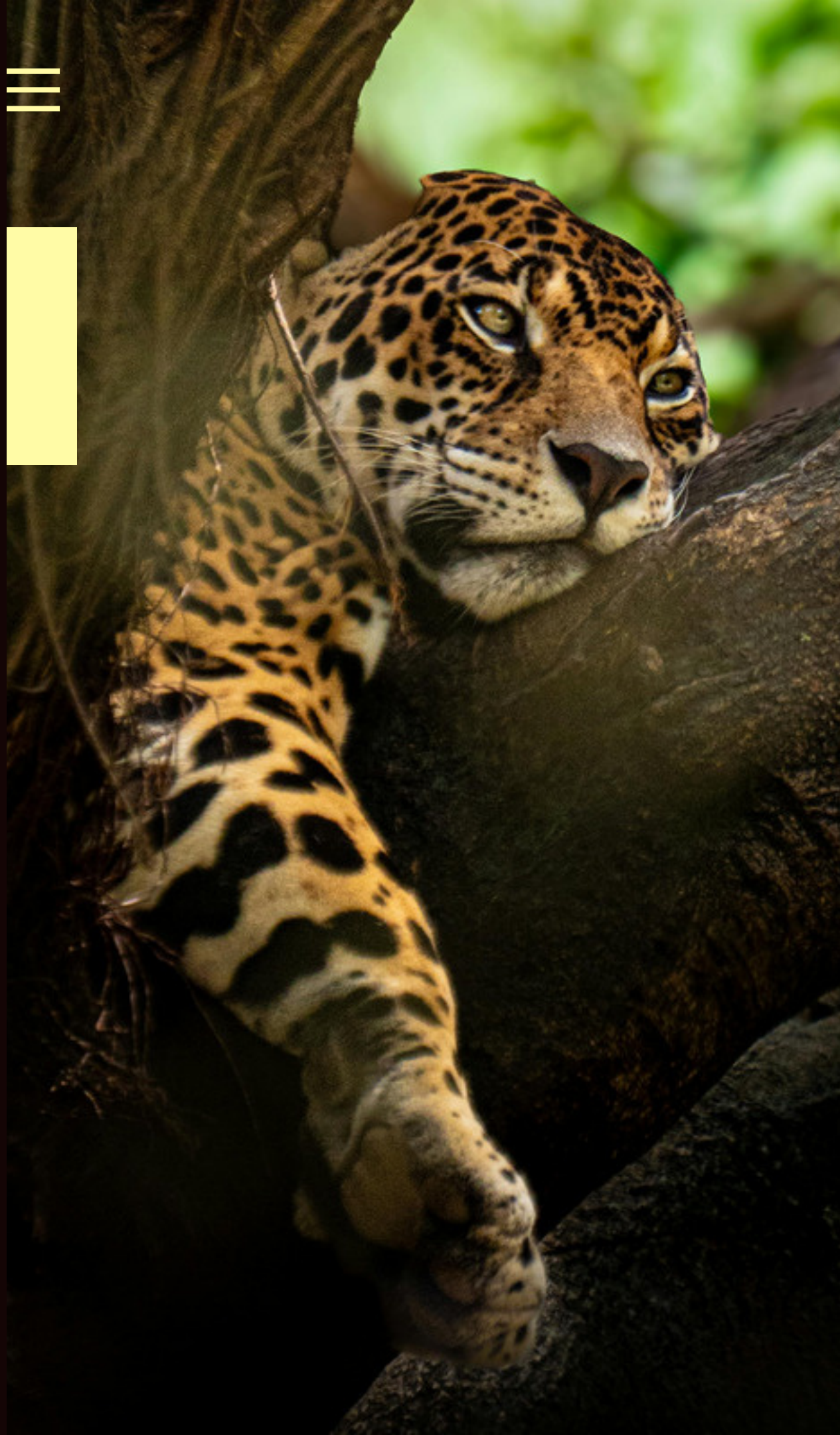
