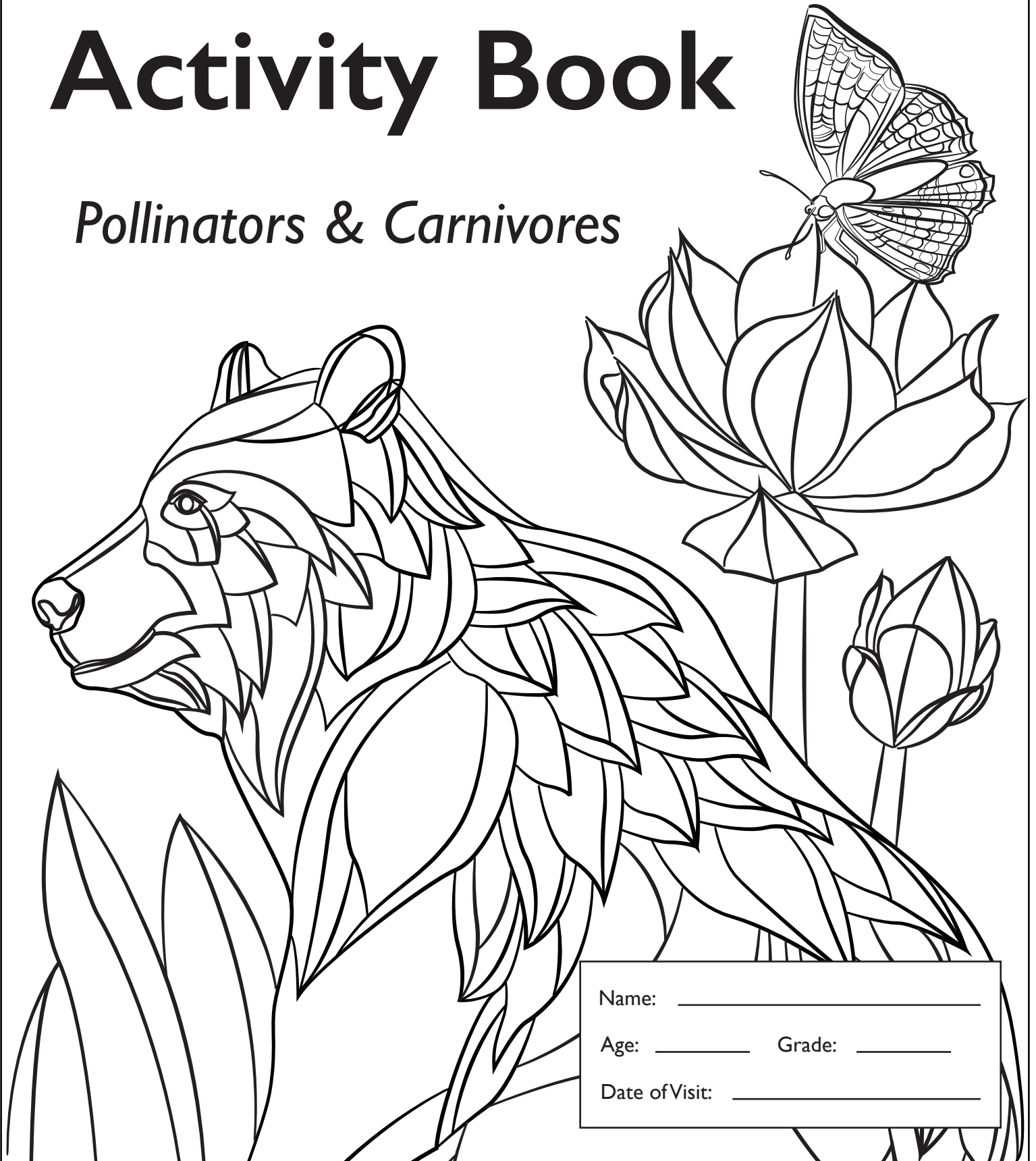


# Junior Zookeeper Activity Book

*Pollinators & Carnivores*



Name: \_\_\_\_\_

Age: \_\_\_\_\_ Grade: \_\_\_\_\_

Date of Visit: \_\_\_\_\_

Junior Zoo Keeper Activity Book | 2023  
First Edition

Created by Ella Rubenstein & Siobhan Warmer-Hinds  
Illustrations provided by Woodland Park Zoo

This book was created and implemented on the lands of the Coast Salish Peoples, whose ancestors resided here since time immemorial. Many Indigenous peoples still thrive here.

This book was created to partially fulfill thesis requirements for the degree of Masters of Arts in Museology at the University of Washington.

Thank you to our supervisory thesis committee: Meena Selvakumar, Jessica Thompson, and Kerrie Littlejohn. Additionally, thank you to Terra Herrmann and Mary Jackson for assistance with coordinating and editing.

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# ZOOKEEPERS

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Zookeepers are an important part of any zoo. They feed and train the animals, keep them mentally engaged, and clean their enclosures. They also teach zoo visitors about the animals and related conservation issues. Because of the work zookeepers do, visitors (like you!) can watch animal behavior firsthand and hopefully become inspired about nature and wildlife conservation.

Do you want to inspire other people to care for our environment? Become a Junior Zookeeper!

*To become a Junior Zookeeper:*

- Complete at least 2 pollinator pages and 2 carnivore pages.
  - Agree to the Junior Zookeeper Oath.
- When you finish, return the book to the pick up spot.
- Get your certificate signed by a zoo staff member.
- Enjoy your visit!

Scan for map



**Note to guardians:**

You are encouraged to join your child as they pursue the activities in this book. Don't worry about answering all of the questions correctly. Appreciation of wildlife and nature starts with becoming aware of the beauty, diversity and stories of the plants and animals around you. *Your enthusiasm is contagious!*

# BEEES

## Backyard Habitat

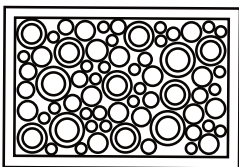


One of the most well known pollinators is a bug! Bees are well known for their pollinating powers. They spread pollen by catching it on their sticky hairs, and then deposit it when they land on a different flower. Bee population numbers are declining. This is due to pesticides, climate change, and habitat loss.

### Native Species:

an organism that comes from a certain region or ecosystem.

### Ways you can help:



Bee box



- ⬡ Provide food – Grow a variety of plants and flowers in your yard. If they bloom at different times, bees will always have a meal available.
- ⬡ Provide water – Bees get thirsty too! Set out a shallow container of water with some stones so they don't drown.
- ⬡ Provide shelter – Bees get tired and need a safe place to rest. Some like specialty bee boxes and others prefer dead logs, wood piles, or the plants they pollinate.

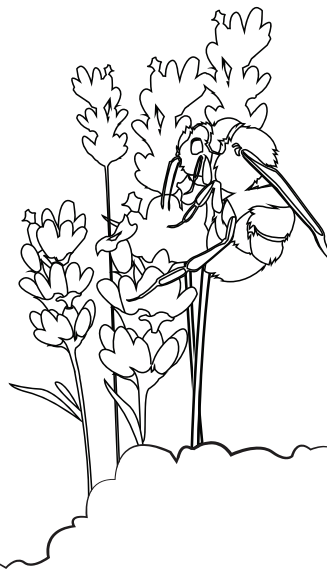
Can you find these pollinator-friendly words?

Pollinator | Native | Plant  
Bee | Flower | Pollen | Seed

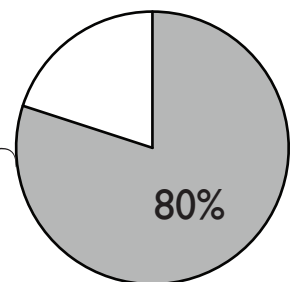
P Y O Y M E R F Y Z  
L O N P L A N T J W  
W T L A T L B E G K  
P A F L T C P D C A  
S O J L I I P Q B Y  
E I L W O N V H E I  
E I R L J W A E E X  
D M J A E G E T A D  
V U D A F N L R O X  
S U S X C F L W P R



There are 600 **native species** of bees in Washington.



Bees are not the only pollinators. Birds, moths, butterflies, and bats all help fertilize plants. Without these animals, 80% of all plants would be in trouble.



# BUTTERFLIES & MOTHS

## Habitat Discovery Loop



Unlike bees, who seek out pollen to eat, butterflies and moths are accidental pollinators. They prefer to eat nectar, but end up spreading pollen anyways. Pollination is required for many plants to make fruit and seeds, which they need to reproduce. Humans depend on pollinators too. **One of every three bites of our food is made possible because of pollination.**

### Tips for a butterfly friendly backyard:

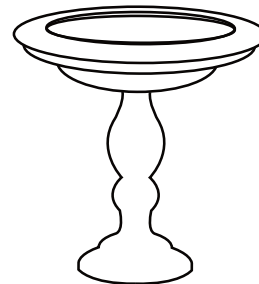


Avoid chemicals (like pesticides) in your yard and garden to keep the soil healthy.



Mud-puddling: Butterflies get key minerals and salts from mud. In a container, mix half soil and half manure. Place in your yard or garden and keep wet with water.

Water

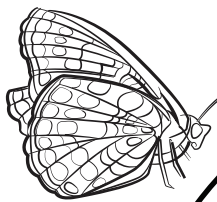


Butterflies are active during the day and moths are active at night. Different plants have flowers that bloom at different times of day. This means there's always a flower ready to be pollinated by a moth or butterfly!



