

Animal Adaptations STEM Field Study First Grade

Hi-

Enclosed in this field guide you will find planning materials for your upcoming Animal Adaptations STEM Field Study. The STEM Field Study was inspired by the New Nature Movement. Children learn best through exploration in nature, where they are free to be themselves, boosting self-esteem and confidence for real world experiences. The Animal Adaptations STEM Field Study is designed to support teachers with lesson plans and activities, as well as an outdoor field study, which serves as a foundation for the Life Science in the Next Generation Science Standards and provides a rich and special learning opportunity for students.

This experience is directly tied into the first grade science scope found in the STEMscopes curriculum taught during the first quarter of the school year, Parts of Animals, Protecting the Young, Animal Survival, and Animal Trait Inheritance & Variation. It aligns with the NGSS standards of 1-LS1-1 and 1-LS1-2 as well as SEP 1; Asking questions and defining problems, SEP4; Analyzing and interpreting data and SEP8 Obtaining, evaluating and communicating information.

The [NTPS Animal Adaptations STEM Alignment document](#) shows the cross curricular connections between the all core content areas (i.e. Science, Math, ELA, SEL, Social Studies, and Career Connections).

Enjoy the refuge!



Table of Contents:

Page 1	Introduction letter
Page 2	Table of contents
Page 3	Logistics page 1 of 2
Page 4	Logistics page 2 of 2
Page 5	Check list page 1 of 2
Page 6	Check list page 2 of 2
Page 7	Chaperone guide for Animal Adaptations page 1 of 2
Page 8	Chaperone guide for Animal Adaptations page 2 of 2
Page 9	Pre trip lesson 1 : What is a Scientist
Page 10	Pre trip lesson 2 and 3 : Wonder center and wonder of the week
Page 11	Pre trip lesson 4 : Pondering time
Page 12	Pre trip lesson 5 : Observation window
Page 13	Pre trip lesson 6 : Magnifying lesson
Page 14	Pre trip lesson 7 : Using a science notebook
Page 15	Pre trip lesson 8 : Using a sit spot
Page 16-17	Pre trip lesson 9 : PBIS transportation Pre-trip lesson
Page 18-20	Pre trip lesson 10 : Animal tracks and signs
Page 21	Post trip lesson 11 : Group presentations
Page 22	Tips and tricks
Page 23	Picture vocabulary cards and door poster

First Grade Animal Adaptations STEM Field Study

Who?	First Grade classrooms
What?	Animal Adaptations STEM Field Study
Where?	Billy Frank Junior Nisqually National Wildlife Refuge (BFJNNWR)
When?	Last week of September, October Full day trips from 9:00 AM -2:00 PM ¹
Why?	To give all NTPS students a common experience around Life Science which aligns with the Next Generation Science Standards (NGSS) and curriculum materials used in the classroom

Logistics:

1. Through our science program, students use the Field Experience to deepen their understanding of animal adaptations, how animals protect their young, and how animals survive.
2. Chaperones will be *necessary*. A min. of 1 adult to 5 children is preferred. Chaperones must have cleared background checks and volunteer forms on file. Chaperones need to drive themselves to the Refuge for a chaperone orientation, which will start at 9:30 AM.
3. Chaperones have assigned groups *prior* to the day of the trip, as well as a way to identify students in their groups.
4. There is a [field journal](#) students will use during and after this trip.
5. Pencils, and clipboards will be necessary for completing the field journal.
6. Chaperone sheets and directions will be provided as resources to pass out. Feel free to include your own logistical preferences too. *These sheets should be shared before the day of the trip so parents can have a "quick review" prior to the day of your trip.*
7. It is the participating teachers' responsibility to connect with the school nurse to find out about allergies, collect epi-pens if necessary (and get trained if not recently trained) and arrange for a first aid kit. Directly from the superintendent's office: "If you are taking students on a STEM field study, remember to please send a list of all students to the health room at least two weeks in advance so that the nurse can get field trip packs ready for you to take with you. Let's keep our kids safe while they are having an educational opportunity in the community".
8. Rules for the trip should be taught to students and practiced *prior* to the trip. This should include teaching of the pre-trip lessons, "sit spot" expectations, "PBIS Bus standards" (found in lesson 9 and on the tips and tricks page) and "listening to chaperones".
9. STEM Field Study Science Standards are planned on a timeline to align with your STEMscopes lessons.

