

Refuge Expedition Lesson Plan

A visit to Willapa National Wildlife Refuge offers an opportunity for students to use their knowledge and observation skills gained from classroom lessons and workbook extensions. During the expedition students test educated guesses about Refuge wildlife, collect data, and report this information to Refuge staff.

Key Concepts

This lesson's activities will help students to apply:

- Knowledge of the use of facts, inference and experiments.
- All their senses to make and record detailed field observations.
- Skill in sharing field observations in a concise and thoughtful manner.
- Understanding that everyone is responsible for the success of National Wildlife Refuges and the future of wildlife.
- *Optional:* Individual quiet time can support personal observation, reflection and connection with the wild.

Materials

- Expedition schedule (one for each small group instructor, expedition leads, and teacher)
- Habitat map (one for each small group)
- Timer or some way to keep track of time
- Volunteer nametags and vests
- 2-way radios (at least one for lead and assistant instructors)
- First aid kits (at least one for lead and assistant instructors)
- Emergency plan and school contact numbers
- Extra notebooks, paper and pencils
- Extra rain gear and boots
- Tents
- Portable microphone
- Refuge Deed (one for each student, chaperone and teacher)
- Instructor Inference Sheets (each Refuge generated inference sheet contains safety information, experiment instructions, and equipment list)
- Equipment to test inferences (see instructor's inference sheet for a complete equipment list)
- *Optional: journal sticker for individual reflection activity*

Set-up

- Students bring their observation (*Let's Go Outside*) notebooks, pencil and lunch.
- Each group or student brings a Willapa NWR Wildlife Identification Guide from the classroom.
- Ensure the students are divided into small groups (assigned by teacher to total the number of instructors).
- Ensure that each student group has at least one chaperone.
- Ensure that each student group has selected at least three inferences to test.
- Each instructor is assigned a small group. The instructor will stay with their assigned student group for the duration of the expedition.
- Inference equipment is boxed, bagged or grouped for each inference.
- Parking for chaperones, instructors and buses is delineated.
- Lead instructor and assistant have 2-way radios on and check that the radios are working properly.
- Outhouses are placed.



1. Intro (10 minutes) – Facilitated by lead instructor on bus

1. Welcome and introductions – “Good morning! Refuge Explorers have an important expedition today. You have been training all spring for this important activity. You have facts about the Refuge, observation skills and have made educated guesses/inferences about what you will find...”
2. Recap purpose of the expedition – “An expedition is a journey to make observations and scientific discoveries. Today you’ll help the refuge gather important information that may help wildlife”.
3. Unload bus, split class(es) into pre-assigned small groups, and have instructors join assigned groups.

2. Small Group Intro (15 minutes) – facilitated by small group instructors

- a) Introductions - Form a circle that includes the students, chaperone(s), and instructor. Instructor facilitates a “name game” or introduction activity. Example:
 - Have each person think of an animal or plant at Willapa NWR that starts with the same letter as their first name and a gesture that represents it (they can use the wildlife card for ideas).
 - Have one person say their name, the plant or animal name, and make a gesture like that animal/plant.
 - The group repeats the name, animal/plant name and performs the gesture.
 - Continue until each person in the circle has shared names and gesture.
- b) Gear Check & Restrooms
 - Have students use the restrooms. While waiting perform gear check.
 - Ensure that each student has: an observation notebook, two pencils, backpack, lunch, water, and raingear (as needed). Each group should have wildlife guides, inferences/experiments, additional equipment as needed to test inferences.
 - Provide clipboards, plastic bags, notebooks and pencils, rain gear as needed.
- c) Follow Schedule – individual school schedules will direct the small group’s activities and outline timeframes.

3. General Schedule (each group will follow specific timeline defined by the length of time they are at the refuge)

Each small group will visit at least 3 habitats and each student will record at least one observation per habitat:

a) Expedition (90 – 120 minutes) – facilitated by small group instructors

1. **Inference Huddle** - Gather group in a quiet location to review which inferences they will be testing as a group (the students should have a list of inferences already selected. If not, the instructor will choose for them). Instructors will help the group plan where the group will go first using inferences and habitat maps (NOTE: this is student-directed learning, so the students should be able to tell you where they need to go). Ask:
 - What habitats do you need to visit?
 - Which one shall we go to first?
 - How do we get there from here?
2. **Travel to first inference testing location** - Students lead the way, instructors helping them as needed
3. **Review & Prepare** - Students share their inference and experiment idea with the instructor before they conduct it. Instructors refer to the Instructor Inference Sheets for specifics and will share any safety concerns or specific areas of focus the students may need or have not thought of.
4. **Conduct Experiment and Make Observations** - Students verbally share their observations with the instructor after/during the experiment
 - What do they hear, smell, see, and feel?
 - Is their inference correct? Why or why not?
 - Why is this information helpful to Refuge staff?
 - What can the student group do differently to get more/better information/facts?