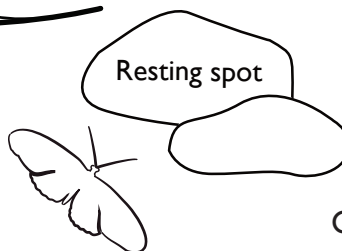
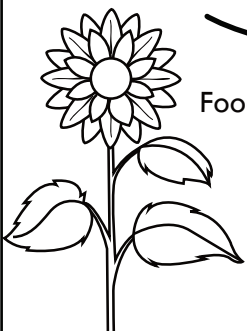
Help the butterfly find its way to food, water, and resting spot.

START



Food

Resting spot



Check out the zoo's butterfly conservation project at [www.zoo.org/butterflies](http://www.zoo.org/butterflies)

# TROPICAL RAINFOREST BIRDS

## Tropical Rainforest Aviary



Nectar-eating birds pollinate plants the same way butterflies do: by carrying pollen from one flower to another. Not all birds eat nectar though. Other kinds of birds help plants reproduce by eating fruit or nuts and then pooping out seeds.



Beak shape can tell us what a bird eats. For example, nectar eaters have long, skinny beaks. Each kind of bird has a beak that is **adapted** to its native habitat and diet.

### **Adaptation:**

A characteristic of a living thing that helps it survive in its environment. Like giraffes have long necks to reach the tops of trees in the savannah, and camels have humps to store water in the desert. What's another example of an adaptation?

Be a wildlife biologist: Take careful notes! Which birds do you see? Where do they come from? What do they eat? And what shape is their beak?

Name	Place of Origin	Diet	Draw Beak Shape

Do any of the birds you see help with pollination?

Which ones? How do they help? \_\_\_\_\_

\_\_\_\_\_

# INDIAN FLYING FOX

## Trail of Adaptations



You won't find an Indian Flying Fox flying around Seattle. Instead, there are 15 other bat species native to Washington.

Bats are important pollinators, especially fruit bats like the Indian Flying Fox. They get pollen stuck to their fuzzy bodies and move it from plant to plant when they fly.

Habitat loss, human disturbance, pollution, and wind turbines negatively affect bats. For a while, this problem has been ignored due to misconceptions about bats. Let's bust some myths! **Draw lines to match the myth to the truth.**

### MYTH 1:

Bats are blind.

### TRUTH:

Neither the Indian Flying Fox nor any of the bats in Washington eat blood. A couple of species in Central and South America do, but they don't typically target humans.

### MYTH 2:

Bats are pests.

### TRUTH:

Some bats use echolocation to navigate the night, but this doesn't mean they're blind. The Indian Flying Fox and other fruit bats use their big eyes to find fruit and flowers in the dark.




### MYTH 3:

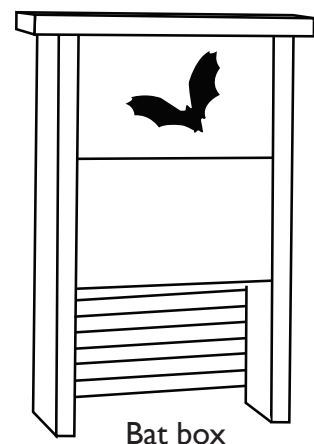
Bats only drink blood.

### TRUTH:

Bats can eat up to 600 mosquitos an hour. Getting rid of that many pests protects us from diseases such as malaria, West Nile Virus, Dengue, and Yellow Fever. In this way, bats are helping keep us healthy!

Bats do a lot to help us. What can you do to help bats?

-  Tell your family and friends what you've learned about bats! Sharing your love of bats will encourage others to protect them too.
-  Provide shelter: Leave hollow trees standing or place a bat box in your yard.
-  Keep pets indoors.



# MANED WOLF

## Temperate Forest



The Maned Wolf is a carnivore. That means it's part of a group of animals that includes "doglike" animals (like wolves, bears, and even sea lions) and "catlike" animals (like house cats, tigers, and hyenas). It's called "carnivora" because they have special adaptations for eating meat, like sharp canine teeth. While all carnivora eat meat, many also eat plants.

Get to know the Maned Wolf by filling in the blanks (hint— look at their sign):

They look like a fox and are named after a wolf but actually are neither! They are unique \_\_\_\_\_, the largest in \_\_\_\_\_.

Maned Wolves mainly hunt small animals, but their favorite food is \_\_\_\_\_. They like to eat "wolf's apple" because it may protect them from a deadly parasite. Like birds and other fruit eaters, the \_\_\_\_\_ pass through the wolves' digestive tract. Then the "wolf's apple" plant is able to \_\_\_\_\_ in their nutrient-rich poop.

Local groups in Brazil and Argentina are trying to help the Maned Wolves by preventing \_\_\_\_\_ loss and \_\_\_\_\_ hunting (also called poaching).

Poaching not only kills the animal and decreases populations, but also makes **conservation** harder. Because the animal deaths are not recorded, biologists have to estimate the amount of loss and the poachers' methods. Then they have to make an educated guess on how to best protect the animal from poaching.

One way to combat poaching is to not buy animal products like fur or ivory, unless you're certain it's been legally and ethically sourced.



### Conservation:

the practice of protecting species and their habitats in order to maintain healthy species or populations and to restore, protect or enhance natural ecosystems.

# HUMBOLDT PENGUIN



## Penguin Exhibit

Humboldt penguins are carnivores. They like to eat schooling fish such as sardines, anchovies, and herring. Sometimes they will nibble on squid or crab. In the wild, Humboldt penguins travel between one and 57 miles to catch a meal.

What is your favorite food? Draw it!



How far would you travel to get it? \_\_\_\_\_

Climate change has forced Humboldt penguins to travel even further to hunt fish. Out in cooler waters, they have to compete with the fishing industry. Imagine how you would feel if you had to travel even farther for your favorite tasty treat. And then you can't even eat it because someone took it before you got there!



The zoo supports Punta San Juan, a marine reserve in southern Peru. It's home to half of all wild Humboldt penguins. This marine reserve provides a safe habitat and park rangers to watch over the penguins. They allow scientists to study the penguins too. The more we know about Humboldt penguins, the better we can help them thrive.

### Ways you can help penguins thrive:

- ▶ Visit [seafoodwatch.org](http://seafoodwatch.org) to learn about up-to-date sustainable seafood choices.
- ▶ A good option is to buy seafood from local fishermen. Pike Place has many local vendors!

# KOMODO DRAGON



## Trail of Adaptations

Komodo dragons are the largest lizards alive, growing up to 200 pounds and 10 feet long. They can eat up to 80% of their body weight in one meal. They hunt deer, horses, pigs, rats, and even water buffalo. Komodo dragons also **scavenge**. They can smell an already dead meal from five miles away. Their special carnivore teeth are serrated (like a steak or bread knife) and their spit is venomous. All of these traits and behaviors make up one deadly carnivore!

### Scavenger:

an animal that eats dead animals that they find instead of killing prey themselves

### Activity: Act like a Komodo Dragon

Observe the Komodo Dragons.




What would it be like to mimic their behavior?

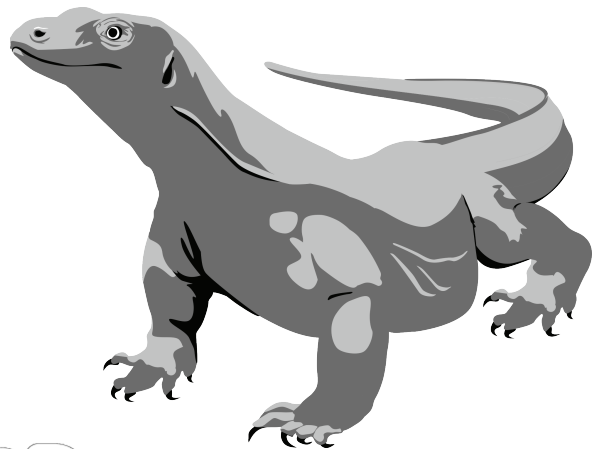
- Can you bask in the sun?
- Crawl around like them?
- Stick your tongue out?

Check off the ones you try! Can you mimic any other behaviors?

Komodo Dragons are threatened by forest clearing, illegal human set fires, and loss of prey species to hunt and eat. Rising sea levels are also a danger to their only wild habitat, Komodo National Park.

Some actions you can do to combat climate change when you visit the zoo:

-  Sort your waste appropriately into separate recycle, compost, and trash bins.
-  Bring a reusable water bottle and fill it up at one of our many stations.
-  If you are able, don't drive to the zoo. Take public transportation, walk, or bike instead.



Komodo Dragons are ectothermic, which means they rely on external heat to warm their body. In the wild, they live on just a handful of tropical islands within Komodo National Park in Indonesia.

# BROWN BEAR

## Living Northwest Trail



Meet Juniper and Fern! They are brown bears. Juniper was rescued from Alaska, and Fern from Montana. Both of them came to the zoo because of bear/human interactions. As people continue to take up more space, some carnivores have learned to survive on the edge of their habitat and in urban areas. This has resulted in increased interactions between humans and carnivores.

### What can bears eat?

Draw lines from the brown bear to the foods that are safe for her to eat.

grass



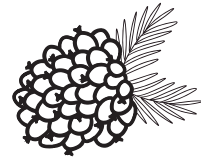
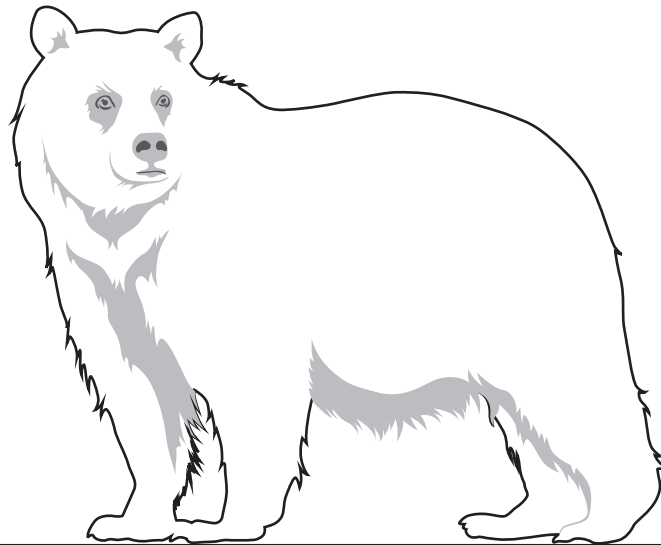
squirrel



chips



bulb root



berries



hot dog



salmon









chocolate

We want to coexist peacefully with our carnivore neighbors, and we can do that by avoiding behaviors that will result in negative interactions. So unlike pollinators, it's important to **NOT** provide food, water, or shelter for Pacific Northwest carnivores. Remember, when animals are in areas with people, they are still wild animals and should not be approached, touched, or harassed.

