WOODLAND PARK ZOO

Wild Wise: Coexisting with Carnivores

Teacher Webinar

WOODLAND PARK ZOO SAVES ANIMALS AND THEIR HABITATS THROUGH CONSERVATION LEADERSHIP AND ENGAGING EXPERIENCES, INSPIRING PEOPLE TO LEARN, CARE AND ACT.

ZOO.ORG

Wild Wise: Coexisting with Carnivores

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Wild Wise: Coexisting with Carnivores Team

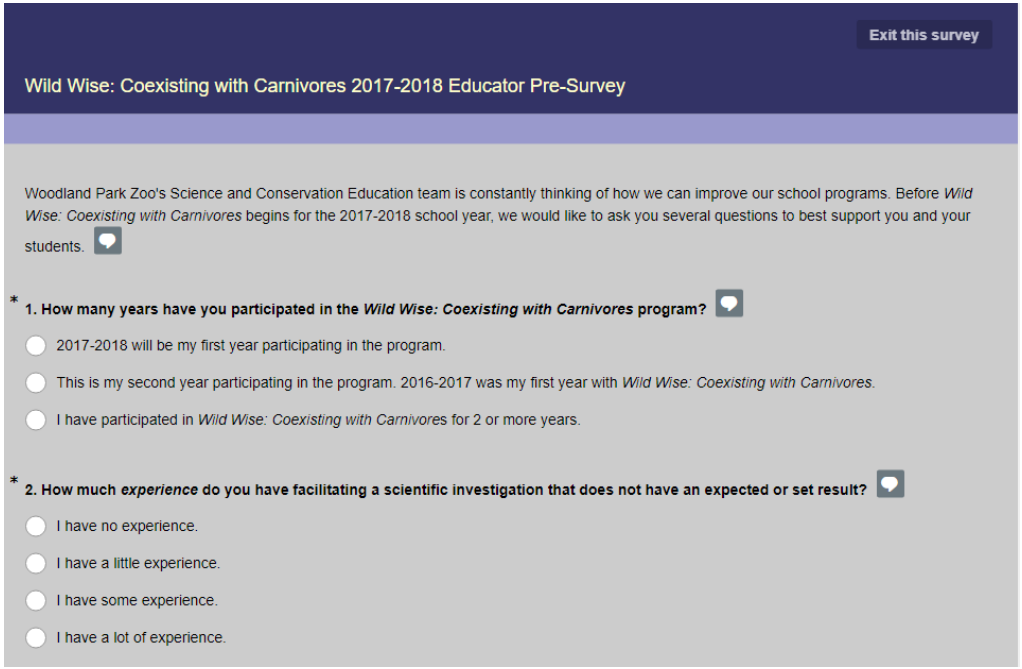
Name	Title & Organization	Responsibilities	Email
Alicia Highland	Educator & School Partnerships Coordinator, Woodland Park Zoo	Overall program coordination and logistics	Alicia.Highland@zoo.org
Kelly Lindmark	Science & Conservation Education Specialist, Woodland Park Zoo	Program facilitation of zoo-guided elements (“day of” questions)	Kelly.Lindmark@zoo.org
Katie Remine	Science & Conservation Education Supervisor, Woodland Park Zoo	Program development, funding and evaluation	katie.remine@zoo.org
Emily Gogerty-Northrip, Rex Walker and Marie Jensen	School Programs Presenters, Woodland Park Zoo	Facilitation of zoo-guided program elements	wild.wise@zoo.org
Lena Jones	Grade 6-12 Science Curriculum Specialist, Issaquah School District	Overall Issaquah SD program oversight	JonesL@issaquah.wednet.edu

Program Updates

- **CWC Teacher and Student Resources Website:** www.zoo.org/wwcwc: curriculum, student worksheets, evaluation tools, and supplemental materials.
- **CWC Student Packet:** the worksheets in the student packet are aligned to the program elements outlined in the Teacher Guide.
- **Evaluation Tools Packet:** student pre-assessment, a student presentation checklist, presentation rubric, and the student post-assessment.
- **PowerPoints:** two new PowerPoints to help launch the program and introduce your students to overarching goals of the project
- ***Updated* CWC Teacher Guide**

Teacher Survey

- We will use the data for internal program evaluation purposes
- Help us to assess our programmatic outcomes for teachers
- Will use to design tools to support participating teachers and classrooms
- It should take no more than 10 minutes to complete.



https://www.surveymonkey.com/r/WWCWCEducatorSurvey17

WOODLAND PARK ZOO

Program Overview

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What is Coexisting with Carnivores?

The Wild Wise: Coexisting with Carnivores (WW:CWC) program gives students a chance to develop their science inquiry, civic literacy and leadership skills as they investigate and share recommendations for living with the carnivores in their communities.

We aim to support teachers in facilitating student-driven science investigations that address real-world problems in their communities.

What is Coexisting with Carnivores?

As part of this curriculum, students will…..

- Develop investigative questions about local, wild carnivores in their community
- Plan and carry out scientific investigations
- Collect, analyze, and interpret data

What is Coexisting with Carnivores?

As part of this curriculum, students will…..

- Construct scientific explanations about patterns they observe
- Share their scientific conclusions with peers and community members
- Make recommendations for coexisting with carnivores in their communities

What is Coexisting with Carnivores?

Students will focus their investigations on these essential questions:

- How are carnivores using the natural and human-made resources in our community to meet their needs?

- How can humans meet their needs while allowing carnivores to meet their needs? (How can humans and carnivores successfully share the landscape?)

Roles of Teachers, Students, and Zoo Staff

Students: To practice skills in scientific inquiry, collaboration, and scientific communication

