Name: _____

The Effect of Diet on Sleeping Patterns and Energy Budgets of Mammalian Species

Sleep is often viewed as a vulnerable state of animal behavior as the animal becomes relatively unresponsive to the environment making them more susceptible to predation. Sleep must fulfill some universal function, however, as the behavior has survived species propagation and natural selection. The objective of this comparative study is to investigate how diet can affect the sleeping patterns and energy budgets of two mammalian species—specifically one carnivore species and one herbivore species.

Prediction:
Using previous knowledge, what do you expect to see? How will these animals' behaviors differ?

Procedure:

1. Identify subjects: Choose two exhibits to complete your study—one exhibit containing one of the following carnivore species and one exhibit containing one of the following herbivore species.

Carnivore Choices:	*Herbivore Choices:*
Malayan Tigers (Cat Canyon)	Maasai Giraffe (Giraffe Ridge)
White Lions (Siegfried & Roy's White Lion Exhibit)	Asian Elephants (Elephant Reserve)
Cheetah (Africa Exhibit)	Grevy's Zebra (Rhino Reserve)

2. Complete preliminary observations and describe the individuals and their habitats:

Table I

Carnivore	
Species / Exhibit	
Describe the exhibit (indoor/ outdoor, # of individuals, landscape etc.)	
Diet of animals (ask a keeper or look on the Zoo's webiste)	

Name: _____

Table II

Herbivore	
Species / Exhibit	
Describe the exhibit (indoor/ outdoor, # of individuals, landscape etc.)	
Diet of animals (ask a keeper or look on the Zoo's webiste)	

3. Categorizing activity and data collection:
   You will spend a total of 2hr collecting behavior observations; 1hr with the carnivore species, and 1hr with the herbivore species. Use the **survey approach** to complete your ethogram. This method involves watching multiple individuals at the same time*. At one minute intervals, note what each of the animals in exhibit is doing at that instant (Table III). You will repeat this every minute for your entire observation period.

Table III

Behavior Observed	**Description**
Feeding	The animal put food into mouth or chewed an edible substance. Includes foraging behavior and drinking. Ruminating behavior should also be included.
Locomotion	Movement of the animal that resulted in a change of location
Stationary Alert	The animal was motionless with eyes open and was alert to surroundings
Resting	The animal was motionless with eyes closed.

*At least two individuals should be observed in each exhibit
**Observations should be completed in intervals of at least 15 minutes. Be sure to avoid collection observations during times of keeper talks or animal feedings.

Record observations in the data tables below.

CARNIVORE OBSERVATIONS

Minute	**Individual # 1**				**Individual # 2**				**Individual # 3**			
	Feed.	**Loco.**	**Stat.**	**Rest.**	**Feed.**	**Loco.**	**Stat.**	**Rest.**	**Feed.**	**Loco.**	**Stat.**	**Rest.**
1												
2												
3												
4												
5												
6												
7												

Name: _____

Minute	Individual # 1				Individual # 2				Individual # 3			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
8												
9												
10												
11												
12												
13												
14												
15												
16												
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20												
21												
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Name: _____

Minute	Individual # 1				Individual # 2				Individual # 3			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
56												
57												
58												
59												
60												

HERBIVORE OBSERVATIONS

Minute	Individual # 1				Individual # 2				Individual # 3			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
1												
2												
3												
4												
5												
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36												
37												
38												

Name: _____

Minute	Individual # 1				Individual # 2				Individual # 3			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
39												
40												
41												
42												
43												
44												
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59												
60												

Results:

Tabulate the total number of minutes your observed animal spent in each category and record results in the tables below. Then, determine each species' activity budget by dividing the time spent in each category by the total observation time.

Table IV

	Carnivore Animal #1				Carnivore Animal #2				Carnivore Animal #3*			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
Minutes of Behavior												
Tot. Observation Time	**60 minutes**				**60 minutes**				**60 minutes**			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
Activity distribution (%)												

*If applicable

Calculate the average time in each category for your species and record as a percent.

Feeding:

Locomotion:

Stationary Alert:

Resting:

Name: _____

Table V

	Herbivore Animal #1				**Herbivore Animal #2**				**Herbivore Animal #3***			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
Minutes of Behavior												
Tot. Observation Time	**60 minutes**				**60 minutes**				**60 minutes**			
	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.	Feed.	Loco.	Stat.	Rest.
Activity distribution (%)												

*If applicable

Calculate the average time in each category for your species and record as a percent.
Feeding:

Locomotion:

Stationary Alert:

Resting:

Discussion: On a separate piece of paper, answer the following.

Present your findings.

Was your prediction supported? Why or why not?

Explain possible reasoning for these results.

List any potential sources of error.

How could you take this study a step further? What would you do next?