Education Dept.
Georgia Aquarium
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Animal Behavior

Teacher guide
Grades 9-12

Program Description: What is enrichment? Why do we train animals? Before animals can live in a zoological setting, biologists must understand what they need and how they behave. While participating in this exploratory experience, students will discover how the aquarium staff maintains the health of the animals as well as the training techniques used in the process.

Enduring Understandings:

- Observation is the best way to study and understand animal behavior.
- Understanding animal behavior helps us to maintain animals in aquariums and to protect their populations in the wild.

Objectives:

- Students will observe and interpret animal behaviors in the Aquarium.
- Students will recognize the importance of animal training and enrichment.

Georgia Performance Standards

SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.
a. Exhibit the above traits in their own scientific activities.
b. Recognize that different explanations often can be given for the same evidence.

SCSh6. Students will communicate scientific investigations and information clearly.
d. Participate in group discussions of scientific investigation and current scientific issues.

SZ4 Students will assess how animals interact with their environment including key adaptations found within animal taxa.
b. Relate animal adaptations, including behaviors, to the ecological roles played by animals

SZ5. Students will evaluate the relationships between humans and other animals.
c. Compare and contrast how humans can preserve animal diversity in captive and natural environments with regard to habitat creation and conservation, research, legislation, animal enrichment, diet, medical, breeding programs and management of genetic diversity at local and global levels.

Before coming to the aquarium, the students should understand that:

- The Aquarium is not only an educational and entertainment facility but a research facility as well.
- Positive reinforcement is a training method that rewards animals for good behaviors.

Activities:

1. **Ethogramania** (pre-visit) - Students will practice their field research skills by observing an animal and creating an ethogram of the animal's common behaviors.
2. **Beluga Observation Lab** (to be done at the Aquarium post-visit) -Students will use their new research skills to study the behavior of our beluga whales.

Ethogramania (pre-activity)

Grades: 9-12

Objective: Students will see firsthand what it means to be an animal researcher by observing an animal, creating an ethogram (a catalog of behaviors), collecting data on the animal's behavior, and drawing conclusions from that data.

Time Needed: 2 class periods and homework time

Background:
Understanding animal behavior is important to scientists for several reasons. To protect and manage animal populations in the wild, we need to know where and how they spend their time, what they eat, how and when they mate, and what their social structure is. This can also help us better understand ecosystems and to predict human impacts on them.

If we are going to maintain animals in zoos or aquariums, we need to know as much as possible about their specific needs and behaviors. This helps us to determine what their nutritional requirements are, how much space and what type of habitat they need, and which animals can and cannot be housed together, among other things. Understanding behavior can also help biologists monitor their health and reactions to changes in their environment.

Observation is the best method researchers have for learning about the behavior of a species or an individual animal. Through repeated observations, researchers can develop an understanding of an animal's baseline behavior ("normal" behavior for that animal). Once this baseline is developed, observations at different times or in different situations can show researchers which factors cause variations in the animal's behavior.

Researchers often collaborate when conducting animal behavior research. To ensure the researchers see and interpret behaviors the same way, researchers will create an ethogram, a visual or written catalog of the common behaviors for a particular species. These descriptions may be written and/or pictorial.

Materials:
- Copies of the "Animal Data Collection" worksheet (1 for each student)
- Copy of the Beluga Ethogram at the end of the guide

Procedure:

First Day (in class):
1. Go over background information with the students. Discuss the importance of animal behavior research and the methods used in this research.
2. Explain ethograms and show the students an example of one. Ask the students how they think researchers develop these ethograms.
3. Explain to the students that they will be developing an ethogram of their own and using it to collect data on animal behavior.

4. Pass out Animal Data Collection worksheets for students to take home.

Homework (may be done over several days):

1. Each student will choose an animal (this could be any animal: a pet, a friend's pet, an animal easily viewed in a backyard or park, or even a sibling), and observe the animal for 15 minutes.
2. During observation, students will make notes on the animal's behaviors, beginning to separate and identify distinct behaviors.
3. Using the data collected from these preliminary observations, students will create an ethogram by choosing 5 specific behaviors and making a list of these behaviors with a description of each one. Alternatively, students may use photographs or sketches to represent the behaviors.
4. Once the students have developed their ethograms, they will fill in the names of the five behaviors in the spaces on their Animal Data Collection sheet.
5. Students will use the worksheet to do 3 separate observations of their animal. Teacher may decide if these observations should be done at different times on the same day or at the same time for 3 consecutive days, or let the students decide.
6. Before each observation session, the student should record the date, time, and any environmental factors (weather if they are outside, noise, presence of other animals or people, etc.).
7. During each observation session, the student will watch their animal for 5 minutes, marking its behavior every ten seconds (they can count these out rather than using a timer). For example, once they start their five minute session, they will count to ten. On ten, whatever behavior the animal is performing is what they will mark down a tally for on their worksheet. They then start over counting to ten and repeat until their 5 minutes are up.
8. Students may use the "additional observations" section on their worksheet to record any "other" or unusual behaviors or to make any notes.
9. After finishing all three observation sessions, each student should write a few paragraphs explaining what conclusions they can draw from their observations, any difficulties they had, and anything they think merits further study.