¹ Please refer to your building OP for your start and end time for this STEM Field Study. Times vary by school based on date and transportation needs.

First Grade Animal Adaptations STEM Field Study

Check List / Packet

Pre-Approval

- Discuss field study objectives with your building administrator team.
- Teacher training is offered prior to any school bringing students for this trip.
- Notify the kitchen staff of the date of the field study as soon as possible. (This may be done through your school office staff, please discuss this step with them.)

Funding

- Science department is paying for all student transportation costs.
- There is no entry fee for students, teachers, or chaperones for this field study.

Transportation

- Your OPs arrange transportation for your school.
- Double check EARLY that bus (es) are confirmed, and have a 9:30 AM departure time and return by 1:30 PM so students have the full amount of time for lessons scheduled.
- Make sure every student has a smart tag. If a smart tag is needed, please let your office professional know.

Student Forms

- Permission slips – Use your school permission slips. Distribute and collect from parents and guardians.
- Review students' behavior expectations and requirements for the field experience.
- Check the photo permissions forms for your students for "outside organizations" releases. List those who may not have photos taken for this purpose and have the list ready to share as needed.

Office

- Notify office staff of any schedule changes made to accommodate this field study (lunch, etc.).
- Prepare a list of students going and (if applicable) staying. Give to office staff.
- Check with office staff whether you take permission slips with you on the trip or turn them into the office prior to boarding buses.
- Notify the Health Room of the date of field study early. Any allergy/medication training is the responsibility of the teacher and should be completed well in advance of the trip.
- Complete whatever procedures are expected at your school site (checklists, planning meetings, etc.)

The trip itself is a "rain or shine" field experience. Jackets with a hood/umbrellas on hand to predict days would be a great idea, as would a water bottle for each child if the weather is hot.

Chaperones

- There will be no charge for chaperones.
- Chaperones must have a current, up to date [Volunteer Form](#) on file. Get this information to parents as early as possible.
- Younger siblings do not attend the STEM field study, this is important for the safety and education of our first graders. Divided attention with younger children can lessen the experience. Chaperones must attend fully to students of NTPS during the trip.
- One chaperone for each 5 students is the minimum number of chaperones suggested. If you do not receive enough chaperons, please reach out to the Elementary Instructional Specialist (min. 1 week advance notice needed for recruitment of chaperons).
- Remind chaperones to dress appropriately for weather, and bring an umbrella if necessary.
- Chaperones will need to arrive at the Refuge by 9:00 for a chaperone orientation.

- Having groups “preset” with coordinating name tags, lanyard/necklaces, etc. will help your chaperone know who they are monitoring for the day.
- Chaperones need information sheets to guide them with their groups. Sending this home early may be helpful, & giving a copy the morning of should be planned for.

2 weeks prior to trip:

- Complete all pre trip lessons.
- Notify kitchen/office the number of students that will NOT be eating lunch at school the day of the Field Trip. (Notify whomever office staff told you to inform.)
- Give kitchen/office list of students who will purchase lunch from school.
- Confirm with office and Health Room students who will attend the trip.
- Check that chaperones who plan on attending have completed background checks.
- Ask office staff to confirm with Transportation the bus reservation.
- Remind families about the trip, weather appropriate clothing, and lunches.
- Go through photo permission forms in office & list “no outside organization” photo students.
- Make sure every student has a smart tag. If a smart tag is needed, please let your office professional know.