- Allow the students to make adjustments and complete the experiment again.
5. **Record Data** - At the end of each experiment, instructors have students sit quietly for five minutes and record observations, thoughts, feelings and/or sketches in their notebooks to capture their “data”. Each student must record at least one observation for each inference test. Remind them that they will be reporting their findings to Refuge Staff.
 6. **Repeat** - Work through the above process again, until at least three inferences have been tested. NOTE: you may have to speed up the students or leave out an experiment if time is running short.
 7. **If time allows** – have the students choose what else they would like to explore, and do that.

b) **Optional: Individual Reflection (15 minutes) – facilitated by small group instructors**

1. Instructors explain to students that they will have an opportunity to find a “special spot” to make observations using their senses. They can choose any location that:
 - Is within view of an adult associated with their group
 - No closer than 10 feet from another student or adult
 - Is safe to travel to and sit in
2. Instructors explain that the students will have just 2 minutes to find their special spot and get settled. Once there, they will have 10 minutes to do the following (instructors can give each student a label for their journals as a reminder):
 - LOOK – take in the big picture or focus on something small
 - LISTEN – what do you hear, where and how much?
 - FEEL – Is there wind or rain touching your skin? How does an object (such as a leaf, rock or soil) feel?
 - SMELL – Can you sniff out any odors – pleasant or unpleasant?
 - RECORD – Draw or write in your notebook with enough details that you will remember this spot later. You can write a poem, a song, a story, or field notes. You can draw a picture of something small or the whole view you see.
 - REMEMBER – this is your quiet time in your special spot, do not make eye contact or talk with anybody else.

4. **Eat Lunch (30 minutes) – gather on dike road or at a designated location if weather is inclement**

5. **Prepare Reports and Return (30 minutes) – facilitated by small group instructors**

- a) Instructor finds a quiet spot for the group to prepare their data report.
- b) The group selects data to report. The group will report on one inference that they tested and address the following:
 - What inference did they test and where?
 - One important observation made during testing.
 - Was their inference correct?
 - How does their data help Refuge staff help wildlife?
- c) As a group, students choose how they will report their data to refuge staff. Instructors facilitate if needed. For example, will the group have one spokesperson for the whole report, a different spokesperson for each point, or a group presentation (a skit, song, poem or sculpture)?
- d) All groups return to designated location ready to report data.



6. Report Data to Refuge Staff (30 minutes) – facilitated by lead instructor and Refuge Staff (i.e. manager/biologist)

- a) All groups gather at designated location. Each group sits together and has their report ready.
- b) Lead Instructor and Refuge Staff co-anchor an “interview-style” report out session in which student groups are interviewed about their data. As each group is interviewed, the Refuge Staff and/or Lead Instructor give specific praise about the information the group shares. The interview continues until all groups have a chance to report their data. For example:

Lead Instructor introduces Refuge Staff and sets the stage for date reports, “Welcome back Refuge Explorers. I have *(Refuge Staff name)* with me this afternoon and we are eagerly awaiting the results of your expedition into the Refuge today. *(Refuge Staff name)*, do you have anything you’d like to say to these intrepid explorers?”

Refuge Staff, “Thanks, *(Lead Instructor’s name)*. I am so pleased and excited to see so many people here today making observations about Refuge wildlife. The Refuge staff is small and can’t possibly accomplish all there is to do to ensure Refuge wildlife for the future. I am so interested in hearing what these Refuge Explorers have to report. I understand they have each prepared a short presentation that includes one inference they tested and where, one important observation made during the testing of that inference, if the inference was correct, and how they believe this data will help the Refuge staff help wildlife.

Lead Instructor, “They sure have! I have been listening in as they have been preparing their data and I believe we’ll hear some very interesting observations about Refuge wildlife today.”

Refuge Staff, “I can’t wait, let’s get started hearing the data! Let’s start with this group (pointing to a group), what inference did you test...” “Wow, you really caught some great detail in that observation and you’re right in thinking this data could help us protect salamander habitat.”

- c) Refuge Staff shares how these observations will help Willapa NWR meet the mission to protect wildlife and habitat, and that each person plays an important role; we are all owners. As part owner of this refuge, each person has a responsibility to help protect wildlife. As a reminder, each student receives a Refuge Deed.
- d) Instructors ensure all refuge gear is returned from students (pencils, field guides, equipment, etc.).

7. Closing (5 minutes) – facilitated by Lead Instructor

- a) Thank students for their efforts and encourage them to continue making observations about nature. Scientists and citizens are making new discoveries all the time. Students and chaperones are encouraged to return to the refuge and share their discoveries with friends and families. “We hope to see you again soon!”
- b) Direct students to load bus.
- c) Instructors double check for any student/school gear, and wave goodbye to the bus as it leaves.

8. Clean-up (10 - 20 minutes) – Staff & Volunteers

- Hang up any wet gear in trailer, LOCK TRAILER
- Refresh materials such as laminated maps, notebooks, sharpen pencils, and prepare equipment for following day or transport back to Refuge.
- If needed, take down tents.
- Thank Volunteers!!!!