### EXPLORE

Visit the Living Northwest exhibit to learn more about how to coexist with all of our animal neighbors!

### Tips on how to keep bears and other carnivores from wanting to visit your home:

-  Keep trash indoors until the morning of pick-up.
-  Feed pets indoors and store pet food indoors.
-  Clean up food waste after picnics in the park; pick up fallen fruit in your yard.
-  Plant native plants to provide food for birds, rather than hang bird feeders.
-  Keep BBQs, outdoor stoves and cooking areas clean.
-  Close garages, keep car windows rolled up, and don't leave food in cars overnight.

Answer key: Safe foods are grass, squirrel, bulb roots, berries, salmon

# STELLER'S SEA EAGLE

## Living Northwest Trail



Across the Pacific Ocean lives the Steller's sea eagle. This very rare bird only breeds in Russia and spends its winters in Japan. As carnivores, they play a huge role in their **ecosystem**. By hunting, Steller's sea eagles keep the salmon and trout populations in check and their shared ecosystem balanced.

### Ecosystem:

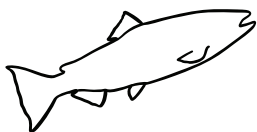
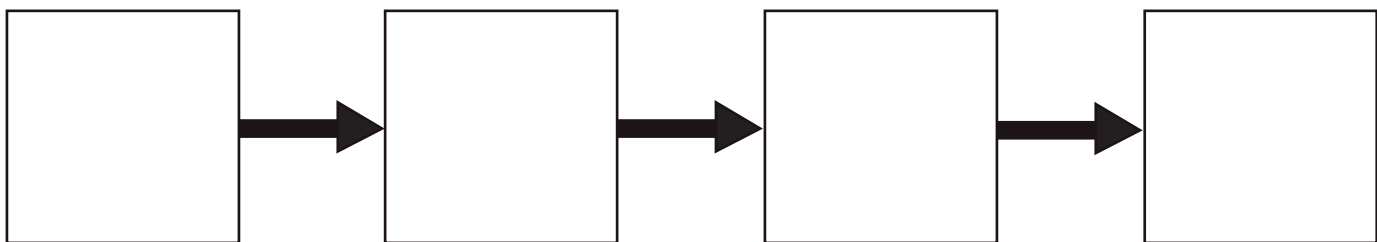
a community of animals, plants, and the environment they live in

The biggest threats to Steller's sea eagles are logging, pollution, pesticides, electrical wires, and overfishing. Thankfully, both Russia and Japan have given them full legal protection



Steller's sea eagles' cousin, the Bald Eagle, can be seen right here in Seattle and its surrounding areas! They live near water, so next time you're near a lake or the Salish Sea, keep an eye out.

A food chain shows the order in which living things get their food. Can you figure out the correct order of the eagle's food chain?



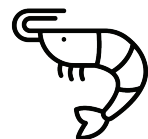
A. salmon



B. Algae



C. Eagle



D. Plankton

When we protect the other members of the eagle's food chain, we also protect the eagle. It's important that we keep the ocean healthy for salmon, algae, and plankton so the eagles can continue to have enough food.

# JUNIOR ZOOKEEPER'S OATH

As a Junior Zookeeper, I swear to uphold  
the following responsibilities:

(Check the boxes to agree)

- Explore ways to help wildlife at home, school,  
and within your community.
- Respect wildlife by keeping a safe distance.
- Share what I've learned and inspire others to  
take care of our environment.

What can you do to help pollinators and carnivores?

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---

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These will only be effective if you AND your neighbors all take these  
actions – so communicate and collaborate with your neighbors to  
ensure your neighborhood can coexist with carnivores and pollinators!



# Certificate

of achievement

THIS CERTIFICATE IS PROUDLY PRESENTED TO

\_\_\_\_\_

For completing all requirements to become a Junior Zookeeper

\_\_\_\_\_

Date of Completion

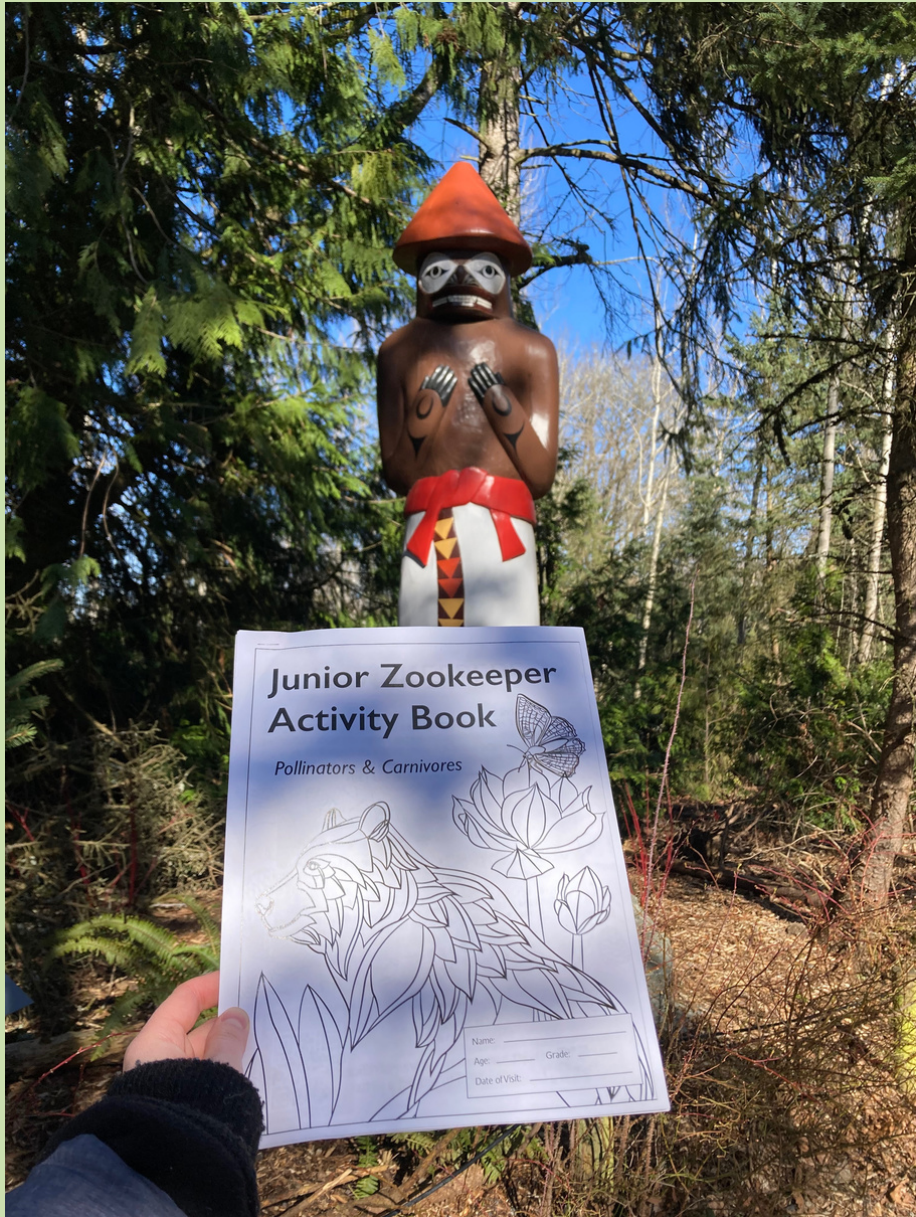
\_\_\_\_\_

Zoo Staff Signature

MUSEOLOGY THESIS PROJECT

# EVALUATION REPORT:

ASSESSING THE EFFICACY OF A  
JUNIOR ZOOKEEPER PROGRAM



**PREPARED BY**

SIQBHAN WARMER-HINDS / ELLA RUBENSTEIN  
CLASS OF 2023

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# I. EXECUTIVE SUMMARY

The purpose of this study was to assess the effect of a group/family guided activity book on visitors' perceptions of pollinators & carnivores. Data was collected through two questionnaires from 85 visiting groups at Woodland Park Zoo over five visits between February and March 2023. The following are key results organized by the evaluation questions that guided the study :



## IS THIS ACTIVITY WELL SUITED FOR THE INTENDED AUDIENCE?



The target demographic was 8-12 year olds, who stated they did not find the activities or vocabulary too difficult to complete. However, the most common participant was a **4-7 year old returning member with multiple adults and other children.**



## DO PARTICIPANTS MAKE CONNECTIONS BETWEEN THE BOOK ACTIVITIES AND CONSERVATION ISSUES?

75% of participants that completed the book during their visit could identify at least one conservation action to take in their daily life

### THE MOST COMMON IDENTIFIED ACTIONS:

"Plant flowers or provide water pollinators"



"Recycle; take care of the planet; & pick up trash"



## DO GROUPS WANT AN INDEPENDENT/ASYNCHRONOUS ACTIVITY DURING THEIR VISIT?



Only **14%** of participants also attended a Zoo program during their visit. Few programs are offered during the winter season. **78%** of participating groups showed strong desire for future access to the book.