3 Days before trip:

- Remind kitchen/office changes of lunch arrangements from before. (see two weeks prior above)
- Notify Health Room of any changes of students’ attending/not attending from before.
- Prepare driving directions for transportation
- Remind chaperones of the arrival time of 30 minutes prior to classes arriving at BFJNNWR.
- Make sure all chaperones know to arrive at the refuge by 9:30 for orientation.
- Pack your science clipboards, a set of pencils, and chaperone bags.
- Obtain large garbage bags for pack in, pack out.

Day of trip:

- Restroom breaks should happen prior to arrival/loading of buses.
- Collect lunches for students.
- Drop permission slips to the office if that is your arrangement.
- ***Remind chaperones NOT to take student photos.***
- Review pack in, pack out policy with everyone on the trip, remember to pack garbage bags.
- ***Remember to bring student smart tags, student journals, clipboards, and writing utensils for your STEM Field Study.***

After trip:

- Complete all post trip lessons.
- Give permission slips to the office if you have not already done so.
- Return medical kits to the health room.

Chaperone Guide for Animal Adaptations STEM field study

RESPONSIBILITIES

Thank you for volunteering your time to chaperone students through this local STEM Field Study to Billy Frank Jr. Nisqually National Wildlife Refuge. Your guidance allows each child to participate in hands-on activities and real scientific explorations. An informational chaperone video should be watched prior to attending this trip. Please connect with your child's teacher for more information. As a chaperone your responsibilities will include the following to allow for a safe, fun-filled, memorable and educational experience for everyone:

- Have an approved volunteer application on file.
- Be able to provide your own transportation.
- Arrive at the refuge by 9:30 for orientation.
- Do not bring siblings on this STEM field study.
- Feel comfortable handling a small group of 4-6 first graders.
- Keep students safe and together at all times (headcounts, sitting and walking together).
- Facilitate student field experience learning throughout the day *by prompting students with questions* as they complete their lessons.
- Remind students of the rules while visiting the refuge.
- Have fun! Your role is not to be an expert, it's to model curiosity and questioning while keeping students safe!

Science Standards Guide:

Here are the Next Generation Science Standards this trip supports and example questions to help guide the students during their STEM Field Study:

- Use materials to design a solution to a human problem by mimicking how plants and/ or animals use their external parts to help them survive, grow, and meet their needs.
- Read texts and use media to determine patterns in behavior of parents and their offspring that help offspring survive.
 - o What body part helps animals move from place to place?
 - o What are some characteristics that help an animal survive?
 - o How do different body parts of animals help them survive in different environments?



CHECKLIST

This is an active and protected refuge and there will be animals and plant life we will share space with. Please consider the following when preparing for this field experience

*Weather (wear clothes and shoes that will be comfortable and appropriate for the day, walking will be involved). This is a rain or shine trip, bring a hoodie or umbrella!

*Number of students you will be responsible for, names and teacher contact information in case of emergency while on the field trip.

*Your lunch!

*Water bottle for yourself (students may carry their own)

- o Why do animals have different types of coverings?
- o How do animals protect themselves?
- o What evidence can you see that indicates an animal has been in this area?
- o What senses do animals use and how do they help them survive?

Pre-Trip Lessons

Setting Students Up to Become Successful Scientists – Grade 1

Lessons 1-5 will develop skills students will use when engaging in the STEM field study and the SEPs. Time can be adjusted to fit your classroom needs. Lessons 6-9 are lessons that students will be using the day in the field.

Support [article](#), [What We Learn From 50 Years of Kids Drawing Scientists](#), on the importance of diverse representations of scientists.

Lesson 1 - Brainstorm/Discuss: Time: 15-30 min.

- What is a scientist?

(A scientist is a person who asks questions and tries to find different ways to answer them.)