Last Day (in class):

1. As a class, discuss the students' data collection experiences. What difficulties did they have? Were there factors that affected the collection process? How do they think they could improve the study methods?
2. Either split the students into groups to have them discuss their findings with each other, or have each student give a brief presentation of their conclusions.

Animal Data Collection Sheet

Directions: *Select an animal. This can be a pet, common animal found in your backyard, animal in a park, etc. On three separate occasions, time yourself for 5 minutes and tally the observed behaviors on the charts below. Tallies should be recorded every 10 seconds (student can count this out rather than using timer).*

Animal: ______________________

Date: _______ **Time:** ______ **Environmental Factors** (i.e. noise, weather, etc.)**:** ___________________________

Behavior	Tallies of Occurrences	Total
Other		

Additional Observations:

____

____

____

Date: _______ **Time:** ______ **Environmental Factors** (i.e. noise, weather, etc.)**:** ___________________________

Behavior	Tallies of Occurrences	Total
Other		

Additional Observations:

____

____

____

Date: _______ **Time:** _______ **Environmental Factors** (i.e. noise, weather, etc.)**:** ___________________________

Behavior	Tallies of Occurrences	Total
Other		

Additional Observations:

____

____

____

Beluga Observation Lab (post activity)

*** This optional activity should be done at the Aquarium after your program (or if necessary due to scheduling you can do it before your program)

Grades: 9-12

Objective: Students will use their new skills as animal behaviorists to observe and collect data on our beluga whales.

Time Needed:

10 min at the Aquarium for observations
15-20 min (or as much time as desired for analysis and conclusions at school)

Background:

Through the "Ethogramania" pre-visit activity and/or their animal behavior program, students should have learned the basics of how and why we observe animal behavior, what an ethogram is and how and why it is used. An ethogram is a visual or written catalog of the common behaviors for a particular species. Using an ethogram helps maintain consistency when observations are being performed by multiple researchers.

Observing animal behavior helps us to learn more about species and individuals, to keep them healthy in an aquarium environment, and to conserve them in the wild. Observation is a key part of the job of an aquarium biologist. Our biologists observe our animals on a daily basis in order to better meet their needs.

Materials:

Copies of the "Beluga Behavior Data Collection" sheet (one per student)
Copies of the Beluga Behaviors ethogram (one per student)

Procedure:

1. Take your group to the beluga viewing window (if it is crowded, it may be easier for them to observe from the second level, at the end of the Coldwater Quest gallery.
2. Pass out "Beluga Behavior Data Collection" sheets and beluga ethograms, pens, and notebooks (or other hard surface for writing on).
3. Give the students 5 minutes to study the ethogram and observe the belugas' behaviors.
4. Have each student choose a beluga to study. Maris is the smaller of the two belugas, Beethoven is larger and has some dark gray markings on his body. The students should circle the name of the beluga they will study at the top of their page.

5. When everyone has chosen a beluga to study, have them read over the procedures at the top of their Data Collection sheets.

6. Once everyone is clear on the procedure, begin timing the trials. Start timing and tell the students to begin trial 1. After 30 seconds, tell them to move to trial 2. Continue for 10 trials.

7. At the end of the trials, have the students total the number of trials in which they observed each behavior, as well as make notes about any "other" or unusual behaviors they observed.

Wrap-up:

At the aquarium or back in the classroom, have the students compare results. Did Beethoven and Maris have similar behaviors? Were there some behaviors that were observed more in one beluga or the other? What did they observe that was unusual or that they couldn't explain? Have them brainstorm reasons behind these "other" behaviors.

As an extension, you can have the students graph behaviors in multiple ways.

Beluga Behavior Data Collection

Observed Beluga (circle one): BEETHOVEN or MARIS

Procedure: Adult will time ten, 30 second trials (intervals). Students will indicate that they observed a specific behavior by checking the box. Only one check mark is needed per observed behavior, per trial, regardless of the number of times a behavior is observed during that trial (e.g. if the beluga breathes four times during trial one, only one checkmark is needed)

To signal the end of one trial, the adult will instruct students to begin the next trial. At the beginning of each, remind the students which trial number they should be starting (e.g. "being trial 2"). At the conclusion of the ten trials, students will total the number of trials in which each behavior was observed.

Time (30 Second Intervals)

Behavior	1	2	3	4	5	6	7	8	9	10	TOTALS
Diving											
Interaction											
Swimming											
Rock Rub											
Breathing											
Other											
Not Visible											

Observations:

_____

_____

BELUGA BEHAVIORS

BREATHING
Going to the surface of the water to take in air

DIVING
Swimming downward with head lower than tail

INTERACTION
Touching or swimming very close to another beluga, body shaking or mouthing toward another beluga

ROCK RUBBING
Rubbing any part of the body on the rocks in the exhibit

SWIMMING
(TAIL MOVES UP AND DOWN)
Moving tail up and down in order to move around the exhibit

NOT VISIBLE
Anytime the beluga is out of sight

NOTE: Any behavior not pictured above may be tallied as "Other"