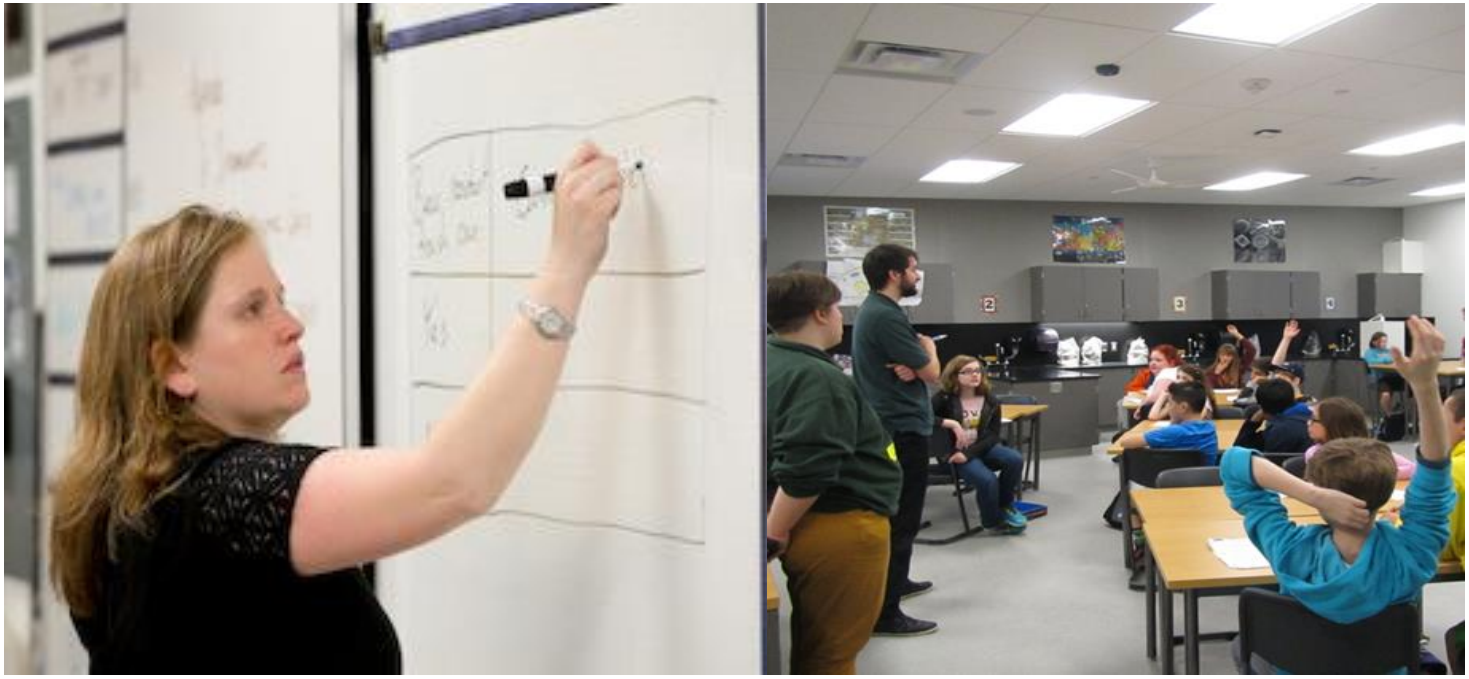
Zoo staff: Provide content on carnivore ecology, assist teachers in facilitation, provide/suggest resources for methods, facilitate community events

Teachers: Facilitate an open-ended scientific investigation that is student-driven

- Investigation does not have a set result
- Dependent on student interests, time, and teacher capacity

Roles of Teachers, Students, and Zoo Staff

- Can be messy and uncomfortable and that's okay!
- Experienced teachers who've done this program and can assist.
- Zoo staff is here to help in the process.



Program Timeline

Wild Wise: Coexisting with Carnivores 2017-2018 Program Overview				
Updated January 2018				
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WOODLAND PARK ZOO

Program Elements

WOODLAND PARK ZOO SAVES ANIMALS AND THEIR HABITATS THROUGH CONSERVATION LEADERSHIP AND ENGAGING EXPERIENCES, INSPIRING PEOPLE TO LEARN, CARE AND ACT.

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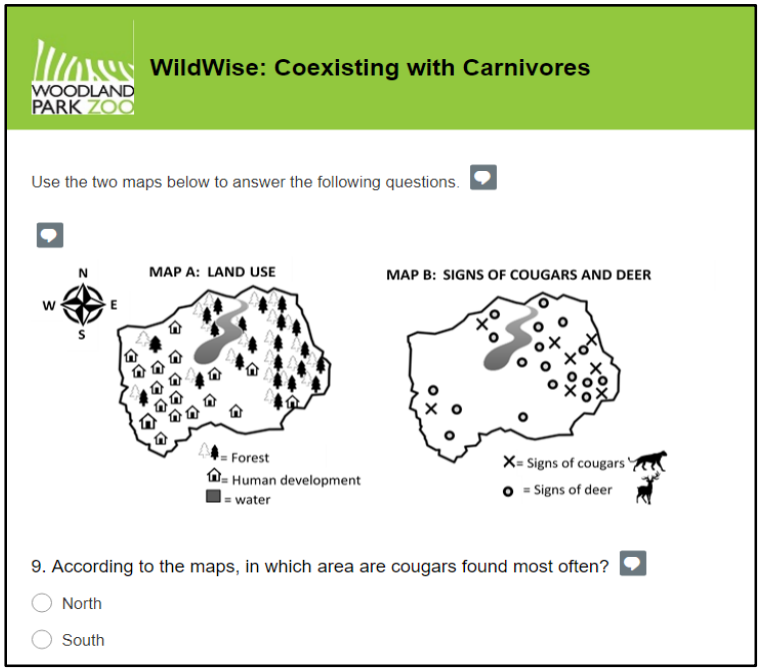
Program Elements

Element 1: Carnivore Community Mapping and Pre-Assessment

- Internal program evolution
- Gauge student understanding of carnivore ecology and student attitudes toward carnivores in their community



https://www.surveymonkey.com/r/WWCWCpre2018

Program Elements

Element 1: Carnivore Community Mapping and Pre-Assessment

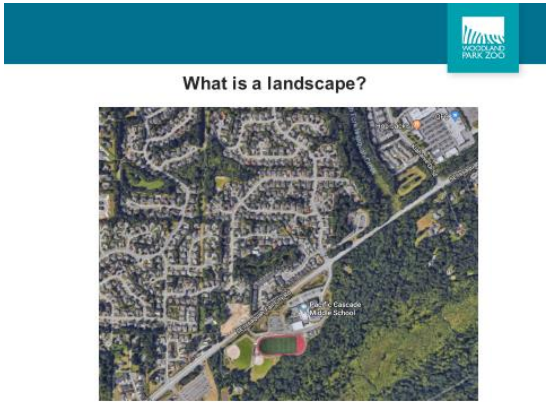
- After student pre-assessment is complete
- Introduces important terminology, essential questions, and provides students with a broad outline of the program.