- What does a scientist look like?
 - o Draw- students can draw what they think a scientist looks like
 - o Discuss- why did students draw the image they drew for a scientist
- Finish these sentences-

Scientists can _____

Scientists have _____

Scientists are _____

- Draw/write - Some things I want to learn in Science:

Introduction of tools, safety:

- Magnifying glasses/hand lenses
- Clipboards
- Journals – and how to record data and observations
- Rulers – how to make straight lines tracing, how to measure with a ruler or cubes, links, etc.

Introduction of behaviors:

- Journal care
- Recording what you observe – in class before out of class
- Questions that are *science* questions (not *values* like, “Which balloon is prettiest?”)

Additional resources:

[What is a scientist slideshow](#)- Link

[Draw a scientist](#)- Link

Wondering – Teacher Information

From [A Place for Wonder](#), by Georgia Heard and Jennifer McDonough.

Chapters linked above:

- The Wonder Center (lesson 2)
- Wonder of the Week (lesson 3)
- Pondering Time and Whole-Class Shared Research (lesson 4)
- The Observation Window (lesson 5)

Lesson 2 – Wondering Center, Chapter 1 in A Place for Wonder (1 – 2 days)

Time: 15-30 min. per day

This lesson is about generating questions – what are students wondering about?

Science and Engineering Practices *introduced but not assessed*. [SEP Matrix](#)

- Asking Questions (SEP1)
- Obtain, evaluate, and communicate information (SEP8)

Materials:

- Chart paper
- Sticky notes
- Markers

Considerations:

- This lesson continues on for more than one day.
- An abundance of sticky notes can be needed, depending on how open ended the investigation is.
- This lesson is a great way for teachers to learn trends in nonfiction topics that students wonder about.

Lesson 3 – Wonder of the Week, Chapter 2 in A Place for Wonder (3 days – this lesson can be continued throughout the year should you choose to have a wonder of the week as part of your classroom routine.

This lesson scaffolds students' guesses to wonders, and demonstrates processing possible answers during a set time. This lesson spans a week, and can be repeated throughout the year.

Time: 15-30 min. per day

Science and Engineering Practices *introduced but not assessed*. [SEP Matrix](#)

- Asking Questions (SEP1)
- Construct explanations and design solutions (SEP6)
- Obtain, evaluate, and communicate information (SEP8)

Materials:

- Chart paper
- Markers
- Wonders generated from Lesson 2 above

Wonder of the Week Considerations:

- Some questions cannot be answered without research and further investigation. This is OK because we want to move students in that direction.
- Reading over the lesson and considering appropriate times for your students to add thinking to the chart as they continue trying to answer the Wonder of the Week may be helpful.

Lesson 4 – Pondering Time and Whole-Class Shared Research, Chapter 3 in A Place for Wonder (1 day)

This lesson is about generating possible ways to answer questions that we don't have answers for.

Time: 15-30 min. per day

Science and Engineering Practices *introduced but not assessed*. [SEP Matrix](#)

- Asking Questions (SEP1)
- Construct explanations and design solutions (SEP6)
- Obtain, evaluate, and communicate information (SEP8)

CCSS:

- ELA-Literacy.SL.1.1A
- ELA-Literacy.SL.1.1.B
- ELA-Literacy.SL.1.1.C

Materials:

- Chart paper
- Books preselected about research topic
- Markers

Considerations:

- “Ask an Expert” is a reasonable way scientists gather information and could be added to your chart.
- Internet access is mentioned as a way to search information. Trying to move students away from “Google it” and into choosing a source that’s got depth is a goal for student learning.
- This leads to “citing” a source in ELA and “engaging in argument from evidence” in Science and Engineering Practices.
- Chromebooks can be used to search on KidRex

Lesson 5 – The Observation Window, Chapter 6 in A Place for Wonder (1 day - Ongoing)

Time: 15-30 min. per day

Science and Engineering Practices *introduced but not assessed* [SEP Matrix](#)

- Asking Questions (SEP1)
- Develop and use models (sketch and label observations) (SEP2)
- Construct explanations and design solutions (SEP6)
- Obtain, evaluate, and communicate information (SEP8)

Observation Window Materials:

- Window
- Shared journal for recording Wonders
- Shared journal for recording observations
- Writing utensils

Considerations:

- Anchor charts may be posted to show examples of what kind of writing goes into shared science journals.
- If you will ask students to record the date, will they be able to see it from their location? Will it need to be posted for their reference?
- How many students could fit in the space, and how will you manage that?