---

## 2. PROJECT BACKGROUND

---



*In 2022 Woodland Park Zoo instituted a new initiative within their conservation education focusing on pollinators and carnivores. These groups of animals have many harmful stereotypes and misunderstandings surrounding them, yet are crucial to the health of our ecosystems (Woodland Park Zoo: Coexisting with Carnivores, 2023). The Zoo chose to focus on these two groups to emphasize the importance of these animals, how their existence impacts humans, and how people can support them at home (Woodland Park Zoo: Carnivores & Pollinators, 2023).*

*Researchers chose to utilize the Junior Ranger Activity model, used in state and national parks systems, as it is a proven format to engage children in conservation messaging and environmental education (Tormey, 2019). The Junior Ranger model is a style of asynchronous activity that encourages adults and children to work together to complete activities over multiple locations. After completing the activities, they return to a park ranger to say an oath and sign a certificate to promote stewardship and conservation. Kids also often get a prize or photo (2019).*

*This project is divided into two sections, the creation of the activity book and the evaluation of its efficacy. The book is designed for children and their families, or the groups with whom they are visiting the Zoo, to engage in deeper levels of discussion and action than provided on existing signage. The purpose of the evaluation is to identify if the book does indeed encourage groups to successfully learn more about the specific conservation issues around the animals featured in the book and learn what actions they can take in their daily lives.*



### 3. PURPOSE STATEMENT

**THE PURPOSE OF THIS STUDY IS TO ASSESS THE EFFECT OF A GROUP/FAMILY GUIDED ACTIVITY BOOK ON VISITORS' PERCEPTIONS OF POLLINATORS & CARNIVORES.**

*THE ACTIVITY BOOK FOCUSES ON THE FOUR GOALS CREATED BY WOODLAND PARK ZOO IN THEIR POLLINATORS AND CARNIVORES EDUCATION INITIATIVE.*

#### EDUCATION GOALS OUTLINED BY THE ZOO

**GOAL 01**

*PEOPLE RECOGNIZE AND RESPECT WILDLIFE IN THEIR SHARED SPACES.*

**GOAL 02**

*PEOPLE RECOGNIZE AND CONSIDER THE NEEDS OF WILDLIFE.*

**GOAL 03**

*PEOPLE AVOID BEHAVIORS THAT CAN LEAD TO NEGATIVE INTERACTIONS WITH WILDLIFE.*

**GOAL 04**

*PEOPLE ENGAGE IN BEHAVIORS THAT CAN HELP WILDLIFE.*

(Woodland Park Zoo: Carnivores & Pollinators, 2023)



## EVALUATION QUESTIONS

The following evaluation questions were designed to determine the effectiveness of the activity book on fulfilling the Zoo's education goals.

**1**

***IS THIS ACTIVITY WELL SUITED FOR THE INTENDED AUDIENCE?***

**2**

***DO PARTICIPANTS MAKE CONNECTIONS BETWEEN THE ACTIVITIES IN THE BOOK AND CONSERVATION ISSUES?***

**3**

***DO GROUPS WANT INDEPENDENT OR ASYNCHRONOUS ACTIVITIES CURRENTLY NOT PROVIDED BY THE ZOO DURING THEIR VISIT?***

## 4. METHODOLOGY

- SAMPLING
- TARGET AUDIENCE
- BOOK DESIGN
- DATA COLLECTION SCHEDULE
- INSTRUMENTS
- STUDY LIMITATIONS



### SAMPLING

*Data collectors were stationed at a table immediately inside the south entrance of the Zoo where visitors passed at the start and end of their visit. Participants were selected through a convenience method, as most participants chose to approach the table voluntarily, often when noticing the sign or other children participating.*

*One adult from every participating group was asked to fill out the pre-activity questionnaire. After getting a verbal overview of the Junior Ranger model, participants were given the activity book and instructions to complete the book and return it to the data collection table. When participants returned, data collectors requested one adult per group to fill out the post-activity questionnaire.*

*The goal was to collect 40-50 pre-activity questionnaires and 30-40 completed post-activity questionnaires.*



## **TARGET AUDIENCE**

*The target audience for the book was families, or groups with a mix of children and adults. The book was designed for children ages 8-12, but any interested party was allowed to participate.*



## **BOOK DESIGN**

*The activity book was designed to highlight 9 animals total, four pollinators and five carnivores. Each page had a unique activity related to learning about an animal. The animals featured in the book were selected from all pollinators and carnivores at the Zoo. Four of the animals are found in the Pacific Northwest to ensure relevance to local visitors.*

*The book was designed to be completed by children with the help and guidance of the adults in their group to encourage multi-generational learning.*



## **DATA COLLECTION SCHEDULE**

*The evaluation team visited the Zoo five times, from open to close, over 4 weekends in February and March. The final day of data collection was added after weather prevented a planned day of collection.*



# INSTRUMENTS

METHODOLOGY CONT.

A two-part questionnaire was administered before and after the activity. The pre-activity questionnaire collected basic demographic information, connection with the Zoo, and familiarity with the Junior Ranger model. The post-activity questionnaire examined participants' use, enjoyment, and education from using the book.

The questionnaire was separated into a pre- and post- activity questionnaire to ensure that the demographic data of all groups was gathered. Not all participants returned to the data collection site to complete the post-activity questionnaire, therefore the split questionnaire ensured that demographic data was collected whether participants did or not finish.

---

## PRE-ACTIVITY QUESTIONNAIRE (APPENDIX A)

The pre-activity questionnaire was completed by all groups that received the activity book. The pre-activity questionnaire was very short, with only 5 questions so groups could start their visit as quickly as possible.

**The pre-activity questionnaire asked questions such as the age of participating children, group dynamics, previous Zoo visits, Zoo membership status, and familiarity with the Junior Ranger model.**

---

## POST-ACTIVITY QUESTIONNAIRE (APPENDIX B)

The post-activity questionnaire was given to one adult in each group that returned to the table with completed books. The post-activity questionnaire determined the overall enjoyment of the children in the group while using the book during the visit. The questionnaire also focused on the engagement and understanding that groups took away from using the book during their visit. The post-activity questionnaire was less than two pages so adults could complete it quickly while data collectors review the completed book and oath with the kids so they could sign their certificate. Only the adults were asked to fill out the questionnaire, though they would often consult the children in the group on their opinions. **The post-activity questionnaire asked questions such as their favorite activity completed, time taken to complete the book, learned actions that they will take at home/after their visit, as well as a Likert scale focused on the perceptions of the user on pollinators and carnivores.**



## LIMITATIONS

*The primary limitation to the data collection process was weather. Weather was an anticipated issue but there was significantly more snow and cold than expected which impacted visitation. The second data collection day was rescheduled due to heavy rain and cold. All data was collected at the South entrance of the Zoo as it is the less used gate which allowed data collectors to keep pace with the rate of people participating in the program but did limit the opportunity to participate to those that entered at the South entrance.*

*Multiple areas in the Zoo were closed during the winter months due to annual schedules and construction which required the evaluation team to remove specific locations in the book. Instead, certain activities could be completed anywhere in the Zoo, such as the butterflies.*

*Not all participants returned to fill out the post-activity questionnaire. This does not mean that participants who did not return did not attempt the activity book at all. Some participants found other Zoo staff to sign their certificate, left out of other gates, or were driven out by weather. Because there were multiple reasons a group may not have finished, the evaluation team focused their data analysis on the 50% of participants that did return and filled out the post-activity questionnaire.*

*Lastly, the book was only created in English and administered by white, cis-presenting females, which could have excluded non-English speaking visitors and limited who feels comfortable approaching the table or accepting the offer to participate. Data collectors did attempt to approach as many groups with children in the targeted age range to encourage all visitors to participate.*

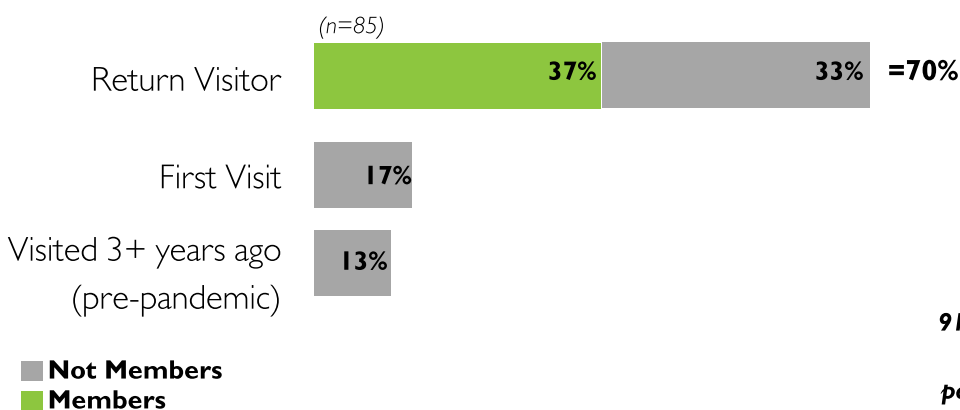
# 5. FINDINGS

## DESCRIPTION OF SAMPLE & PRE-ACTIVITY QUESTIONNAIRE FINDINGS

In total, 85 groups participated in the program and took books from the data collection table. 44 of these groups completed only the pre-activity questionnaire, meaning they did not return to the table due to having other Zoo staff signing the certificate, exiting out of a different gate, or not finishing the activity book. The remaining 41 questionnaires completed both the pre- and post-activity questionnaire. This indicated those groups returned to the table to fill out the post-activity questionnaire.