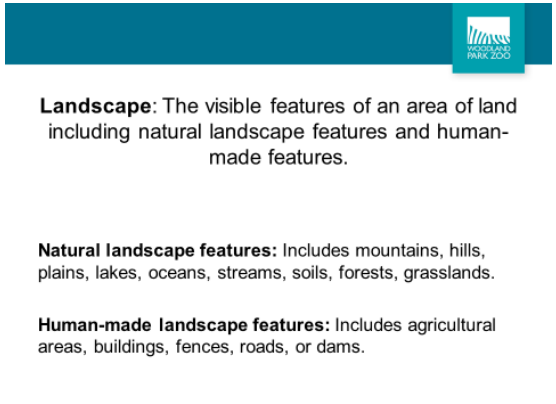
Program Elements

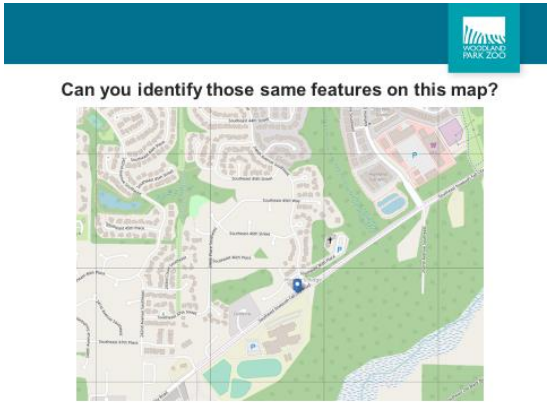
Teacher Guide:
Pg. 11

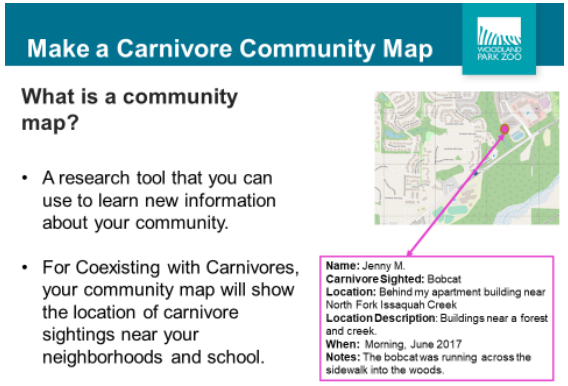
Element 1: Carnivore Community Mapping and Pre-Assessment

- Begin to understand the spatial and geographic distribution of carnivores
- Identify areas on the map, write a brief description about sighting
- Can add multiple sightings and incomplete information is okay





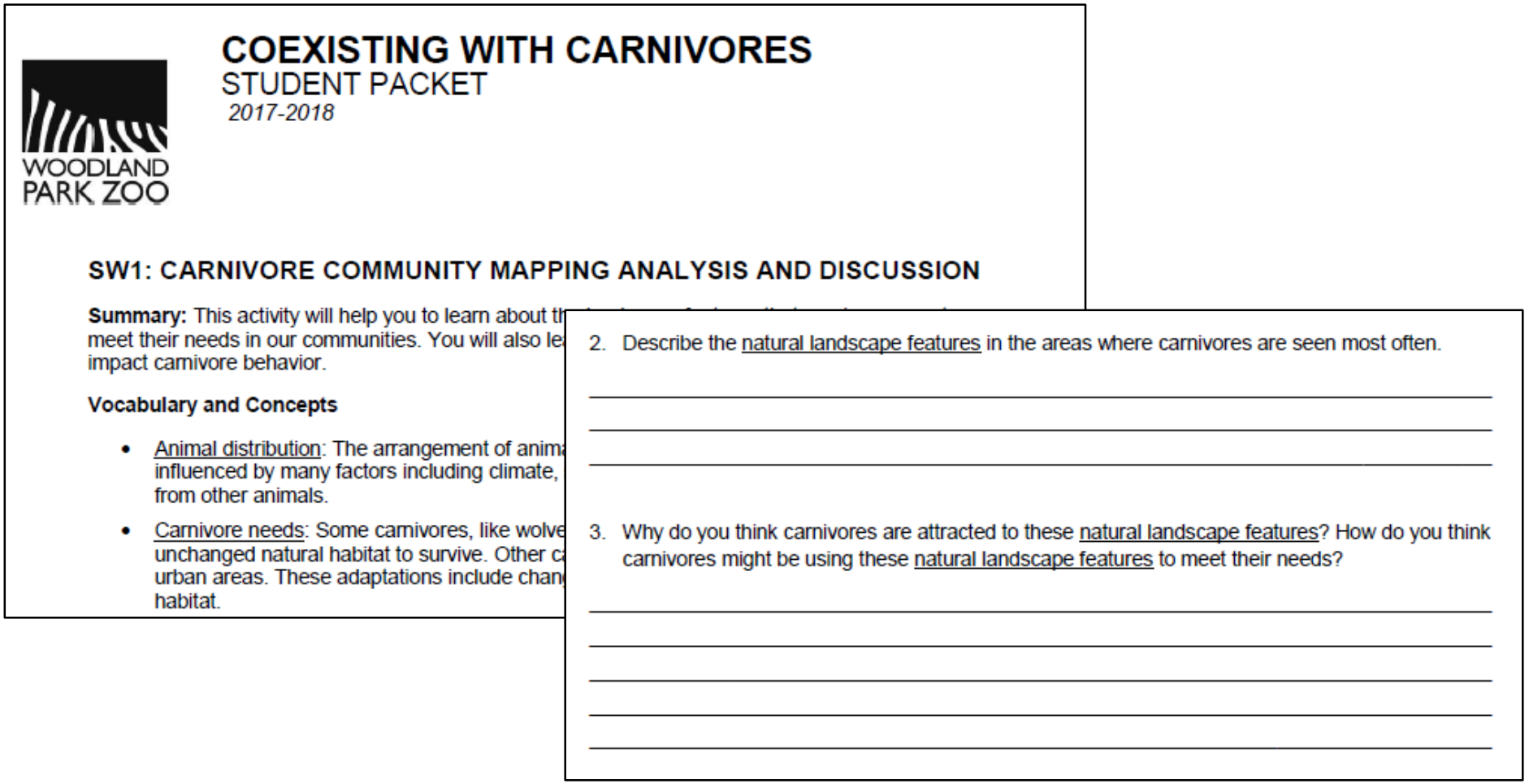




Program Elements

Teacher Guide:
Pg. 13
Student Packet:
Pg. 1

Element 2: Carnivore Community Mapping Analysis and Discussion Students will use their community map to learn more about the natural and human-made landscape features that carnivores use to meet their needs.



WOODLAND PARK ZOO

COEXISTING WITH CARNIVORES
STUDENT PACKET
2017-2018

SW1: CARNIVORE COMMUNITY MAPPING ANALYSIS AND DISCUSSION

Summary: This activity will help you to learn about th
meet their needs in our communities. You will also le
impact carnivore behavior.

Vocabulary and Concepts

- Animal distribution: The arrangement of anima
influenced by many factors including climate,
from other animals.
- Carnivore needs: Some carnivores, like wolve
unchanged natural habitat to survive. Other c
urban areas. These adaptations include chan
habitat.

2. Describe the natural landscape features in the areas where carnivores are seen most often.

3. Why do you think carnivores are attracted to these natural landscape features? How do you think carnivores might be using these natural landscape features to meet their needs?

Program Elements

Student Packet:
Pg. 0

Element 3: Community Interview Homework

Students will gain an understanding about the experiences people have sharing a landscape with carnivores.