Lesson 6 - Magnifying Lesson:

Time: 30-40 minutes whole class lesson (can be ongoing if a wonder station has been set up).

Facilitation:

For directions on instructing this lesson, please use the [PDF Magnify lesson Gr1](#) to introduce magnifying glasses to students.

Science and Engineering Practices *introduced but not assessed*: [SEP Matrix](#)

- Asking Questions (SEP1)
- Develop and use models (individually drawing) (SEP2)
- Analyze and interpret data (when guessing Mystery Object at end of lesson) (SEP4)
- Obtain, evaluate, and communicate information (SEP8)

Materials:

- Magnifying lenses
- Pennies
- Leaf assortment
- Pencils

Considerations:

- This lesson requires drawing, which some students do not feel is a strong point.
- Scaffolding by giving larger paper instead of circular spots may be helpful to art resistant students.
- Mystery Object guessing at the end of the lesson may be more authentic if table groups move to other tables to guess, some may have seen their neighbors while drawing.
- Consider taking students outside to collect leaves and other items in nature.
- Increasing the size of the three circles so that students can make their drawings bigger and add more details may be necessary.

Lesson 7 - Using a science notebook:

Time: 30-40 minutes whole class lesson

Facilitation:

Using a science notebook involves keeping a regular record in drawings, and in words. Students will be using a student journal to record their observations during their Animal Adaptations STEM field study. This lesson will introduce students to field journals, recording observations and using those observations to develop the behaviors that scientists engage in.

Science and Engineering Practices *introduced but not assessed* [SEP Matrix](#)

- Asking Questions (SEP1)
- Develop and use models (individually drawing) (SEP2)
- Analyze and interpret data (SEP4)
- Engaging in Argument from Evidence (SEP7)
- Obtain, evaluate, and communicate information (SEP8)

Materials:

- Student journal or notebook paper
- Pencil, crayons, or other writing utensils
- Something for students to look at (bug, plant, picture)

Procedure:

Provide students with something to look at. Ask students to write a heading on their page (or in their notebook) which includes the date and time. Students will discuss whole group using descriptive words and observations. After the whole group discussion, have students draw and write about the object. Encourage students to add details to their observations using their senses. [Fostering Outdoor Observation Skills](#)- additional information on introducing a science notebook.

Lesson 8 - Using a sit spot:

Time: 20-40 minutes

This lesson provides a schema for teaching behaviors when classroom lessons take place outside. A teacher demonstration lesson on data collection before heading outdoors with students is provided. Students will need to build stamina with sit spots. Those who are more active may need accommodations similar to learning behaviors for workshop time inside the classroom. Previewing the areas around your school may be necessary. Looking for an area with enough space for all your students to sit without being too close to one another will need to be modeled and reinforced.

Science and Engineering Practices *introduced but not assessed*: [SEP Matrix](#)

- Asking Questions (SEP1)
- Develop and use models (sketching and labeling) (SEP2)
- Plan and carry out investigations (SEP3)
- Analyze and interpret data (via discussion of recorded observations) (SEP4)
- Obtain, evaluate, and communicate information (SEP8)

Materials needed:

- Clipboards
- Paper or journals
- Pencils
- Something to use for signal to call students back together at end of lesson

[Sit spot facilitation steps](#): From Fostering Outdoor Observation Skills. Read over this document for sit spot recommendations and facilitation steps.