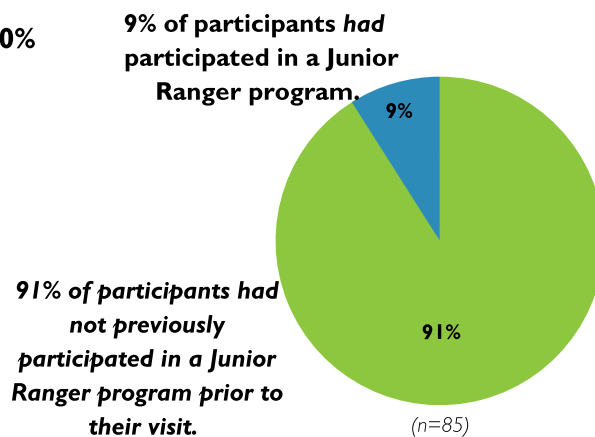
### Visit & Membership Status

Over 70% of visitors *had visited the Zoo previously*, and half of those were members.



### Junior Ranger Experience

Most visitors had not participated in a Junior Ranger program prior to their visit.



### Ages of All Participants

Though the target age range was 8-12, *more children aged 4-7 years old participated*. These numbers reflect all participants who completed a book within the 85 groups to participate.

Ages 4-7	45	Ages 11-12 (6th grade)	2
Ages 8-9 (3rd grade)	26	Ages 13-17 (Teens)	2
Ages 9-10 (4th grade)	21	18+ (Adults)	2
Ages 10-11 (5th grade)	17		

n = 115

Prior experience with the Junior Ranger model of activities was not a barrier for visitors to enjoy or complete the book.

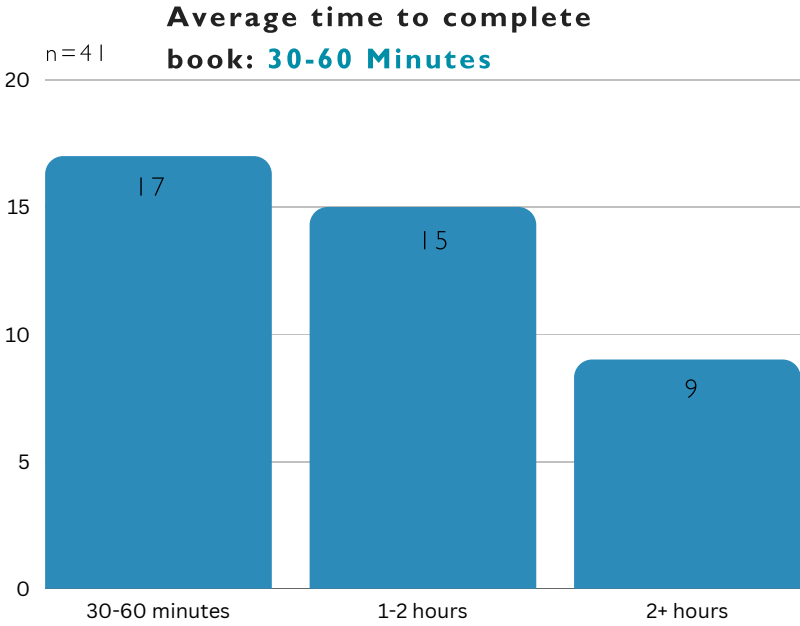


### Intergenerational Learning

98% of users participated in groups with a mix of adults and children

# POST-ACTIVITY QUESTIONNAIRE FINDINGS

Most participants completed the book within 60 minutes and understood the vocabulary and activities provided.



**83% of participants agreed they spent more time reading during their visit than on past visits**

**Almost all participants were able to understand vocabulary used in the book**



**Almost all participants were able to complete all activities in the book**



## Ages of Each Participant that Completed the Book

n=57

Ages 4-7	<b>21</b>
Ages 8-9 (3rd grade)	<b>14</b>
Ages 9-10 (4th grade)	<b>12</b>
Ages 10-11 (5th grade)	<b>8</b>
Ages 11-12 (6th grade)	<b>0</b>
Ages 8-9 (3rd grade)	<b>0</b>
Ages 9-10 (4th grade)	<b>2</b>

## How Participants Described the Activity Book



**Fun**



**Educational**



**Exciting**

n=41

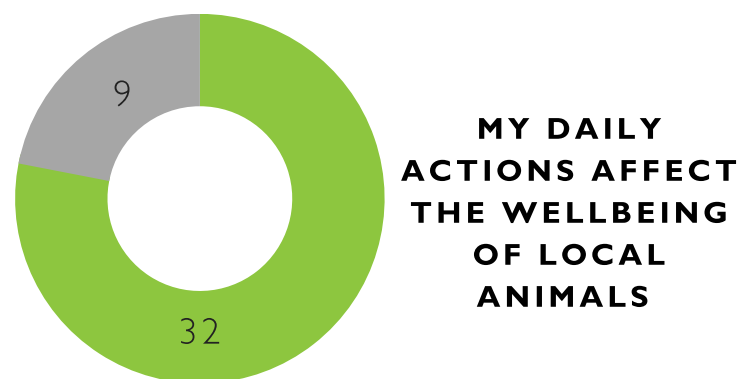
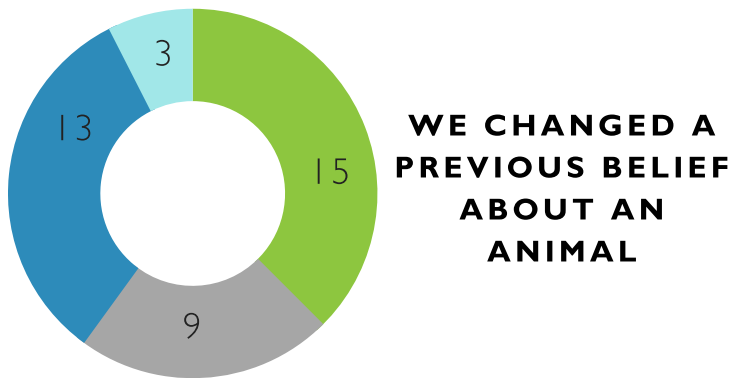
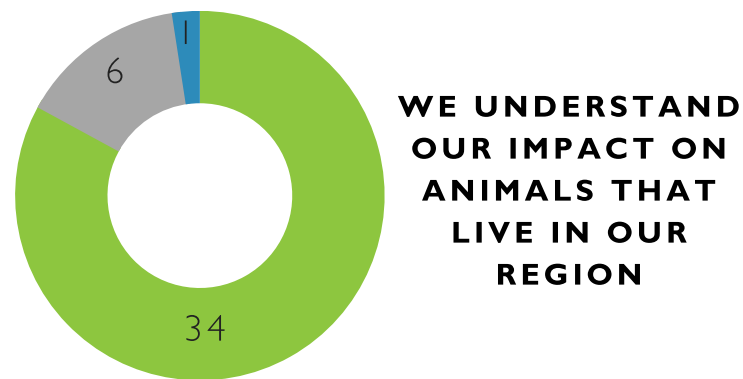
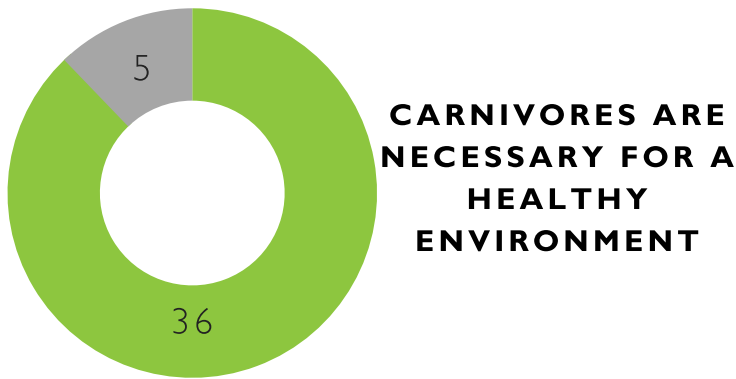
Other common terms people used when asked to describe their experience with the activity book were helpful, interesting, & creative.

# PERCEPTIONS OF CONSERVATION EDUCATION POST VISIT WITH THE ACTIVITY BOOK

Most visitors *strongly agreed* that carnivores were necessary to the environment (87%), that they understand their impact on regional animals (83%), and that their daily actions affect the wellbeing of local animals (78%). More than half of visitors also changed a previous belief about an animal (60%). These questions were designed based on the goals of the Pollinator & Carnivores Education Initiative.

