

 **Toronto Zoo**
Biomes Study Activity
for Secondary
Students

Note to the Teacher

The Toronto Zoo is an ideal location for the study of a variety of animals, their biomes, local habitats, and their adaptations to the environment. This activity leads the student through four major zoogeographic regions, making detailed observations on three animals in each region. The accompanying questions require observation and thinking skills although most can be answered by simply reading the signs. We recommend that the students be assigned two regions in the morning, break for lunch, and do the remaining two areas in the afternoon. Copies of the Biomes work sheet should be provided to students for each pavilion area you assign.

You can either assign the animal examples listed or have the students choose 3 animals from each area. Some animals may be “off display” and require a substitute.

Student's Name: _____

Date: _____

Biomes Study

Instructions:

Find all the animals listed in your package and fill in one Biome Worksheet for each pavilion using the key below. Some answers may require a little searching. **Read the signs.**

Collect the information outlined on the worksheets for the following 3 species in each of the 4 pavilions:

Indo-Malaya Pavilion:

White-handed gibbon
Concave casqued hornbill
Malayan water monitor

Africa Pavilion:

Naked mole-rat
African bonytongue
West African dwarf crocodile

Americas Pavilion:

White-eared marmoset
Gila monster
Blue crowned motmot

Australasia Pavilion:

Tasmanian devil
Tawny frogmouth
Komodo dragon

Key for the work sheets

Biome: Very large areas of terrestrial habitat, each with a characteristic climate, day length, topography and climax flora and accompanying fauna. Most authorities only recognize about 15 biomes for the entire earth:

1. Tundra (treeless, sometimes marshy plains; northern Asia & North America)
2. Northern coniferous forest (a.k.a. boreal, or taiga)
3. Temperate coniferous forest
4. Temperate broadleaf forest (oak - hickory forests of eastern USA)
5. Temperate grassland (prairies of North America)
6. Desert and dry shrub (Sahara)
7. Mediterranean shrub
8. Mountain grassland
9. Flooded grassland and savanna (Florida Everglades)
10. Tropical grassland and savanna (African savanna)
11. Tropical dry forest
12. Tropical coniferous forest
13. Tropical moist broadleaf
14. Mangrove
15. Permanent ice cover (Antarctica, parts of Greenland)

Within each biome are hundreds of specialized ecosystems (e.g. a salt marsh, sand dune, cloud forest, stream or pond) and within these are hundreds or even thousands of habitats or potential habitats. (Tudge, Colin. *Global Ecology*, 1991.)

Biosphere: The part of the Earth, including rock, soil, water and atmosphere that contains living organisms.

Community: All the organisms - plants, animals and microorganisms - that live in a particular habitat and affect one another as part of the food web or through their various influences on the physical environment. (Wilson, E. O. *The Diversity of Life*, 1992.) e.g. The Rouge River valley, which passes through the Toronto Zoo, has a community of plants and animals.

Ecosystem: The organisms living in a particular environment, such as a lake or a forest (or, in increasing scale, an ocean or the whole planet), and the physical part of the environment that impinges on (touches) them. The organisms alone are called the community. (Wilson, E. O. *The Diversity of Life*, 1992.)

Keystone species: An organism, which provides conditions in an ecosystem on which many other species depend. This role is so vital that when the "keystone species" is removed the ecosystem collapses or changes radically.

Population: In biology, any group of organisms belonging to the same species at the same time and place. (Wilson, E. O. *The Diversity of Life*, 1992.) For example: Ontario has a population of raccoons.

Niche: the place or role a species occupies in its community. This includes where it lives, what it eats, where it forages, the season of its activity, etc. For example: the niche of the Black-footed ferret would be: small, ground dwelling, nocturnal predator of small mammals, particularly the prairie dog, in the prairie grasslands of North America. It usually makes its home in prairie dog burrows.

Habitat: the place in nature, where a species lives, including food, water, shelter and space.

Species: a population or series of populations of organisms that freely interbreed with one another in natural conditions but not with members of other species. (Wilson, E. O. *The Diversity of Life*, 1992.) The tiger and the lion are separate species.

Scientific Name: The name that is used by all scientists, regardless of their language, for a species. The name has 2 parts. (e.g. the wolf is Canis lupus .) Words are underlined separately. The first word is the Genus to which the species and its closest relatives belong. The second word indicates the species. Sometimes a third word is added to indicate the sub-species.

Locomotion: How does the animal normally move e.g. Crawl, Swim, Fly, Walk, Run.

Body Covering: Is the animal covered in skin/scales/feathers/fur?
And if the covering is fur: Is it long/short? Is it thin/thick?
Is it straight/curly?

Tail: Does the animal have a tail? Absent/present? And if the tail is present: Is it long/short? Is it thin/thick?

Ears: Does the animal have ears? Absent/present?
And if the ears are present: Are they long/short?
Is it on the side/top of the head?
Is it sticking out/indented into the head?

Location of Eyes: Is it on the front/side/top of the head? Are they large/small?
Do they have eyelids? Absent/present?

Colour: Is the animal's body covering dark/light/
Is the body covering one colour /patterned?

Teeth: Does the animal have teeth? Absent/present?
Are the teeth pointed/flat? Large/small?

Type of Food: Does the animal eat only animals (carnivore) /plants (herbivore) /both (omnivore)? List some food items.

Field Trip Questions:

Australasia Pavilion

1. How many biomes can be found in Australasia?

2. Describe the niche of the Matschie's tree kangaroo?

3. The Great Barrier Reef is the largest coral reef system in the world and covers

an area of about _____ square kilometers.

(read the signs)

4. Describe the niche of the Komodo dragon.

5. What is the preferred habitat of the Tasmanian devil?

6. Describe the range of the echidna.

7. What biome is shared by the Green tree python, Fly River turtle and the Timor monitor?

8. What is a unique characteristic of marsupials?

9. What is a "marsupium"?

Field Trip Questions:

Americas Pavilion

1. How would you describe the climate represented at the entrance to this pavilion?

2. What is the natural habitat of the Golden lion tamarin?

3. What percentage of the earth is covered by tropical rainforest?

4. What is the habitat of the Blue poison dart frog?

5. Why is the alligator called a “keystone species”?

6. How does the River otter mark its territory?

7. How does the beaver create and maintain its habitat?

8. Name 4 species (other than the beaver) that use beaver ponds as their habitat or part of their habitat?

_____	_____
_____	_____

Field Trip Questions:
Africa Pavilion

1. Name an insect with a similar social life to the Naked mole-rat.
(find the Naked mole-rat at the entrance at the top of the boardwalk)

2. Approximately what percentage of land plant and animal species are found in rainforests?

3. What is the Western lowland gorilla's favourite natural plant food?

4. What special habitat does the female Spotted-necked otter use when she has cubs? _____

5. List two (2) types of gorilla.

a _____

b _____

6. What is bushmeat?

7. What biome does the Slender-tailed meerkat inhabit?

6. List 4 forest food items eaten by the Mandrill?

Indo-Malayan Pavilion

1. How would you describe the climate represented in this pavilion?

2. How many eggs are normally laid by the female Malayan water monitor?

3. Why has the Malayan bonytongue become endangered?

4. What is the difference in the methods of reproduction of the Boa and the Python?

5. How does the “hinge” help the Vietnamese box turtle survive?

6. What special protection does the crocodile newt possess?

7. List 3 favourite food items of the Mangrove snake?