Lesson 9 - Pre-trip Safety Lesson (1-2 days as needed):

This lesson is designed to prepare students for the day of the trip. Please adjust this lesson to reflect your PBIS school wide expectations. These expectations **should be reviewed** prior to your STEM field study and if possible the day before your trip. This lesson can be taught through several options or in any way that you would teach safety lessons to your students:

Option 1:

Using a T-chart, create a teacher side and a student side. On the teacher side, list the jobs of the teacher, on the student side list the jobs of the students. It is helpful to use the verbiage "Teacher will _____, students will _____". Use the below sample ideas as what can go on the "T" chart.

Example: Teacher will watch students for walking feet while at the refuge. Students will walk while at the refuge.

Option 2:

Turn the following expectations into a game. For example: the PBIS bus expectations can be turned into the "bus game". Arrange student's seats into "a bus" (three chairs on one side, three chairs on the other with a walkway between them). Have students practice backs on backs, bottoms on bottoms, and voices at a respectful level. Another "twist" would be to have them whisper while the bus is moving and zero voice if the bus stops. You can do this by saying "red light (voices off), green light (voices whisper)". Have students model correct behavior expectations as well as incorrect and discuss why the correct is safest (this is like setting up a Daily 5 routine if your building does Daily 5).

- Review with your students your school wide PBIS expectations:
 - Share with students that while at the refuge the same expectations will be expected (this will include being respectful of plants and animals as well as staff at the refuge)
 - Take with you any tickets or rewards you may have and use them while at the refuge
- Review with your students the PBIS bus expectations (these expectations are from transportation, so please do not alter these):
 - Staying seated at all times. Bottoms on bottom of seat, backs on back of seat.
 - Keep hands and feet to yourself
 - Listen to the bus driver. Keeping voices to a respectful level is expected.
 - Be safe and respectful at all times
- Review with your students BFJNNWR expectations:
 - Stay with your adult chaperone at all times
 - Listen and follow directions

- o Leave all items at the refuge (rocks, leaves, etc.)
- o Use your “eagle” eyes to observe nature instead of touching
- o Using a quiet voice will help with observing animals in nature. The quieter you are, the more animals you are likely to see.

[Optional slide deck if interested/ needed.](#) Please make your own copy and feel free to edit images as needed.

Lesson 10 - Nisqually Pre-Trip Lesson:

DESCRIPTION:

This activity is designed to assist in preparing students for their visit to Billy Frank Jr. Nisqually National Wildlife Refuge. The activity is presented in three parts; What is a National Wildlife Refuge, Animals of the Refuge, and Animal Track & Sign. Each part is a 20-35 minute session. Each session should be completed on separate days. This lesson is to be started and completed *prior* to your STEM Field Study date. We strongly encourage you to contact refuge educators with questions that your students pose.

OBJECTIVES:

Students become familiarized with National Wildlife Refuges. Students are introduced to some of the animals of Billy Frank Jr. Nisqually National Wildlife Refuge. Students learn about looking for signs that wildlife leave behind and practice looking for tracks & signs around their school.

GRADE LEVEL: 1

DURATION: 3 sessions (parts), 20-35 minutes per session

SKILLS:

Observation, Questioning, Theorizing, Concluding, Exploring, Sharing

VOCABULARY:

Snag: a standing, dead tree that provides food and shelter for many animals

Midden: A pile of waste created by an animal, such as chewed pine cones at the base of a tree or on a rock where a squirrel sat and ate.

MATERIALS:

- [16 Animal photos](#) in plastic sleeves (slide deck)
- [20 Track/Sign photos in plastic sleeves](#) (PDF)
- Answer Key (included in PDF- Page 2)
- [Zoo](#) and [Refuge](#) photos
- "What's Wild?" Story and pictures

SEPs [SEP Matrix](#)

- SEP1: Asking questions and defining problems
- SEP4: Analyzing and interpreting data

CCCs

- Patterns
- Structure & Function

CCSS

- ELA-Literacy.SL.1.1B
- ELA-Literacy.SL.1.2

SS Learning Standards

- C4.1.3
- G1.1.1

ACTIVITY DIRECTIONS

Part 1: What is a National Wildlife Refuge?