## OPINIONS ON CONSERVATION EDUCATION

n=41

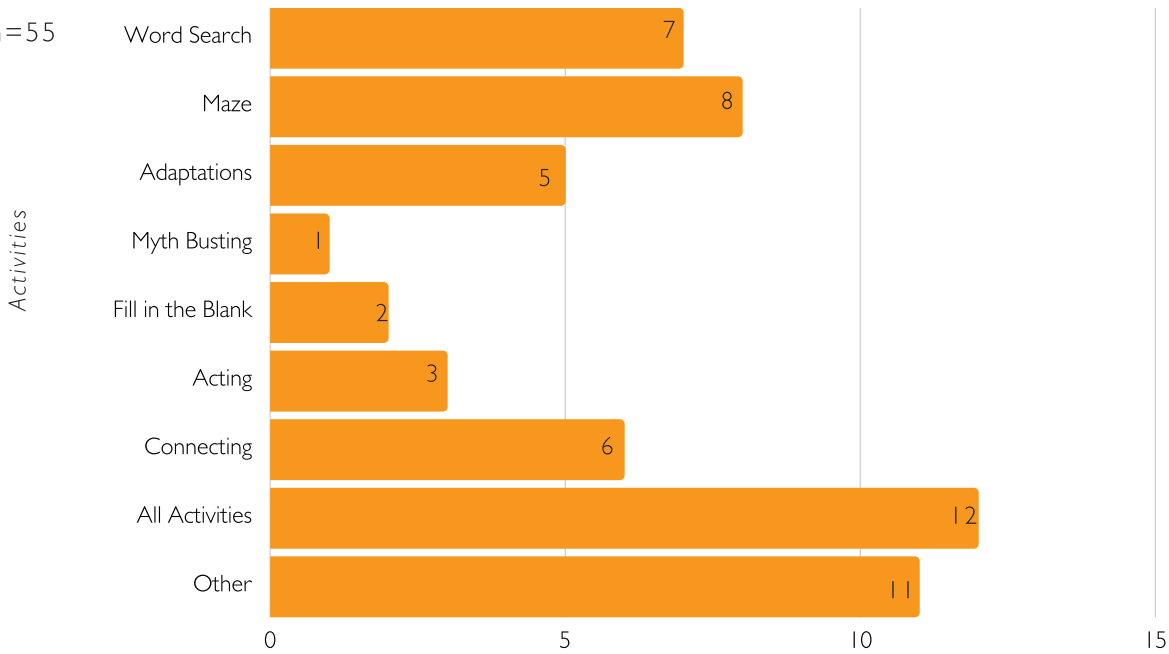


No participants responded that they *Strongly Disagreed* to these questions.

# ENJOYMENT OF BOOK BY PARTICIPANTS

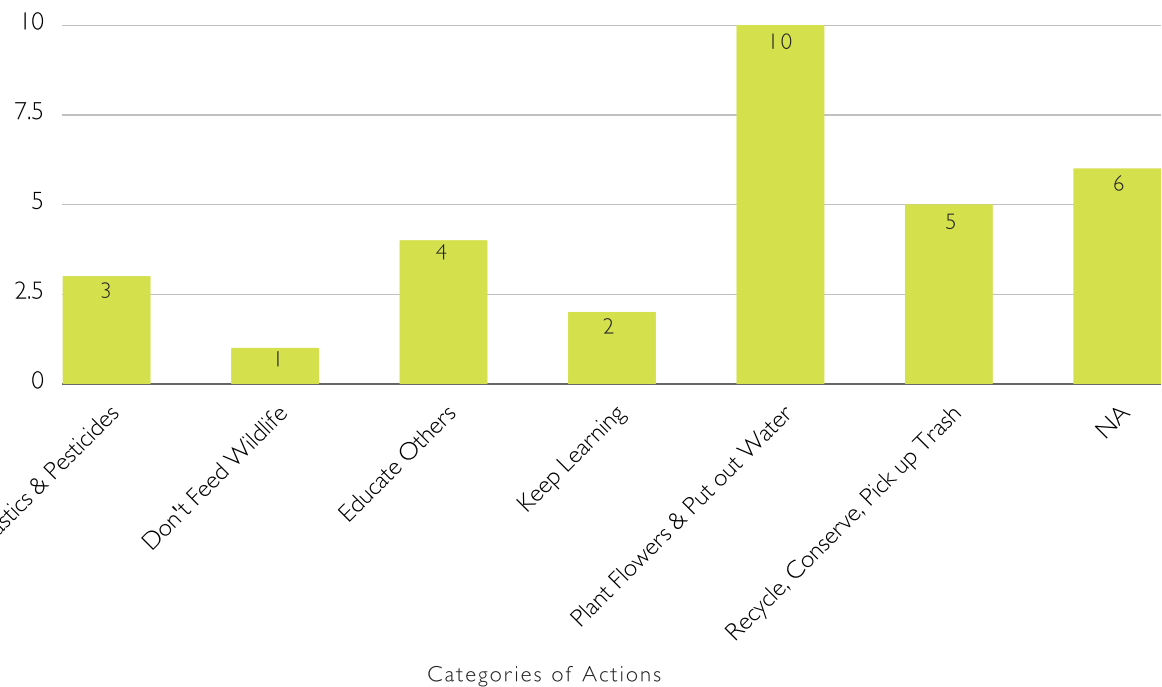
## Favorite Activities

n=55



Participants specified their favorite activity or activities in the book. Most people stated they enjoyed all the activities, but the most popular activities were the word search and maze.

## Actions Identified by Participants

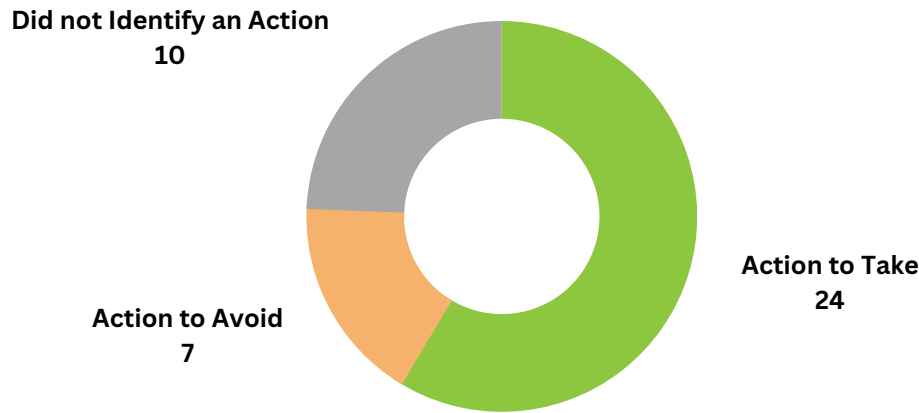


When asked, the most common conservation actions people stated they would take were to **plant flowers and put water out for pollinators.**

**Actions to Avoid:** Avoid Pesticides and Plastics & Don't Feed Wildlife  
**Actions to Take:** Educate Others, Keep Learning, Plant Flowers & Put out Water, & Recycle

# COMPARISON OF CONSERVATION ACTIONS AND FAVORITE ACTIVITIES

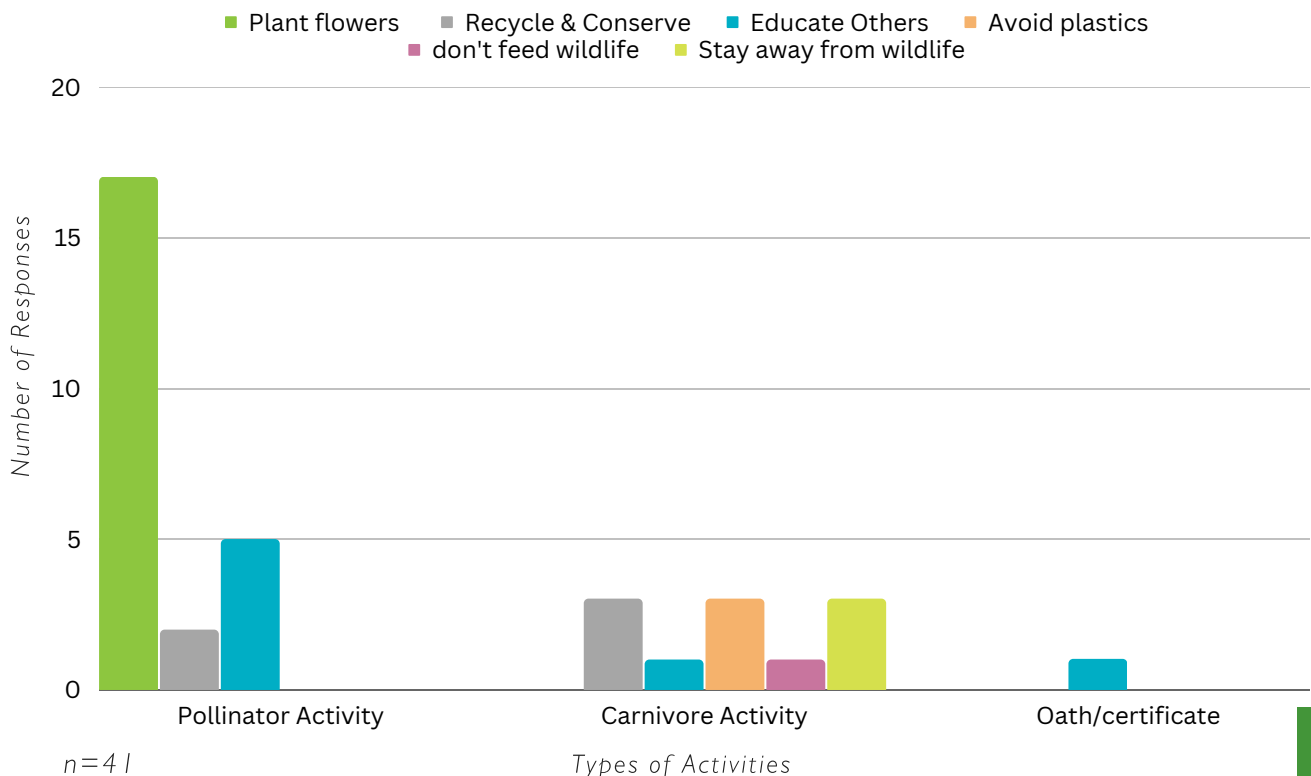
**Actions Agreed to Take or Avoid 75% of Participating Groups Could Identify a Specific Action to Take or Avoid**



n=41

*There is significant overlap between the visitors whose favorite activity was a pollinator activity (maze or word search) and being able to identify actions that would support pollinators (planting flowers and providing water).*