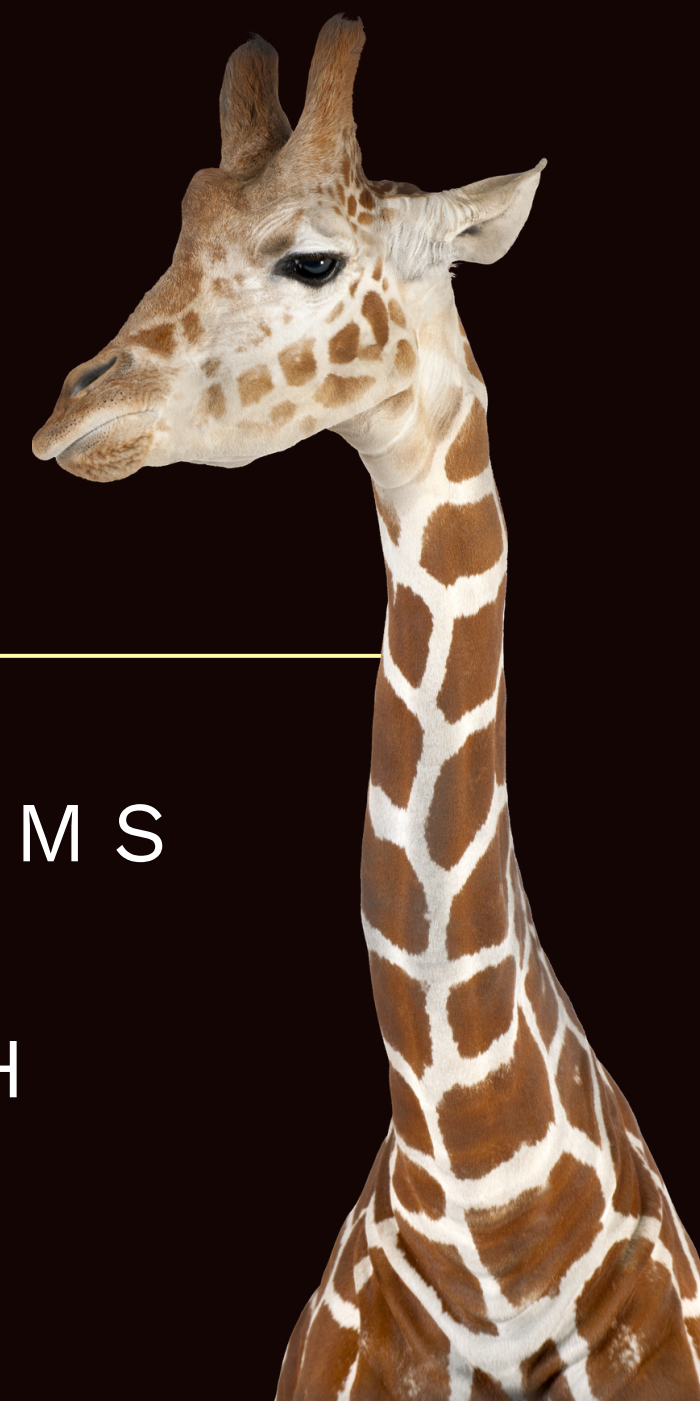