Introduce the activity by letting students know that they will be participating in a STEM field study to a wildlife refuge. Discuss what a wildlife refuge is and compare a wildlife refuge to a zoo. Encourage students to think of ways that a refuge is different from a zoo. At a refuge the animals are not in cages or enclosures, no one feeds the animals, and they come to the refuge on their own. Let students know that a refuge is a home for wild animals and that when they visit they will spend time walking through the animal's home. To supplement the comparison of zoos and refuges consider showing the included pictures of Billy Frank Jr. Nisqually National Wildlife Refuge and a zoo.

Part 2: Animals of the Refuge

Introduce the students to the kinds of animals that call Billy Frank Jr. Nisqually National Wildlife Refuge home by showing the animal pictures used for the track and sign matching activity. Go over each of the animals with the students, practicing saying their names together. Find out if the students have already seen any of these animals before. Where did they see them? Discuss where these animals might live and what they might eat. Consider how their body parts might give clues to where they live and what they eat. Also look for clues in the background of the photos; is the animal in a forest? By a pond? For additional exploration, have students sort the animals by groups (animals with fur, animals with feathers, animals that can swim, animals that can fly, etc.) Aligns with STEMscopes Parts of Animals, Animal Survival, Animal Trait Inheritance and Variation. ([1-LS1-1](#) and [1-LS3-1](#))

Part 3: Animal Tracks & Signs

Arrange the animal photos in such a way that your class can see all of the photos and match the track & sign pictures to the animal. Pin the photos up on a wall, lay them out on a carpet, hang them along a line with clothespins, etc. Keep the stack of track & sign photos out of sight.

Introduce the activity by asking students what is meant by "tracks & signs". Take guesses from the students until you collectively figure out that tracks (or footprints) and signs are any piece of evidence left behind by an animal. Ask students if they can think of any examples of something an animal would leave behind. Allow students to share with the whole group for a few minutes. Students will share examples like tracks in the mud, fallen feathers, teeth/claw marks, nests, partially eaten food, tracks in the snow, woodpecker holes, discarded fur, etc. Once many types of tracks and signs have been shared ask students if they have ever found a track or sign on their own. Where were they? What animal left the track or sign? How did they find the track or sign?

Explain that when we look at tracks and signs we are collecting clues about an animal's life. We can learn where it sleeps, what it likes to eat, where it raises its young, where it gets water from, and on and on. Tell the students they are going to learn some of the tracks and signs that different animals at this wildlife refuge leave behind. All of these photos were taken right along the trail that they will be walking when they visit.

Explain that their job will be to work together as a class to figure out what the track or sign is, by looking at the picture and discussing. Once they have an idea of which animal left the track

or sign 3 behind a student or teacher can match the sign to the animal they believe left it behind. It is O.K. if more than one sign gets matched to the same animal.

Once all tracks and signs have been matched, check their answers using the answer key. Review any that were incorrectly matched by reading the clue on the back of the track & sign card. After hearing the clue, discuss other possible animals that may have left the track or sign behind. Have the students consider other animals that may have left the track or sign based on the clue that was read.

Extension

To follow up the matching activity, ask students if a wildlife refuge is the only place they can find evidence of wildlife. Remind them that wildlife is everywhere and that they can find wild creatures and their tracks & signs around their homes, parks, and school. You may choose to take the students on a Track & Sign walk around the schoolyard, looking for evidence of animals like spider-webs, feathers, woodpecker holes, ant hills, etc.

Lesson 11 - Post-trip lesson:(if you take any pictures, please consider sending to Jana Brock for use in PD's, communications, and any lesson needs that may arise).

Time: 2-3 sessions

One to two sessions (30-40 min. per session) may be needed to complete the first portion of the lesson.