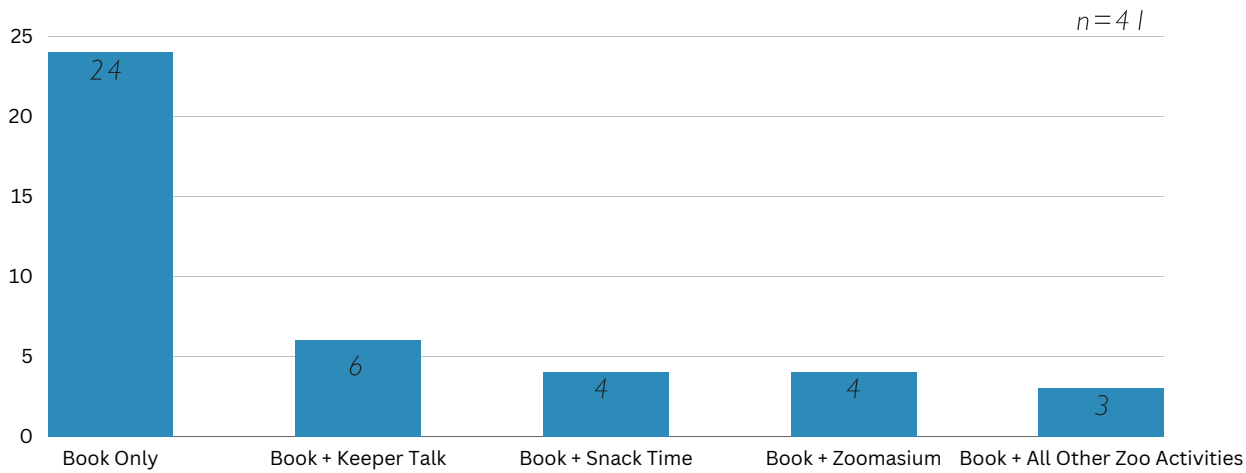
## Favorite Activities Compared to Actions Visitors Will Take at Home



n=41

# Future Use of Activity Book

## PROGRAM PARTICIPATION

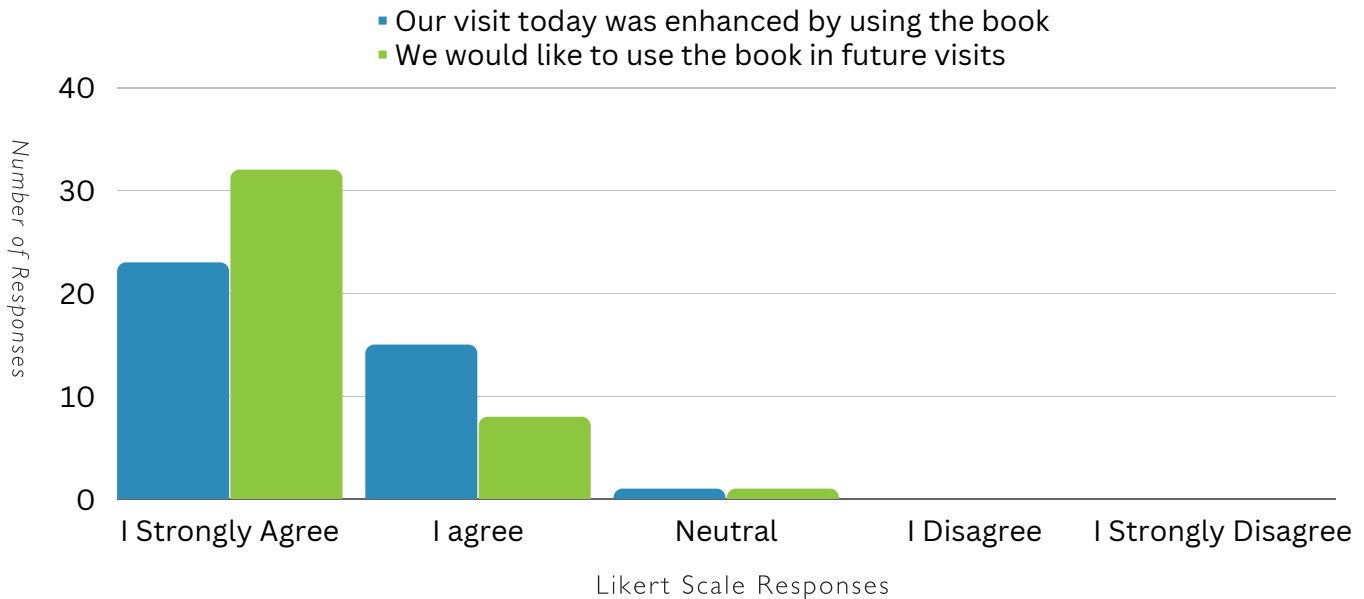


59 % of participants only participated in the activity book and no Zoo offered activities. During the winter season, fewer activities are offered than during the summer. Overall participation in activities is lower in the winter as most programs are offered outdoors and weather dependent. Zoo provided programs contained a mixture of free and paid programs.

## DESIRE FOR GUIDED INDEPENDENT ACTIVITIES

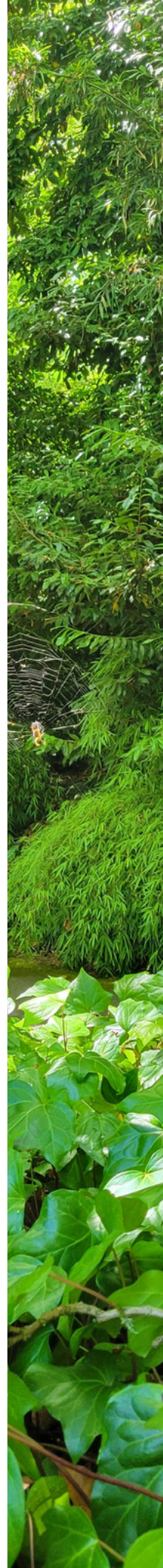
Future use of the book was very popular among users (32). 72% of those visitors also felt that their visit was enhanced by using the book.

n=41



# 6. CONCLUSIONS

- 1 Though designed for 8-12 year olds, children, and adults, in **other age ranges had interest in participating** in the activity.
- 2 Most participating children fell **below the target age range**, and most participating groups were returning visitors.
- 3 Visitors who used the book **strongly agreed** that their **actions and presence affect the wellbeing of local animals** and mostly agreed to take actions to support pollinators and agreed to avoid actions that harm carnivores.
- 4 Use of the activity book can help **reinforce learned behaviors that promote conservation and stewardship.**
- 5 People do **want guided activities they can do independently or asynchronously** during their visit, especially as Zoo-offered programs are less popular in the winter.



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# 7. RECOMMENDATIONS

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## **Short Term Recommendations Based on the Evaluation Study**

*The Zoo would benefit from providing more guided activities, such as the activity book, to promote conservation education to reinforce education goals and mission. To ensure easy access, the Zoo should designate a pick up and drop off spot for the book.*

*While well suited for 8-12 year olds, the guide book was very attractive to 4-7 year olds. This younger age range has different educational needs and a new version for 4-7 year olds with simplified vocabulary and short written text would be more effective. There also can be more emphasis on activities, coloring, and actions to keep children engaged.*

*An "on-season" and "off-season" version of the book can be created, with the "on-season" book including seasonal animals and stationing the Bees activity at the Pollinator Patio and the Butterfly activity at the Molbak's Butterfly Garden.*

*The staff interaction creates a personal and memorable experience, however, if needed the Zoo could eliminate the staff interaction by pre-signing the certificate.*

# RECOMMENDATIONS CONT.

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## **Long Term Recommendations Based on Best Practices and Standards**

*In the future the Zoo should provide translations into the most commonly spoken languages at the Zoo as they continue to expand language accessibility across the park.*

*Lastly, the book was free and should continue to be a free resource to promote equal access. A unique prize or certificate could be created for members as an incentive as many participants were members and clearly have interest in more activities on return visits.*



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## 8. REFERENCES

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# Appendix A

## Pre-Activity Questionnaire

### PRE-ACTIVITY QUESTIONNAIRE

GROUP NUMBER \_\_\_\_\_ DATE \_\_\_\_\_ LOCATION \_\_\_\_\_

START TIME \_\_\_\_\_ END TIME \_\_\_\_\_

# OF BOOKS \_\_\_\_\_

Who are you visiting with today?	Kids and adults	Just children	Just adults				
How old are the kids in your group? (circle all that apply)	Infants and Toddlers	Ages 4-7	Ages 8-9 (3rd grade)	Ages 9-10 (4th grade)	Ages 10-11 (5th grade)	Ages 11-12 (6th grade)	Teens
Have you visited the Zoo in the last three years?	Yes	Yes, but more than 3 years ago	No, this is my first visit				
Are you Zoo Members?	Yes	No	No, not yet				
Have you or the children in your group ever participated in a Junior Ranger Program?	Yes	No	I have never heard of the Junior Ranger programs	No, but I am familiar with them			

**ACTIVITY DIRECTIONS:** THIS BOOKLET IS DESIGNED AFTER THE JUNIOR RANGER PROGRAMS FOUND IN THE NATIONAL AND STATE PARKS SYSTEMS ACROSS THE US. THIS ACTIVITY BOOK WILL GUIDE YOU THROUGH THE ZOO WITH EDUCATIONAL ACTIVITIES. WHILE THIS BOOK IS DESIGNED FOR CHILDREN, ADULT FACILITATION AND SUPPORT IS HIGHLY RECOMMENDED. THE BOOK CAN BE COMPLETED IN ANY ORDER. WHEN YOU COMPLETE THE BOOK, COME BACK HERE TO TAKE THE JUNIOR ZOO KEEPER PLEDGE, SIGN YOUR CERTIFICATE, AND SNAP A PIC!