GET WILD

IN YOUR CLASSROOM



USING FREE LIVESTREAMS
TO MAKE CONNECTIONS
ACROSS SCIENCE, MATH
AND ELA



INTRODUCTION

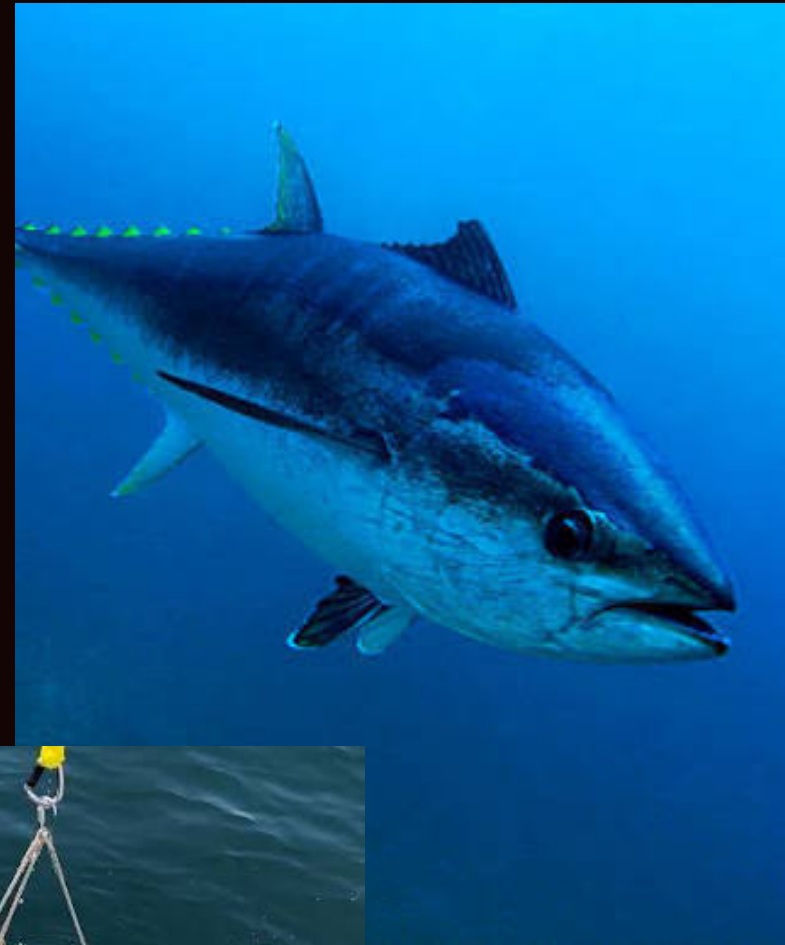
This workshop equips educators to use livestream animal cameras to teach observation, data collection, and scientific writing across elementary to high school levels.

Learning Targets:

I can design ethograms, reliably collect qualitative and quantitative data, and produce basic scientific reports using student-collected evidence.



≡ **TRICIA MAYHEW**



Educational Background

B.S., Sweet Briar College (Biology and Chemistry, concentration in Ecology and Conservation)

M.S., Texas A&M University (Wildlife and Fisheries Science)

Director of Christian Education, Concordia University, St. Paul

Field Work

National Science Foundation Fellowship - Freshwater Limnology

Galveston Bay Dolphin Research Program - Tracking and data collection on bottlenose dolphins

Environmental Protection Agency - Data collection and analytics of mercury content in tuna

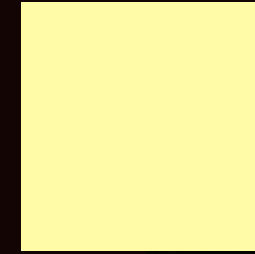
Teaching Experience

4th and 5th grades homeroom and science

Middle and High School Life/Biological Sciences/APES



INTRODUCTION TO LIVESTREAMS



- Locate reputable livestreams from accredited zoos and aquariums.
- Verify streaming schedules and access requirements.
- Plan lesson timing and backup streams.





MONTEREY BAY AQUARIUM

*Live cams of captive animals

*Live cams of wild ocean habitats





Jelly Cam

Watch the Monterey Bay Aquarium's live Jelly Cam and see our breathtaking sea nettles drift and pulse.

● Live: 7 a.m.–7 p.m. PT

📺 Watch the cam



📺 Camera is live now

Sea Otter Cam

Watch sea otters live as they swim, play, lounge in ice buckets and eat during our daily feeding shows.

● Live: 7 a.m.–7 p.m. PT

📺 Watch the cam



📺 Camera is live now

Kelp Forest Cam

Watch the live Kelp Forest Cam at the Monterey Bay Aquarium and watch a feeding show.