WILD WISE: COEXISTING WITH CARNIVORES
Community Interview

Name _____ Teacher _____

School _____ Period _____ Date _____

Directions: *The purpose of this interview is to learn about experiences people have living in an area where there are large carnivores, such as bears and cougars. Choose one adult from your household to interview. Read him or her each question and write their answers in the available spaces.*

Who are you interviewing (for example, "Mom" or "Grandpa")? _____

Questions:

1) Which of the following animals do you think live in the wild in Issaquah or Sammamish? (circle all that apply)

2) Since living in the Issaquah/Sammamish area, have you had any personal encounters with wild carnivores? If yes, please describe what happened.

Program Elements

Element 1: Carnivore Community Mapping and Pre-Assessment Students will use community mapping to learn about the distribution of carnivores in their communities.

Element 2: Carnivore Community Mapping Analysis and Discussion Students will use their community map to learn more about the natural and human-made landscape features that carnivores use to meet their needs.

Element 3: Community Interview Homework Students will gain an understanding about the experiences people have sharing a landscape with carnivores.

Community observations that students will utilize to create their investigative question.

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Program Elements

Element 4: Woodland Park Zoo Field Trip – Wild Wise and Pacific Northwest Carnivores Programs

- Wild Wise: naturalist skills, and research methods
- Pacific Northwest Carnivores Program: carnivore ecology in the Pacific Northwest

Program Elements

Element 4: Woodland Park Zoo Field Trip – Wild Wise and Pacific Northwest Carnivores Programs

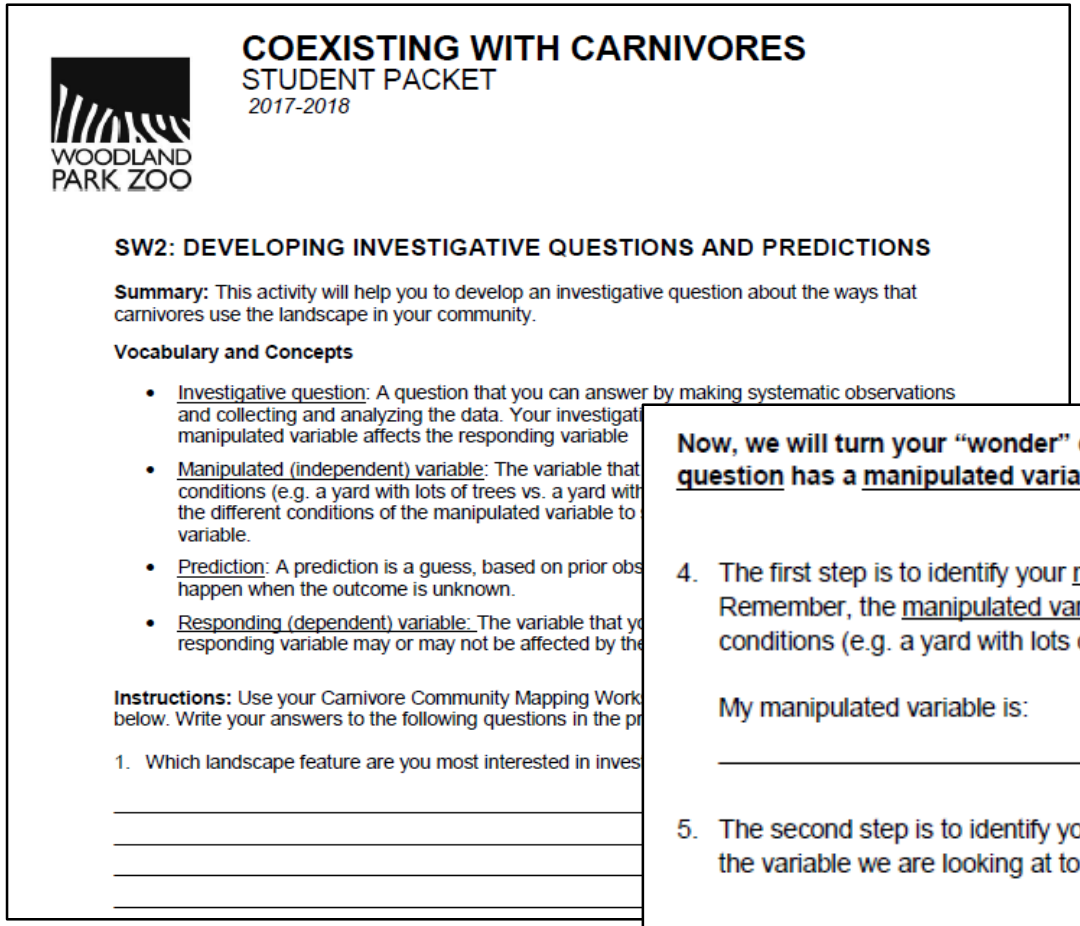
Out of respect for animals other guests, and zoo grounds, we as that students **and** chaperones:

- Remain focused
- Refrain from using cell phones unless taking photos
- Chaperones stay with students at all times
- Students stay with chaperones at all times
- Do not throw food or objects into the exhibits
- Do not tap on the glass or otherwise stress the animals
- Be quiet near exhibits

Program Elements

Teacher Guide:
Pg. 18
Student Packet:
Pg. 4

Element 5: Developing Investigation Questions and Predictions Students will develop a comparative investigation question and prediction related to carnivore uses of the surrounding landscape.



COEXISTING WITH CARNIVORES
STUDENT PACKET
2017-2018

SW2: DEVELOPING INVESTIGATIVE QUESTIONS AND PREDICTIONS

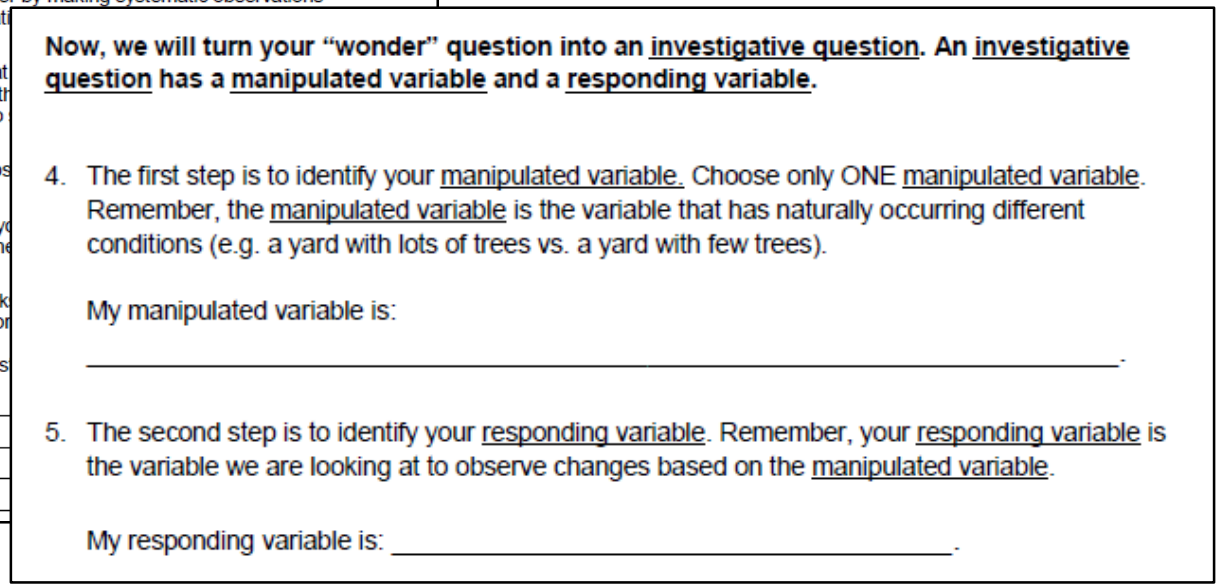
Summary: This activity will help you to develop an investigative question about the ways that carnivores use the landscape in your community.

