain speeds up to 17mph

Salsa & Fresca
Gender: Both Male
Date Acquired: 03/2020
Approximate hatch date: Unknown; Salsa (larger) is older than Fresca (smaller)
Reason for Non-Release: Acquired from SoCal Parrot Rescue. Have beak damage due to unknown cause.
Lifespan: 30 years in wild

Common Name: Mitred Conures

Scientific Name: Psittacara mitratus

General Species Information

Appearance:
- Green on the back with yellow underneath and red on the head & face

Habitat/Range:
- Naturally in Peru, Bolivia, and Argentina. Introduced to California, Hawaii, and Florida
- Typically in dry subtropical zones but also in some forests, grassy hills, prefer larger trees

Diet:
- Not well known in the wild, most likely crops.
- Some of our naturalized parrots favorite food sources are; loquat, fig, pine (nuts), guava, coral tree nectar (blossoms), etc.

Predators: Cooper's hawks

Conservation Status: Species of Least Concern
- Greatest threat is the pet trade
- Globally, the parrot family is the most rapidly declining family of birds on the planet.

Fun Facts:
- Sounds often resemble a trumpet
- Younger birds typically lack the red face

Cora
Gender: Female
Date Acquired: 2003
Approximate hatch date: Unknown
Reason for Non-Release: Fused wing joints, transferred from Wetlands Wildlife Care Center

Common Name: Black-Crowned Night Heron

Scientific Name: Nycticorax nycticorax

General Species Information

Appearance:
- Adults - light-gray with a black crown and an all-black bill
- Juveniles - brown with large white spots on the wings and a yellow-and-black bill

Habitat/Range:
- Typically found in wetlands like estuaries, marshes, streams, lakes and reservoirs
- Found throughout most of South America year round and most of the US coast line

Diet:
- Leeches, earthworms, insects, crayfish, clams, mussels, fish, lizards, amphibians, eggs, rodents

Predators:
- Hawks and raccoons typically prey on eggs and young

Conservation Status:
- Numbers are decreasing according to surveys because of threats like pesticide and heavy metal pollution

What can you do?
- Don't use pesticides in your yard/garden

Squeaker
Gender: Male
Date Acquired: 2004
Approximate hatch date: Unknown
Reason for Non-Release: Captive breeding program in Colorado

Common Name: Black Oystercatcher

Scientific Name: Haematopus bachmani

General Species Information

Appearance:
- Adults - Black plumage, pale legs, bright orange beak
- Juveniles – Dark plumage with a dark-tipped orange bill

Habitat/Range:
- Coastal rocky shore, mudflats in summer
- Alaska to Baja California

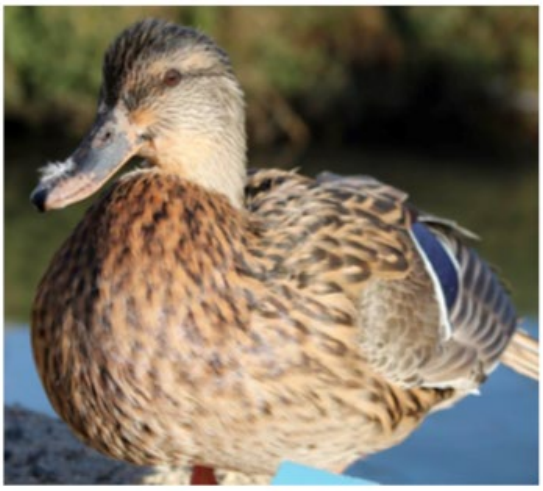
Diet:
- Mollusks, especially mussels and limpets; occasionally eating crabs and bugs too

Reproduction:
- 1-4 olive-spotted eggs only, usually nests on islands, nests built of rocks and shells

Fun Facts:
- Will sometimes use its beak to hammer open shells, some will mate for life

Conservation Status:
- Mainly threatened by oil spills and coastal pollution

What can you do?
- Participate in a community clean-up & dispose of your trash properly



Roxy
Gender: Female
Date Acquired: Sept. 2006
Approximate hatch date: Unknown
Reason for Non-Release: From Project Wildlife

Common Name: Mallard

Scientific Name: Anas platyrhynchos

General Species Information

Appearance:
- Males – Green head and grey body
- Females – Mottled brown

Habitat/Range:
- Ponds and parks as well as wilder wetlands and estuaries
- Found in North America and Eurasia

Diet:
- Not divers but "dabble feeders"; opportunistic eating vegetation and invertebrates

Reproduction:
- Generally monogamous; pairing takes place in the fall with breeding in spring
- Only mothers incubate and care for eggs; nest on the ground with 1-13 eggs and 2 broods

Fun Facts:
- Ducks are strong fliers; migrating flocks of Mallards have been estimated traveling at 55 miles per hour.
- Origin species for most domestic ducks; will come to nest boxes if available

Conservation Status:
- Low Concern

Hershey
Gender: Female
Date Acquired: Dec 2012
Approximate hatch date: Unknown
Reason for Non-Release: Domestic Species