● Live: 7 a.m.–7 p.m. PT

📺 Watch the cam



📺 Camera is live now

Aviary Cam

Watch our live web cam of the Aviary at the Monterey Bay Aquarium for an adventure in birdwatching.

● Live: 7 a.m.–7 p.m. PT

📺 Watch the cam



📺 Camera is live now

Spider Crab Cam

Watch our Spider Crab Cam and see some of the largest deep-sea crabs in our Into the Deep exhibition.

● Live: 7 a.m.–7 p.m. PT

📺 Watch the cam



📺 Watch the cam

Penguin Cam

Our Penguin Cam is currently offline as we renovate our exhibits. Thank you for your patience.

📺 Watch the cam



📺 Camera is live now

Shark Cam

Watch live as sevengill sharks, leopard sharks, bat rays, sturgeon, and others glide through the rocky reef.

● Live: 7 a.m.–7 p.m. PT

📺 Watch the cam



📺 Camera is live now

Moon Jelly Cam

the Monterey Bay Aquarium's live Moon
am and be hypnotized by our gorgeous



📺 Camera is live now

Open Sea Cam

View open-ocean animals, from tuna to turtles, sharks and sardines.



📺 Camera is live now

Monterey Bay Cam

Watch our live web cam of Monterey Bay and look for otters, birds, and sailboats on Monterey



SAN DIEGO ZOO

SMITHSONIAN'S NATIONAL ZOO

***Wide variety of captive animals**

***Consistently online**



SAN DIEGO ZOO
Giant Panda Cam
[VIEW CAM](#)



SAN DIEGO ZOO
Koala Cam
[VIEW CAM](#)



SAN DIEGO ZOO
Baboon Cam
[VIEW CAM](#)



SAN DIEGO ZOO
Polar Cam
[VIEW CAM](#)



SAN DIEGO ZOO
Penguin Cam
[VIEW CAM](#)



SAN DIEGO ZOO
Hippo Cam
[VIEW CAM](#)



SAN DIEGO ZOO
Ape Cam
[VIEW CAM](#)



SAFARI PARK
Tiger Cam
[VIEW CAM](#)



SAFARI PARK
Elephant Cam
[VIEW CAM](#)



SAFARI PARK
Platypus Cam
[VIEW CAM](#)



SAFARI PARK
Giraffe Cam
Supported by ABCmouse
[VIEW CAM](#)



SAFARI PARK
Burrowing Owl Cam
[VIEW CAM](#)



BUILDING ETHOGRAMS

[Basic technique for study of animal behavior]

01. Define Target Behaviors

Create a concise list of
observable behaviors

K-6: eating, walking, resting

**7-12: standing alert, scent marking,
eating vs. ruminating**



BUILDING ETHOGRAMS

[Basic technique for study of animal behavior]

02. Examples

Use examples and videos to
model behaviors for clarity

K-5: act out behavior

**6-12: create clear definitions of
targeted behaviors, including coding**

Behavior	Definition
Resting, RE	Animal is lying on the ground and in inactive or relaxed state
Standing-alert, SA-	Animal is still, alert and gazing at stimuli or potential stimuli
Locomotion, LO	Animal is obviously moving without any accompanying behaviors
Feeding/Drinking, FD	Animal is feeding or drinking
Ruminating, RU	Animal expresses typical behavioral series of rumination i.e. regurgitating, chewing and swallowing
Tail-pasting, TP-	Animal is rubbing its tail and scent-marking on the surface of the wall or doorframe
Urinating/Defecating, UD	Animal fully or partially exhibits a series of activities such as earth-scratching, urinating and pellet covering
Environmental sniffing, ES	Animal explores the wall or ground with its nose