Vocabulary and Concepts

- Investigative question: A question that you can answer by making systematic observations and collecting and analyzing the data. Your investigati manipulated variable affects the responding variable
- Manipulated (independent) variable: The variable that conditions (e.g. a yard with lots of trees vs. a yard with the different conditions of the manipulated variable to variable.
- Prediction: A prediction is a guess, based on prior obs happen when the outcome is unknown.
- Responding (dependent) variable: The variable that y responding variable may or may not be affected by th

Instructions: Use your Carnivore Community Mapping Work below. Write your answers to the following questions in the pr

1. Which landscape feature are you most interested in inves



Now, we will turn your "wonder" question into an investigative question. An investigative question has a manipulated variable and a responding variable.

4. The first step is to identify your manipulated variable. Choose only ONE manipulated variable. Remember, the manipulated variable is the variable that has naturally occurring different conditions (e.g. a yard with lots of trees vs. a yard with few trees).

   My manipulated variable is:

   _____.

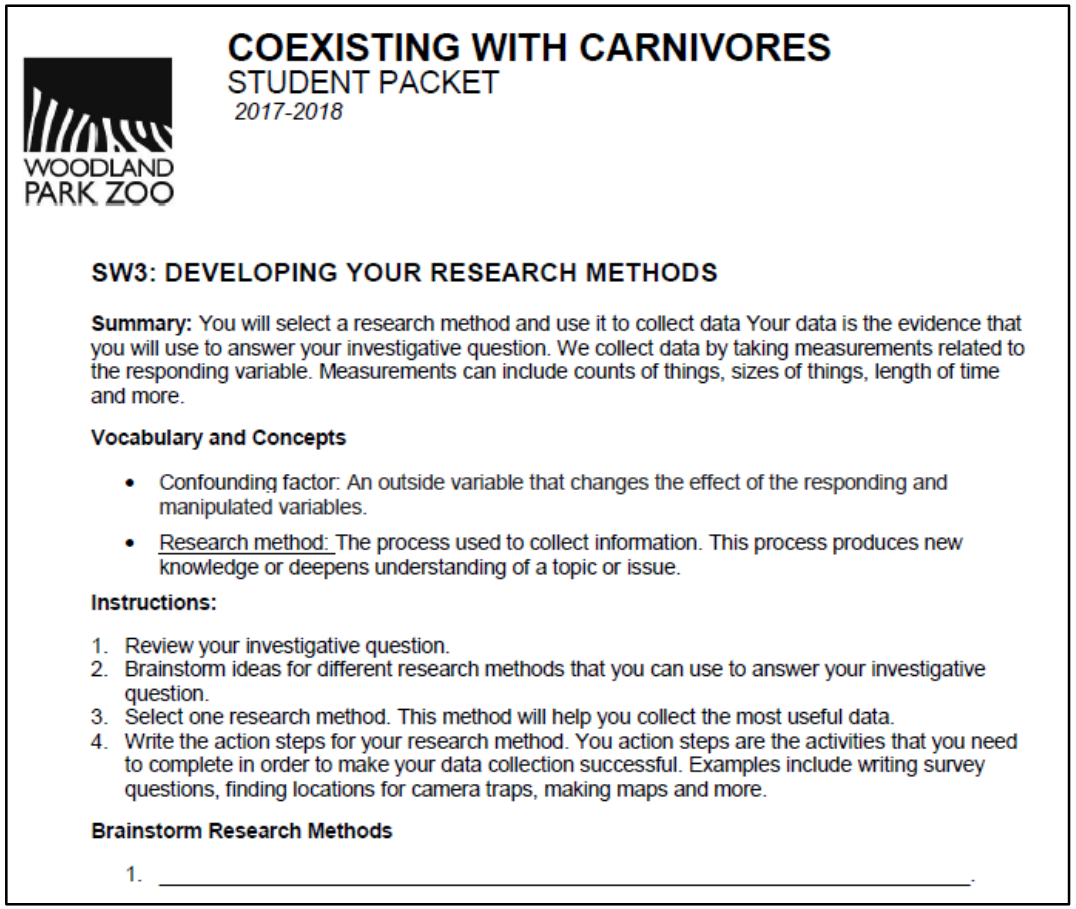
5. The second step is to identify your responding variable. Remember, your responding variable is the variable we are looking at to observe changes based on the manipulated variable.

   My responding variable is: _____.

Program Elements

Teacher Guide:
Pg. 20
Student Packet:
Pg. 7

Element 6: Developing Your Research Methods and Collecting Data
Students will develop research methods to gather data about the carnivores in their communities. Students will also learn about confounding factors and consider how they will control for these factors in their study design



COEXISTING WITH CARNIVORES
STUDENT PACKET
2017-2018

SW3: DEVELOPING YOUR RESEARCH METHODS

Summary: You will select a research method and use it to collect data Your data is the evidence that you will use to answer your investigative question. We collect data by taking measurements related to the responding variable. Measurements can include counts of things, sizes of things, length of time and more.

Vocabulary and Concepts

- Confounding factor: An outside variable that changes the effect of the responding and manipulated variables.
- Research method: The process used to collect information. This process produces new knowledge or deepens understanding of a topic or issue.

Instructions:

1. Review your investigative question.
2. Brainstorm ideas for different research methods that you can use to answer your investigative question.
3. Select one research method. This method will help you collect the most useful data.
4. Write the action steps for your research method. You action steps are the activities that you need to complete in order to make your data collection successful. Examples include writing survey questions, finding locations for camera traps, making maps and more.

Brainstorm Research Methods

1. _____.

Program Elements

Element 6: Developing Your Research Methods and Collecting Data

After zoo staff have approved your research methods, you can start collecting data.

Program Elements

Element 7: Western Wildlife Outreach Bear Education Trailer Visit
Through a presentation and use of biofacts such as pelts and skulls, students gain further information on carnivore taxonomy and ecology.