Common Name: Rouen/Rouen Hybrid

Scientific Name: Anas platyrhynchos domesticus

General Species Information

Appearance:

- Resembles a very large mallard

Habitat/Range:

- Domestically bred species for meat not egg-laying
- Europe and the United States

Diet:

- Not divers but "dabble feeders"; opportunistic eating vegetation and invertebrates

Fun Facts:

- Bred throughout Europe since 1800
- They are good foragers and good for insect control

Salt & Pepper
Gender: Both are unknown
Date Acquired: Aug 2017
Approximate hatch date: Aug 2016
Reason for Non-Release: Wing injuries. imprinted

Common Name: Ring-Billed Gull

Scientific Name: Larus delawarenis

General Species Information

Appearance:
- Smallest of the white gulls
- Adults - dark yellow bill with black band on it; black tipped wings
- Juvenile (first two years) - motley brown and gray with a pink bill and legs

Habitat/Range:
- Found around all bodies of water
- North America; Canada to Mexico

Diet:
- Omnivorous; Fish, insects, earthworms, rodents, grain/fruits, human food scavenging

Reproduction:
- Colony nesters, nests will be about 2ft wide, 2-4 eggs

Fun Facts:
- More commonly seen inland than other gull species
- Adults play by repeatedly dropping objects, then swooping to catch them—perhaps honing their hunting moves.

Conservation Status:
- Big issues with consuming trash and pollution

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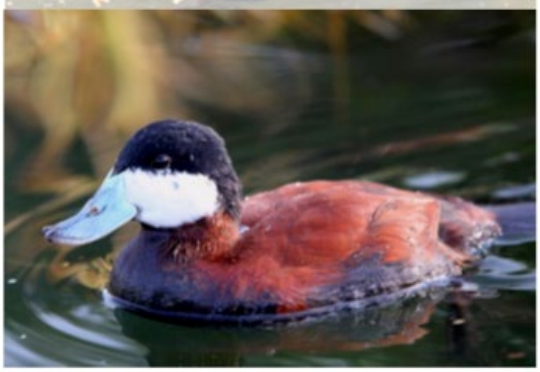

Top: non-breeding male; bottom: male in breeding season

Rudy
Gender: Male
Date Acquired: 2007
Approximate hatch date: Unknown
Reason for Non-Release: Captive bred at San Diego Zoo, CA

Common Name: Ruddy Duck

Scientific Name: Oxyura jamaicensis

General Species Information

Appearance:

- Small, stocky, large headed; dark cap with pale cheeks
- Non-breeding male - dull gray-brown above and paler below with dull gray bills
- Breeding male - red plumage (feathers) and blue beak

Habitat/Range:

- Ponds, lakes, and sheltered bays
- North America from Alaska/Canada to Mexico and into Central America

Diet:

- Plants, insects, and mollusks

Reproduction:

- Nests in marshy vegetation on the ground, eggs are large and white with a pebble texture; minimal parental care

Fun Facts:

- Harassed by grebes and coots during breeding season; ducklings preyed on by herons and gulls
- Males court females by creating a swirl of bubbles in the water to attract a mate
- Fossils have been found dating over 11,000 years

Conservation Status:

- Low Concern

Igor
Gender: Female
Date Acquired: Unknown
Approximate hatch date: Unknown
Reason for Non-Release: Damaged right leg, rehabilitated at Project Wildlife, CA

Common Name: White-Faced Ibis

Scientific Name: Plegadis chihi

General Species Information

Appearance:
- Blackish in color with a long curved beak and long legs

Habitat/Range:
- Prefers freshwater marshes but will venture to saltwater too
- Most of the US excluding the south east; west of the Mississippi

Diet:
- Aquatic prey in shallow water; probing in mud with long beak; mostly insects, crustaceans, earthworms

Reproduction:
- Nests in colonies in low trees/reeds
- Sites shift from year to year
- Uses many reeds and rushes to build nest
- Eggs pale blue-green to turquoise
- Young fly at 4 weeks

Fun Facts:
- Flock flies in lines like cormorants
- Breeding adults develop red face and red plumage during breeding season
- Related to spoonbills

Conservation Status:
- Trending upward; highly impacted by rising sea levels

Common Name: Hooded Merganser

Scientific Name: Lophodytes cucullatus

Top bird – male; bottom bird - female

Molly
Gender: Female
Date Acquired: January 2020
Approximate hatch date: June 2019
Reason for Non-Release: Wing injury

General Species Information

Appearance:
- Males - black and white pattern and chestnut flanks
- Females - have a "cinnamon" crest

Habitat/Range:
- Shallow water marshes, small lakes, ponds, wetlands, forested rivers
- When migrating, may move to more coastal, saltwater bodies
- Eastern half of North America and the Pacific Northwest

Diet:
- Fish & crayfish; serrated bill to help them grasp food

Reproduction:
- Nest in tree cavities, ducklings jump from the nest to the forest floor when they are one day old
- Up to 13 eggs in a clutch