Type of Behavior	Behavior	Code	Description of Behavior
<i>Solitary</i>	Sleep	S	Animal assumes species-specific position for sleep, stays in one place and is not alert to environmental changes.
	Rest	R	Animal stays in one place but may be roused easily by environmental changes.
	Groom Self	GS	Animal engages in washing or smoothing its own fur or hair using tongue or forelimbs.
	Maintenance	M	Animal urinates or defecates.
	Travel	T	Animal moves from place to place.
<i>Food Related</i>	Eat	E	Animal consumes food it finds in its environment.
	Drink	D	Animal consumes water or other liquids found in its environment.
	Look for Food	LF	Animal searches the environment for food items.
<i>Social</i>	Groom Others	GO	Animal engages in washing or smoothing the fur or hair of another animal in its environment.
	Play	P	Animal engages in interactions with other that may involve locomotion, climbing, manipulating objects or other activities that show a relationship between two or more interacting animals.
	Contact	C	Animal comes in contact with another animal while engaging in a solitary behavior.
<i>Aggressive</i>	Fight	F	Animal engages in physical conflict with another animal in its environment.
	Steal Food	SF	Animal approaches another animal that has located food in the environment and either by physical force or distraction, removed that food item from the vicinity of the other animal.
<i>Off Exhibit</i>	Off Exhibit	O	Animal is not visible in exhibit.



01. Qualitative

[focuses on descriptions, words, and experiences instead of measurable numbers]

Train students in descriptive notes, narrative snapshots, and thematic recording.

Encourage sensory-rich descriptions and reflexive comments to capture context.

DATA COLLECTION
METHODS





02. Quantitative

[anything that can be counted or expressed using exact values]

Teach focal and/or scan sampling with timed intervals.

Use simple spreadsheets or tally sheets; emphasize consistency and sampling duration.

DATA COLLECTION
METHODS





Elementary Ethogram

Animal: _____

Date: _____

Location: _____

About the size of: _____

Body Description: _____

Habitat Description: _____



Behaviors my animal does:

1. _____

2. _____

3. _____



Make a hypothesis! **Why** do you think your animal does this behavior?

Make a hypothesis! **How many times** do you think your animal will do this behavior while you count?

BUILDING ETHOGRAMS- ELEMENTARY



Behavior: _____

Amount of Time: _____

Tally the number of times you see the behavior during the time period:

Time #1

Time #2

What did your data show?

What could you do next to learn more?