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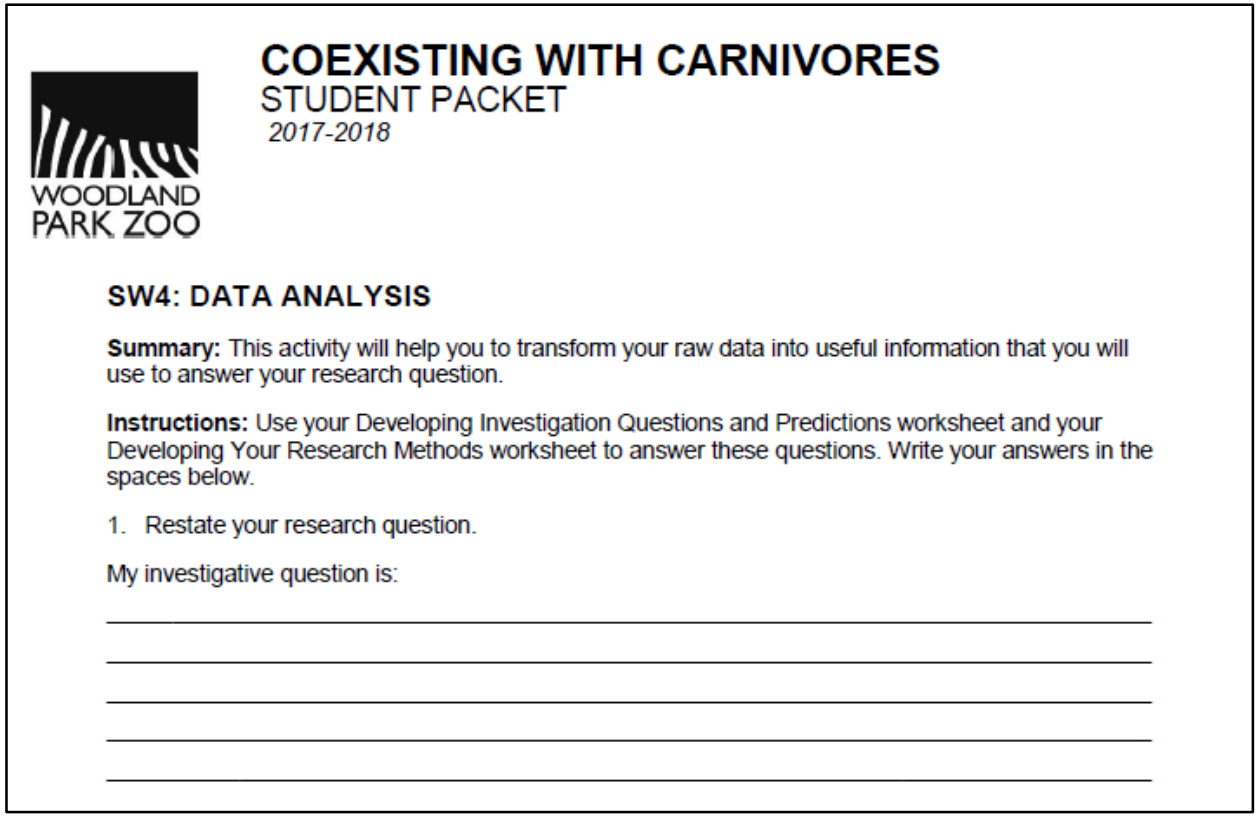
Program Elements

Teacher Guide:
Pg. 25
Student Packet:
Pg. 10 & 14

Element 8: Data Analysis and Conclusion Writing
Students will transform their raw data into useful information that they will use to answer their research question. They will develop conclusions to inform others about their results and importance of their research.



WOODLAND PARK ZOO

COEXISTING WITH CARNIVORES
STUDENT PACKET
2017-2018

SW4: DATA ANALYSIS

Summary: This activity will help you to transform your raw data into useful information that you will use to answer your research question.

Instructions: Use your Developing Investigation Questions and Predictions worksheet and your Developing Your Research Methods worksheet to answer these questions. Write your answers in the spaces below.

1. Restate your research question.

My investigative question is:

_____

_____

_____

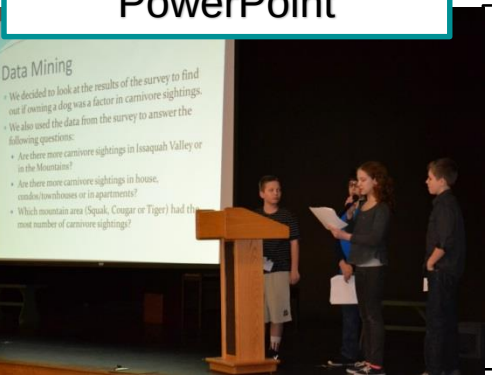
_____

_____

Program Elements

Element 9: Presentation Building

PowerPoint



Blog

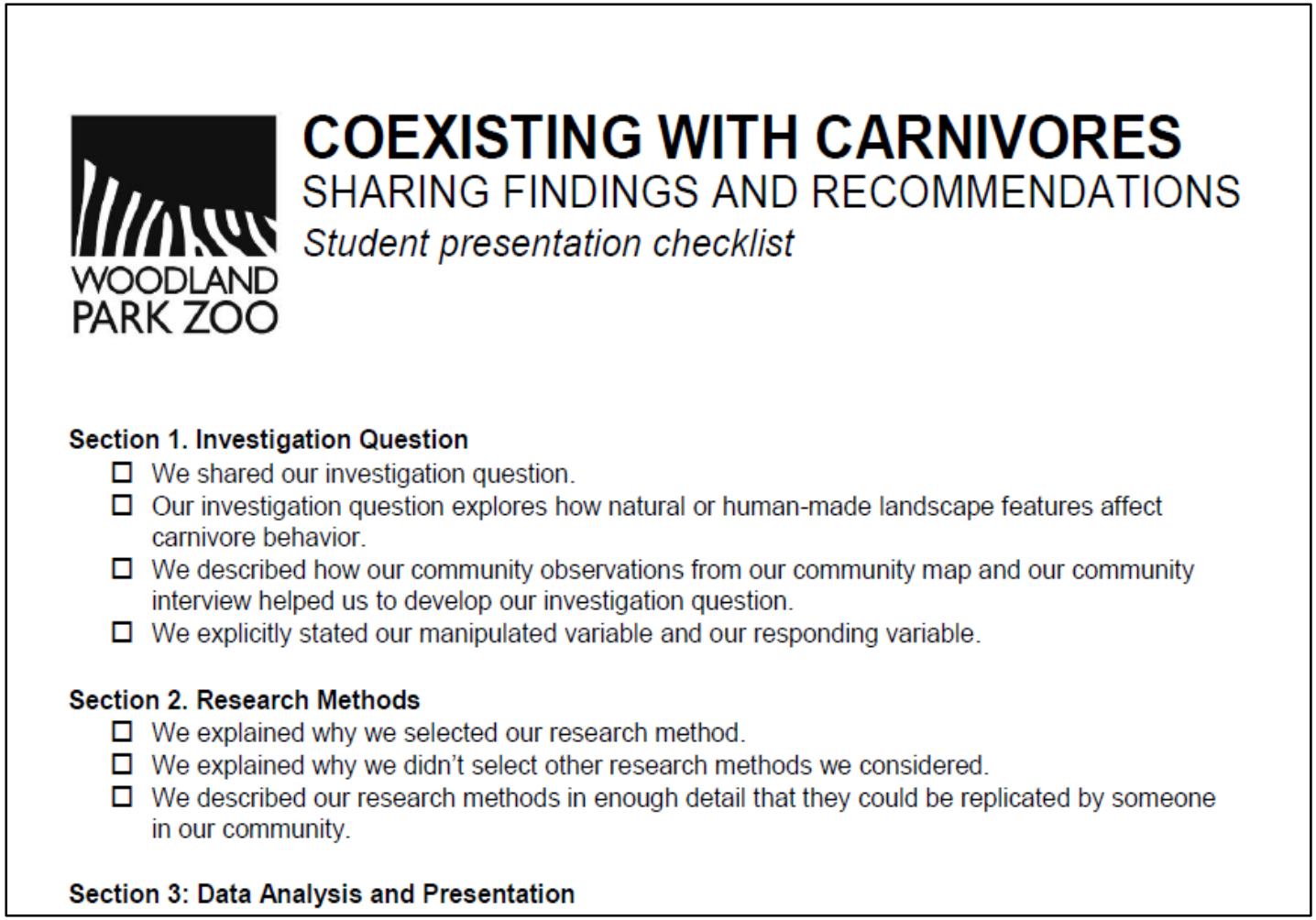
Infographic

Poster/Tri-fold

- To increase student engagement, have students create communication tools in small groups. The content of the tools may overlap.
- Each class may create up to five separate tools (five student groups). However, not each student group will present at the final community event.
- If time and resources allow, encourage groups to use more than one format.

Program Elements

Element 9: Presentation Building



WOODLAND PARK ZOO

COEXISTING WITH CARNIVORES

SHARING FINDINGS AND RECOMMENDATIONS

Student presentation checklist

Section 1. Investigation Question

- ☐ We shared our investigation question.
- ☐ Our investigation question explores how natural or human-made landscape features affect carnivore behavior.
- ☐ We described how our community observations from our community map and our community interview helped us to develop our investigation question.
- ☐ We explicitly stated our manipulated variable and our responding variable.

Section 2. Research Methods

- ☐ We explained why we selected our research method.
- ☐ We explained why we didn't select other research methods we considered.
- ☐ We described our research methods in enough detail that they could be replicated by someone in our community.

Section 3: Data Analysis and Presentation

Program Elements

Element 10: Final Presentations: Sharing Findings and Recommendations and Post-Assessment

Determine with your teaching team the format for your school's Sharing Findings and Recommendations sessions.

Format options:

Option 1: Each class presents individually to zoo staff during the normally designated class period.

- This option is available only if **no more than 3 classes** occur simultaneously during one period.
- For this option, there can be **no more than 5 student groups** per class.

Option 2: Science fair with **no more than 2 classes per period**.

- Not all students will have their projects evaluated by zoo staff.

If these options do not work you, please contact Alicia Highland at alicia.highland@zoo.org

Program Elements

Element 10: Final Presentations: Sharing Findings and Recommendations and Post-Assessment

Each student group will present their research findings as well as their evidence-based recommendations for coexisting with the carnivores in their communities

WILD WISE: COEXISTING WITH CARNIVORES

SHARING FINDINGS AND RECOMMENDATIONS

Presentation Rubric 2017-2018

Date: ***Interviewer:*** ***School/Teacher:*** ***Period:***

Investigative Question:

Points	2 - Meets Expectations	1 - Approaching Expectations	0 - Below Expectations	Total
Question				
• What question were you trying to answer with your investigation? • What observations (from your community mapping or adult interview) did you use to design your question? • What were your manipulated and responding variables?	❒ Clearly state an investigative question related to how natural or human-made landscape features affect carnivore behavior. ❒ Link community observations with investigative question. ❒ Presenter explicitly defines manipulated & responding variables.	❒ State an investigative question, related to **either** carnivores **or** to natural or human-made landscape features. ❒ Link general observations with investigative question. ❒ Manipulated and responding variables can be inferred, but are not explicitly defined by presenter.	❒ State an investigative question related **neither** to carnivores **nor** to natural or human-made landscape features, OR did not state an investigative question. ❒ Did not link any observations with investigative question. ❒ Presented question does not have a manipulated and/or responding variable.	
Methods				
• What methods did you use for your investigation? • Why did you choose the methods you did? • Why did you choose not to	❒ Explain why research method(s) was selected **and** other method(s) that they considered but chose not to use.	❒ Explain **either** why research method(s) was selected **or** other method(s) that they considered but chose not to use.	❒ Did not explain why research method(s) was selected or other method(s) that they considered but chose not to use.	

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Program Elements

Element 11: Community Event

One to two student groups from each school will be selected to present their projects at an all-school community event. The Community Event will be held at Issaquah Middle School June 6, 2018. Additional student groups may display their projects during the event, but will not present to the full audience.

Program Elements

Element 11: Community Event

Out of respect for our guests, we ask that student presenters:

- Are prepared
- Remain focused

Out of respect for our student presenters, we ask that guests:

- Refrain from using cell phones unless taking photos
- Student guests stay with adults at all times
- Student guests remain focused

WOODLAND PARK ZOO

Deep Dive: Research Methods

WOODLAND PARK ZOO SAVES ANIMALS AND THEIR HABITATS THROUGH CONSERVATION LEADERSHIP AND ENGAGING EXPERIENCES, INSPIRING PEOPLE TO LEARN, CARE AND ACT.