One day (30-40 min.) to communicate (present) to the class or other group their finished product.

Science and Engineering Practices (SEPs): [SEP Matrix](#)

- Obtain, evaluate, **and** communicate information (SEP8)- *This is a great place to grade SEP8* ([Science practices grading rubric](#))

ELA standards:

- CCSS.ELA-LITERACY.SL.1.4: Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
- CCSS.ELA-LITERACY.SL.1.5: Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
- CCSS.ELA-LITERACY.SL.1.6: Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 [here](#) for specific expectations.)

Materials needed:

- Completed student journals and pre-trip lessons
- Pencils, paper, markers, crayons and other materials for creating presentation
- Poster board (butcher paper works well), chrome book, paper for presentation
- Books for research (R4R), STEMscopes materials (explore lessons, STEMscopedia, vocabulary cards, picture vocabulary, reading science, science today, etc.), KidRex

Considerations:

- Will you place students in small groups or have them complete this lesson on their own?
- Will you select what they will develop (poster, commercial, flier...) or let students select their own model for communicating their research?
- How will you have students share their research/ presentation (gallery walk, share with another class/ person in the building, share a commercial with families...) ?

Procedure:

Part 1: Student will create a poster, commercial, flier, etc. that will be used to share information on how animals use their external parts to survive and meet their needs, how young animals are like but not exactly like, their parents (1-LS1-1, 1-LS-1-2) and/ or explains how animals have adapted to survive in specific environments. Students will use their observations and research

from their STEMscopes lessons, STEM field study pre trip lessons, and their day in the field to communicate their research findings with others.

Part 2: Provide time for students to *present and communicate* their information with others (SEP8). If having students present to the whole class, listen for students' scientific questions for possible grading opportunities (SEP1).

Tips and Tricks:

- Send home chaperone pages 2-3 weeks ahead of time
- Pre-group your students (consider names of animals that will be seen on the trip) prior to trip
- Review the STEM field study lessons with students *prior* to attending the trip
- Plan 12-13 days for the Animal Adaptations STEM Field Study (≈10 *prior* to trip, the *day* of field study, 2-3 days *after*)
- Remember this is a “Pack in, Pack out” trip. Having garbage bags for students to put their trash in will be helpful. **Leave no trace!**
- Have students in groups, and ready (bathrooms, lunches, and materials ready to go) prior to buses arriving at the school. Having students lined up and ready to load buses at 9:30 will ensure maximum time in the field.
- Having a list of all groups for yourself, is very helpful.
- Bring a first aid kit and any student medications from your school nurses' office
- Providing a reusable grocery bag for each chaperone to hold student lunches, and clipboards/student journals, first aid kits (band aids, paper towels...) may be helpful
- Collect completed student journals for lesson 11
- Review bus PBIS expectations and pre-teach those to students (these are from transportation and are non-negotiable)
 1. Stay in your seat (bottom on bottom, back on back)
 2. Keep your hands to yourself
 3. Speak quietly and respectfully
 4. Listen to the bus driver, remember to thank them for driving you to the STEM Field Study
 5. Be safe
 6. Be responsible
- Review behavior expectations of an outdoor classroom with students
 1. Be responsible for your learning
 2. Be respectful of the plants and animals that make the prairie their home
 3. Walking, so as to respect the plants and animals that make the prairie their home, as well as student safety
 4. Listen to and stay with your chaperone
 5. Speak quietly and respectfully

[Vocabulary cards](#)

The vocabulary cards (linked above) can be printed, and cut into thirds, then displayed in a pocket chart or around the room. You may choose to show these cards as a slide deck. Extra slides are available if additional words are needed.

[STEM Field Study door poster](#)

This poster can be printed and laminated for use in the classroom as a visual for students that once they leave through the door, they will be participating in an outdoor classroom. This is a great way to set the “stage” for student expectations during this STEM field study.