BUILDING ETHOGRAMS - ELEMENTARY



Secondary Ethogram

Species: _____ Date/Time: _____

Location: _____ Weather: _____

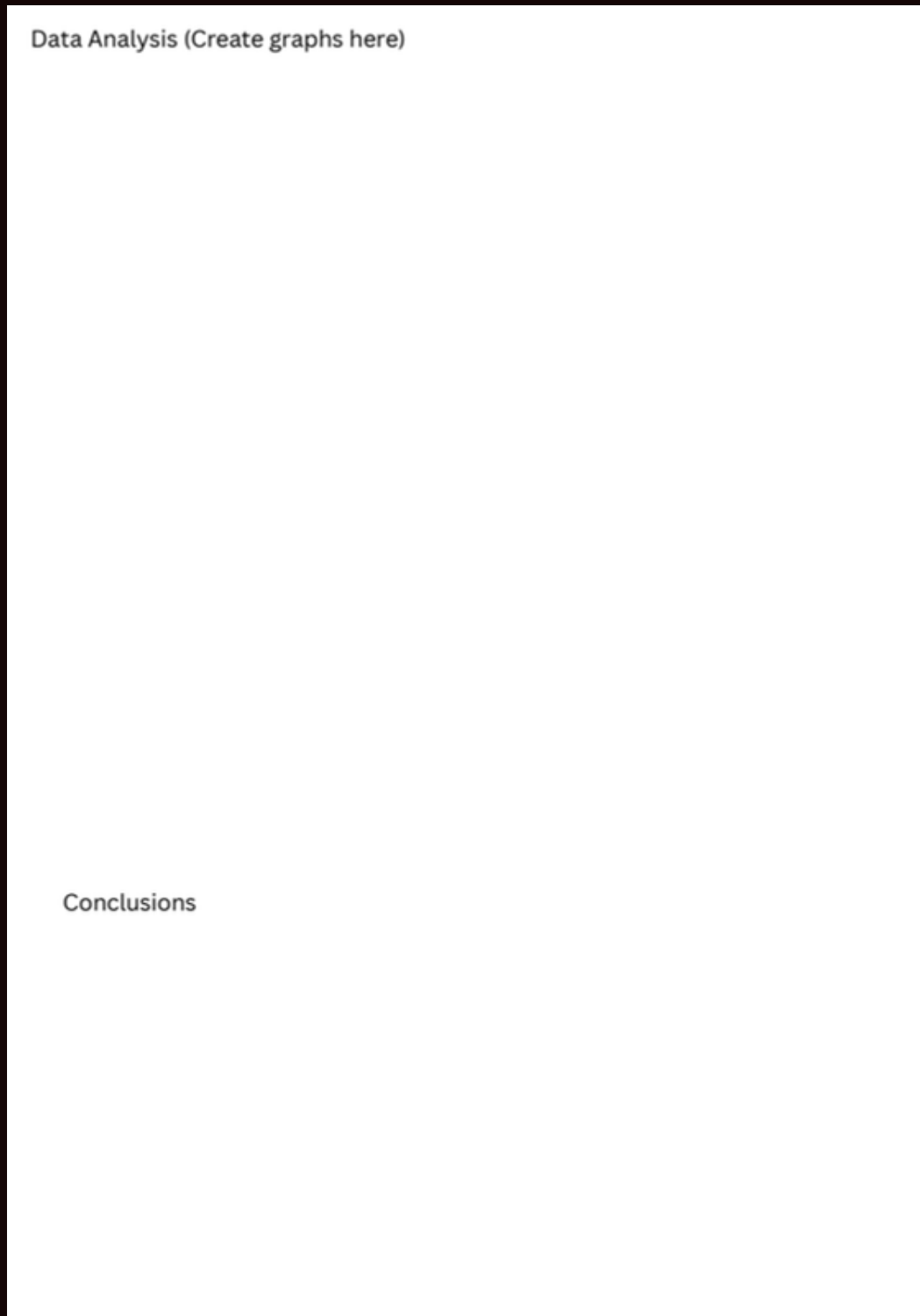
Other info: (keeper present/crowd level) _____