ZOO.ORG

Program Elements: Methods

Overview

- Research methods describe the steps that students will take to find an answer to their investigative question.
- Their methods should be clear, easy to follow and replicable by other scientists.
- Zoo staff will help students to develop their methods. **However, teachers will have the final say in which method the students use.**
- Complete the Student Worksheet 3: Developing Your Research Methods during this activity.
- **Submit your worksheet to zoo staff at least three days before their visit.**

Program Elements: Methods

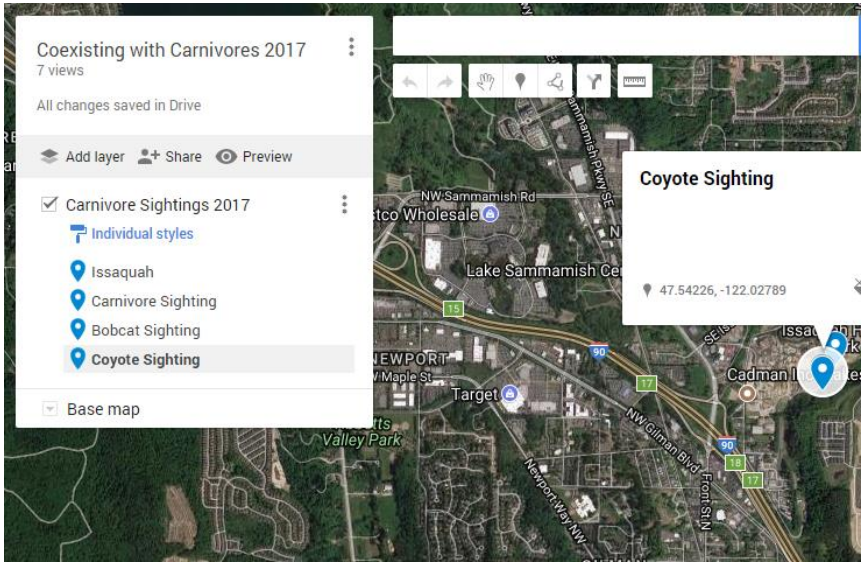
Zoo staff will introduce and suggest students choose from these data collection tools:

- **Camera Traps:** A camera trap is a remotely activated camera that is equipped with a motion sensor or an infrared sensor. Camera trapping is a method for capturing photographs of wild animals when researchers are not present.
- **Online Surveys**: An online survey is a questionnaire that the target audience can complete over the Internet. Online surveys automatically store responses.
- **Person-to-Person Surveys**: For a person-to-person survey, the interviewer is physically present to ask the survey questions.
- **Walking Surveys:** Walking surveys are systematic observations made on foot that can help you better understand either the community in general or a specific condition or aspect of it.

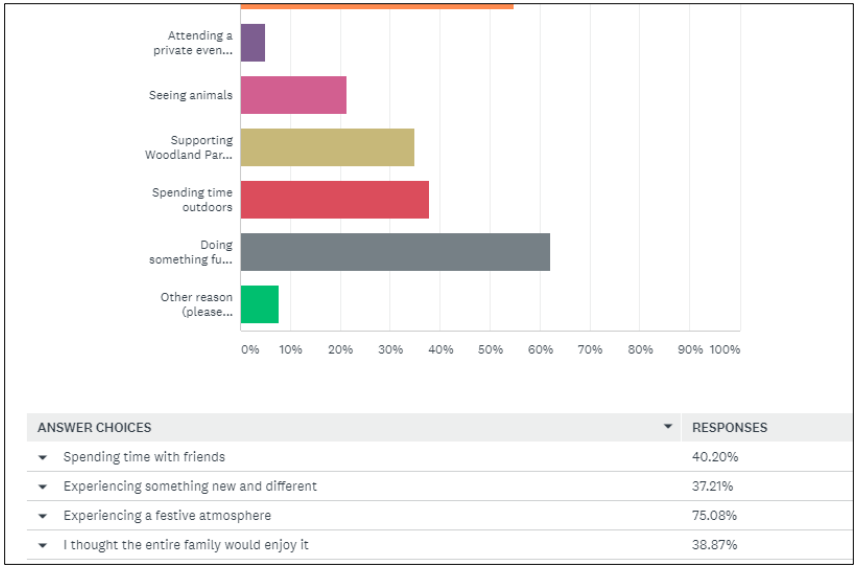
Program Elements: Methods

Online Surveys

Google My Maps



SurveyMonkey



ANSWER CHOICES	RESPONSES
Spending time with friends	40.20%
Experiencing something new and different	37.21%
Experiencing a festive atmosphere	75.08%
I thought the entire family would enjoy it	38.87%

- You can create crowd sourced maps via Google My Maps to collect geographic/spatial surveys
- You can use SurveyMonkey to collect qualitative and quantitative data

Program Elements: Methods

Camera Traps

- We are excited to support teachers and their students in using camera traps and eMammal
- WPZ staff are able to provide camera trap training for teachers.
- Please email wild.wise@zoo.org to request a consultation on camera trapping

Program Elements: Methods

Camera Traps

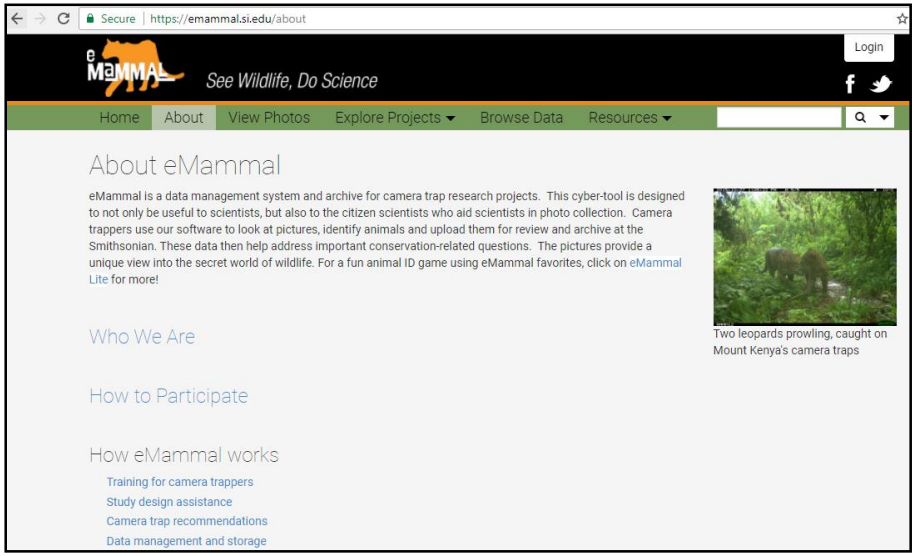
Each school has up to four kits (provided by the district); each teacher should have access to one kit.

Each kit contains the following:

- 5 remote camera traps
- 40 AA batteries (8 batteries per camera)
- 10 16GB SD/SDHC memory cards (2 cards per camera)
- 5 python cable locks
- 5 small locks for camera case
- 3 field guides

Program Elements: Methods

eMammal (https://emammal.si.edu/about) is a software and web-based tool for organizing wildlife camera trap data and sharing results.



After your students' photos have been added to eMammal, Woodland Park Zoo staff will verify that your students' animal IDs are correct, and your students' data will contribute to the body of knowledge about animals gleaned by using camera traps around the US and the world!

WOODLAND PARK ZOO

Questions?

WOODLAND PARK ZOO SAVES ANIMALS AND THEIR HABITATS THROUGH CONSERVATION LEADERSHIP AND ENGAGING EXPERIENCES, INSPIRING PEOPLE TO LEARN, CARE AND ACT.

ZOO.ORG