Fun Facts:
- Swim lower in the water compared to other duck species; take flight by running on water
- Live in small groups; sometimes up to 40 individuals
- At times will lay eggs in another bird's nest (brood parasitism)
- Smallest of the Merganser species
- Predators: small and large mammals, woodpeckers, & snakes

Conservation Status:
- Low concern, hunting was historically the largest issue
- Loss of habitat (tree clearing) is becoming an increasing problem for their nesting

Igor
Gender: Female
Date Acquired: Unknown
Approximate hatch date: Unknown
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Common Name: White-Faced Ibis

Scientific Name: Plegadis chihi

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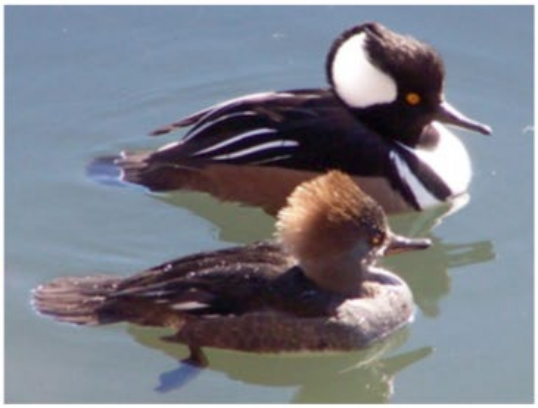

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Light Footed Ridgway's Rail Breeding Program

The Living Coast Discovery Center is working closely with US Fish and Wildlife Services and other partners to protect and conserve the Light Footed Ridgway's Rail (formerly known as the Light Footed Clapper Rail) through a species breeding program that began in 1998. *Together, we have helped hatch, raise, and release over 350 rails.*

Current Population Status

- Listed as critically endangered by the US Fish and Wildlife Services
- Low population status of 203 pairs in 1980
- In 2012-2013 over 520 breeding pairs were counted in California marshes

What can you do?

- Drive safely – especially when near critical wildlife habitats
- Encourage the protection of state parks and unclaimed lands to increase habitat for birds
- Pollution prevention: clean up trash near beaches, parks, streets, drains, highways, etc.

Appearance:

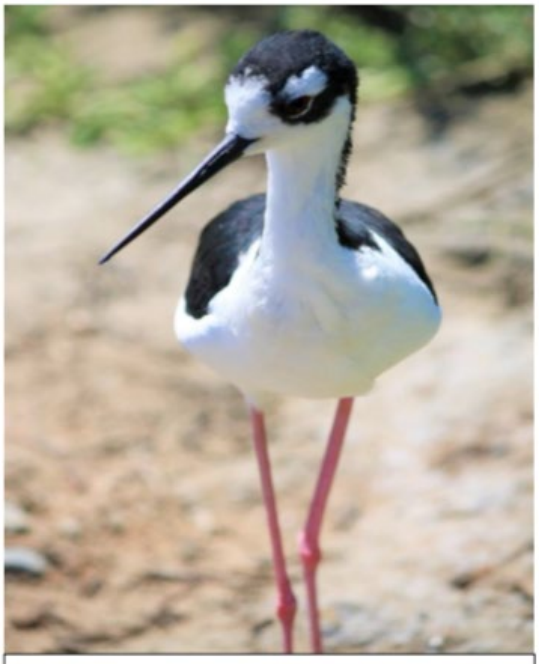
- Medium-sized, tawny brown-gray colored marsh bird, long toes are dull yellow-grey, long beak is down-curved

Habitat/Range:

- Coastal marshes, lagoons, and other marine environments with shallow waters and mudflats
- Require higher vegetation (cordgrass and pickleweed) for covering and nesting purposes
- Santa Barbara, California, US to San Quintin Bay, Baja California, MX; mostly coastal with some inland populations (Salton Sea and Lower-Colorado River subpopulations)

Diet:

- Garden snails, horn snails, saltmarsh snails, beetles, fiddler crabs, hermit crabs, crayfish and other saltmarsh invertebrates



Gender: Male
Date Acquired: 3/18/18
Approximate hatch date: Unknown
Life Span: ~ 5 years in the wild
Reason for Non-Release: Found with a wing injury and damaged eye. He was taken in by the Santa Barbara Wildlife Care Network. After rehabilitation, he was considered non-releasable. He is now missing one eye, but is fully flighted.

Common Name: Black- Necked Stilt

Scientific Name: Himantopus mexicanus

General Species Information

Appearance:

- Black face, hind neck and back with a white throat and under parts. The have very long, thin reddish legs. Their bill is long, thin, black and straight.
- Males - glossy black feathers and a white spot above each eye. Females - dark, brown dorsal feathers

Habitat/Range:

- Typically found in wetlands like estuaries, marshes, streams, lakes and reservoirs
- While some populations stay in one place year-round, others will disperse short distances
- Found in South America & US coast line year round

Diet:

- Leeches, earthworms, insects, crayfish, clams, mussels, fish, lizards, amphibians, eggs, rodents

Predators:

- Hawks and raccoons typically prey on eggs and young

Conservation Message:

- Numbers are decreasing according to surveys because of threats like pesticide and heavy metal pollution.