Body Description: _____

Habitat Description: _____

Behavior	Code	Description

BUILDING
ETHOGRAMS -
SECONDARY

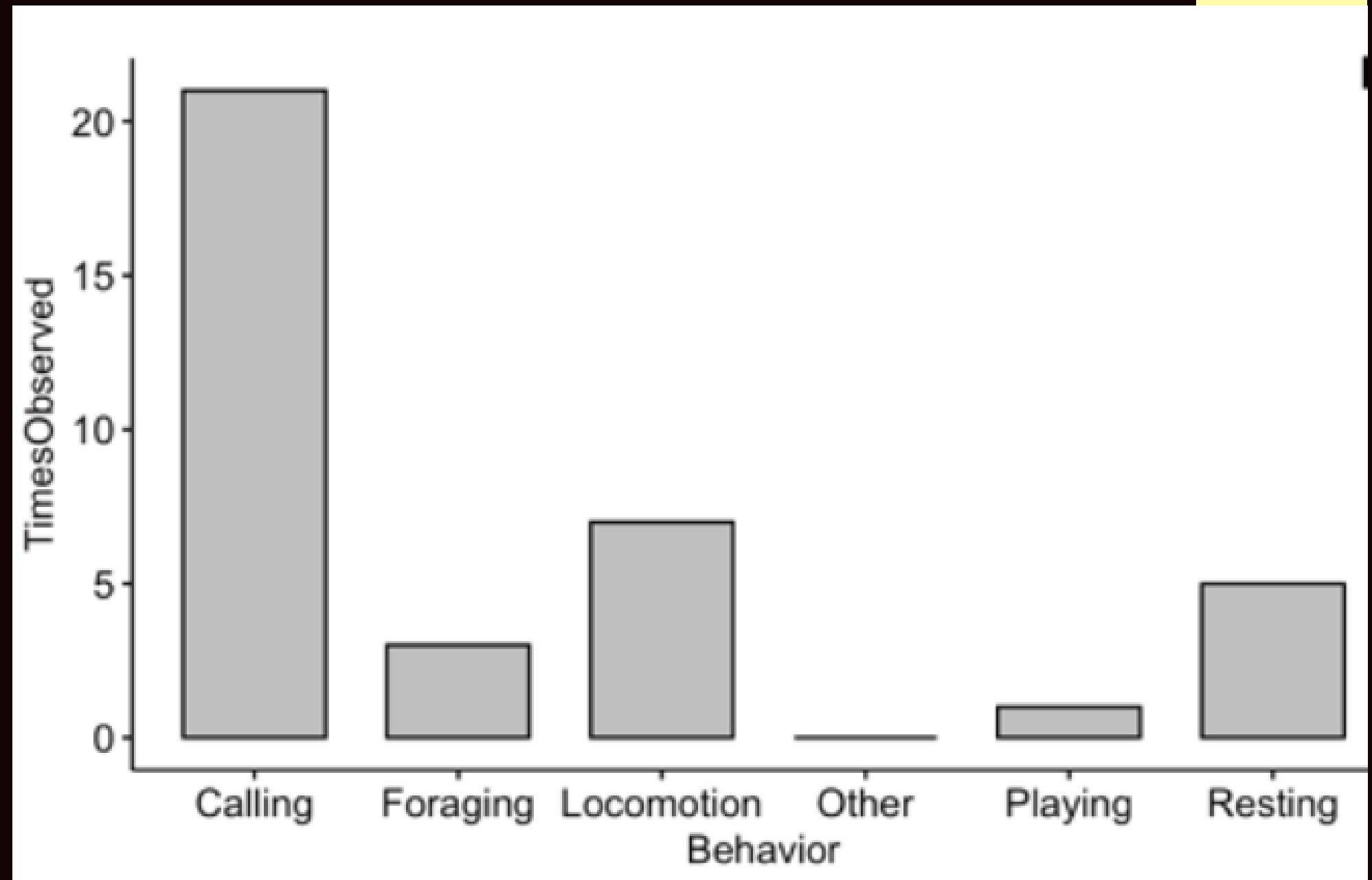
[illegible]

BUILDING ETHOGRAMS - SECONDARY



- Guide students to compute simple rates, frequencies, and proportions.
- Introduce bar charts and line graphs; use visual summaries to highlight patterns.

FROM DATA COLLECTION TO MATH SKILLS





FROM DATA COLLECTION TO WRITING

- Provide sentence frames, paragraph outlines, and role-based assignments by grade.
- Progress from observation reports to structured scientific summaries with hypotheses and conclusions.



K-2: The _____ walked
across the habitat _____
times in _____.

FROM DATA COLLECTION TO WRITING

3-5: There are two tigers in the National Zoo. Their habitat has many areas for them to jump, walk, rest, and even swim. They have a den and a place to go where people cannot watch them. I watched them for ten minutes, and saw them resting and eating. Only one tiger ate at a time, but they rested together on a concrete area at the top of their habitat.

6-12: The otter rolled on its back three times in ten minutes when it was alone, but sixteen times in ten minutes when another otter was in view. Rolling could be a form of communication between individual otters. My hypothesis is that if a captive otter is isolated in a habitat, it will spend less time rolling than if it is with another otter.



LET'S TRY IT!

Materials Needed:

1. Pencil
2. Ethogram (Elementary or Secondary)
3. Recording Sheet (Elementary or Secondary)





GET IN TOUCH

If you get stuck, or want
someone to bounce an
idea off of, reach out!



tmayhew@myhca.org





THANK
YOU