# Appendix B

## Post-Activity Questionnaire

**HELLO, AND THANK YOU FOR PARTICIPATING IN THIS ACTIVITY. THIS FOLLOW UP QUESTIONNAIRE WILL TAKE ABOUT 5-10 MINUTES. THESE QUESTIONS ARE ENTIRELY VOLUNTARY, AND YOU CAN SKIP ANY QUESTION OR STOP AT ANY TIME. THANK YOU FOR PARTICIPATING!**

I feel that...	I strongly disagree	I disagree	Neutral	I agree	I strongly agree
...Carnivores are necessary for a healthy environment					
...We understand our impact on animals that live in our region					
...My daily actions affect the wellbeing of local animals					
...We changed a previous belief about an animal					
...The children in my group understood and used the terms defined in the activity book					
...My group felt our visit was enhanced by using the activity book					
...We spent more time reading and learning than in past Zoo visits (here or other Zoos)					
...We would like to have activities like this for future Zoo visits					

**PART 2.**

**1. OUR FAVORITE ACTIVITY IN THE BOOK WAS**

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-----  
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**2. ONE THING THE CHILDREN IN MY GROUP LEARNED TODAY WAS**

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**3. ONE ACTION WE WILL TAKE OR AVOID TO SUPPORT POLLINATORS AND/OR PREDATORS IS**

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-----  
-----  
-----

**PART 3. CIRCLE ALL THAT YOU ATTENDED TODAY**

**ZOOMAZIUM**

*LOOK, LISTEN, FEEL STORY TIME*

*AMPHITHEATER SHOW*

*PENGUIN SNACK TIME*

*ANIMAL KEEPER TALK*

*PENGUIN FEEDING (PAID)*

*ANIMAL TRAINING DEMONSTRATION*

*OTHER*-----

**PART 4.**

**1. HOW LONG DID IT TAKE TO COMPLETE THE BOOK?**

- A. 30-60 MINUTES**
- B. 1-2 HOURS**
- C. MORE THAN 2 HOURS**

**2. DID THE CHILDREN IN YOUR GROUP UNDERSTAND THE VOCABULARY IN THE BOOK?**

- A. YES**
- B. NO, THE TERMS OUR GROUP STRUGGLED WITH WERE \_\_\_\_\_**

**3. WERE THERE ANY ACTIVITIES THAT YOU FELT WERE TOO DIFFICULT FOR THE CHILDREN IN YOUR GROUP TO COMPLETE?**

- A. YES, \_\_\_\_\_**
- B. NO**

**4. PLEASE CIRCLE UP TO 5 WORDS TO DESCRIBE YOUR EXPERIENCE USING THE ACTIVITY BOOK**

**FUN!  
TOO LONG  
INTERESTING  
CREATIVE  
EDUCATIONAL  
BAD WEATHER  
COLLABORATIVE**

**BEAUTIFUL  
INSPIRING  
FRUSTRATING  
EXCITING  
CONFUSING  
GOOD WEATHER  
TOO SHORT  
HELPFUL**

# Appendix C

## Pre-Activity Questionnaire Findings

Question	Answer Options & Percentage of Responses						
<b>Who are you visiting with today</b>	Kids and adults	Just children	Just adults				
	75.3%	23.5%	1.2%				
<b>How old are the kids in your group? (circle all that apply)</b>	Ages 4-7	Ages 8-9 (3rd grade)	Ages 9-10 (4th grade)	Ages 10-11 (5th grade)	Ages 11-12 (6th Grade)	Teens	Adults
	39.5%	22.8%	18.4%	14.9%	1.8%	1.8%	0.9%
<b>Have you visited the zoo in the last three years</b>	Yes	Yes, but more than 3 years ago	No, this is my first visit				
	71.8%	12.9%	15.3%				
<b>Are you Zoo Members</b>	Yes	No	No, not yet				
	37.6	60%	2.4%				
<b>Have you or the children in your group ever participated in a Junior Ranger Program</b>	Yes	No	I have never heard of the Junior Ranger programs	No, but I am familiar with them			
	8.2%	88.6%	1.2%	2%			

# Appendix D

## Post-Activity Questionnaire Findings

Question	Answer Options & Percentage of Responses				
I feel that...	1 I strongly disagree	2 I disagree	3 Neutral	4 I agree	5 I strongly agree
...Carnivores are necessary for a healthy environment	0%	0%	0%	11.9%	88.1%
...We understand our impact on animals that live in our region	0%	0%	2.4%	14.3%	83.3%
...My daily actions affect the wellbeing of local animals	0%	0%	0%	21.4%	78.6%
...We changed a previous belief about an animal	4.9%	2.4%	31.7%	22%	39%
...The children in my group understood and used the terms defined in the activity book	0%	2.4%	9.8%	39%	48.8%
...My group felt our visit was enhanced by using the activity book	0%	0%	2.4%	38.1%	59.5%
...We spent more time reading and learning than in past zoo visits (here or other zoos)	0%	0%	16.7%	21.4%	61.9%
...We would like to have activities like this for future zoo visits	0%	0%	0%	19%	81%

# Appendix D

## Post-Activity Questionnaire Findings

Question	Answer Options & Percentage of Responses (See code descriptions in Appendix E)					
1. Our favorite activity in the book was...	Specific Activity	Did not Know	General Activity Enjoyment	All Activities	Unrelated Answer	No Answer
	79.4%	2.6%	12.8%	2.6%	2.6%	0%
2. One thing the children in my group learned today was...	Action to take	Action to Avoid	Animal or zoo fact	Nothing	NA	
	12.2%	4.9%	68.3%	14.6%	0%	
3. One action we will take or avoid to support pollinators and/or predators is...	Action to take	Action to Avoid	Educate Others and Support Conservation	Nothing	NA	
	51.1%	14.9%	8.5%	0%	25.5%	

Question	Answer Options & Percentage of Responses			
Part 3. Circle all that you attended today	Zoomazium	Look, Listen, Feel Story Time	Amphitheater Show	Penguin Snack Time
	9.8%	2.4%	2.4%	9.8%
	Animal Keeper Talk	Penguin Feeding (paid)	Animal Training Demonstration	Activity Book Only
	14.6%	4.9%	0%	56.1%

# Appendix D

## Post-Activity Questionnaire Findings

Question	Answer Options & Percentage of Responses		
How long did it take to complete the book?	30-60 minutes	1-2 Hours	More than 2 hours
	42.5%	37.5%	20%
Did the children in your group understand the vocabulary in the book?	Yes	No, the terms our group struggled with were...	
	97.2%	2.8%	
Were there any activities that you felt were too difficult for the children in your group to complete?	Yes...	No	
	16.7%	83.3%	

Question	Answer Options & Percentage of Responses			
Please circle up to 5 words to describe your experience using the activity book	Fun!	Too Long	Interesting	Creative
	19.9%	0.6%	13.6%	8%
	Educational	Bad weather	Collaborative	Beautiful
	18.2%	1.1%	5.1%	5.7%
	Inspiring	Frustrating	Exciting	Confusing
	6.8%	0%	9.1%	0%
	Good weather	Too short	Helpful	
	2.3%	0.6%	9.1%	

# Appendix E

## Open Response Question Codes

<b>Our favorite activity in the book was...</b>	
<b>#</b>	<b>Code</b>
<b>1</b>	<b>Specific Activity</b>
<b>1a</b>	<b>Bees/wordsearch</b>
<b>1b</b>	<b>butterflies/maze</b>
<b>1c</b>	<b>Tropical Birds/adaptations</b>
<b>1d</b>	<b>Indian Flying Fox/myth busting</b>
<b>1e</b>	<b>Maned Wolf/Fill in the blank</b>
<b>1f</b>	<b>Humboldt penguin/ drawing</b>
<b>1g</b>	<b>Komodo Dragon/ acting</b>
<b>1h</b>	<b>Brown bear/connecting</b>
<b>1i</b>	<b>Stellar Sea Eagle/ food chain</b>
<b>1j</b>	<b>Oath / Certificate</b>
<b>2</b>	<b>Did not know</b>
<b>3</b>	<b>General enjoyment of activities</b>
<b>4</b>	<b>All of the activities</b>
<b>5</b>	<b>Unrelated answer</b>
<b>6</b>	<b>No answer</b>

# Appendix E

## Open Response Question Codes

<b>One thing the children in my group learned today was...</b>	
<b>#</b>	<b>Code</b>
<b>1</b>	<b>Action to take</b>
<b>1a</b>	<b>Plant flowers or provide water pollinators</b>
<b>1b</b>	<b>Keep learning/learn more</b>
<b>1c</b>	<b>Recycle; conserve; take care of planet; pick up trash</b>
<b>1d</b>	<b>Support zoos</b>
<b>2</b>	<b>Action to avoid</b>
<b>2a</b>	<b>Stay away from wildlife</b>
<b>2b</b>	<b>Don't feed wildlife</b>
<b>2c</b>	<b>Avoid plastics or pesticides</b>
<b>3</b>	<b>Animal or zoo fact</b>
<b>4</b>	<b>Nothing</b>
<b>5</b>	<b>NA</b>

# Appendix E

## Open Response Question Codes

<b>One action we will take or avoid to support pollinators and/or predators is...</b>	
<b>#</b>	<b>Code</b>
<b>1</b>	<b>Action to take</b>
<b>1a</b>	<b>Plant flowers or provide water pollinators</b>
<b>1b</b>	<b>Keep learning/learn more</b>
<b>1c</b>	<b>Recycle; conserve; take care of planet; pick up trash</b>
<b>1d</b>	<b>Support zoos</b>
<b>2</b>	<b>Action to avoid</b>
<b>2a</b>	<b>Stay away from wildlife</b>
<b>2b</b>	<b>Don't feed wildlife</b>
<b>2c</b>	<b>Avoid plastics or pesticides</b>
<b>3</b>	<b>Educate others and support conservation</b>
<b>4</b>	<b>Nothing</b>
<b>5</b>	<b>NA</b>