

ZOO TRAILS “STOP AND THINK” LEARNING LOG-KEY

DISCOVERY BAY

Tide pool: *Typically this is a rocky shore where tides rise and fall several times daily.*

1. What animals may be found here?

Sea stars, sea urchins, chitins, clams, anemone, shrimp, crabs, scallops, “snail-type” shelled animals called conchs.

2. If you were an anemone, how would you “make a living”?

- a. What would you eat?

Small fish, small crustaceans, zooplankton. After paralyzing them with my stinging cells (cnidaria) I would pull them into my “mouth”

- b. What would try to eat you?

Larger fish that are immune to the stinging cells

- c. How would you defend yourself from predators?

Microscopic stinging cells on my tentacles would paralyze small prey. Many animals would avoid me. I also usually blend in with my surroundings and am hard to see.

3. How would you make a living if you were a sea star or sea urchin?

Sea stars and urchins capture clams, or other sea stars with hundreds of tiny tube feet on their bottom side. Their suction opens up the clam just enough for its stomach to slip into the crack and secrete digestive juices that digest the clam. All that is left is an empty clam shell. Sea stars and urchins have a tough spiny outer skeleton that gives protection. Chitins are related to snails and have a one-sided shell that clings to rocks.

4. How do the changing conditions of tide pools make life very challenging for these animals?

Conditions may range from hot or cold sun and wind at low tides to cold crashing waves full of sand and broken shells at high tides. They must endure temperature and moisture extremes.

5. Why does wave action and very cold water help the animals?

Waves add essential oxygen to the water. Cold water keeps the oxygen dissolved in the water longer and better than warm water can, just like cold pop holds onto its fizz better than warm pop.

6. What does salinity mean and why does it matter?

Salinity refers to the amount of salt dissolved in the water. It is denser than fresh water. Ocean creatures are adapted to living in salt water. Most fresh water organisms would become dehydrated and their cells would shrivel up if placed in the ocean. Most ocean fish would become overly hydrated and their cells would swell up and burst if placed in fresh water.

Estuary:

1. What is an estuary?

A place where fresh water streams or rivers enter the sea, mixing fresh and salt water. It may be an inlet with shallow water with canals protected from big waves. There are high and low tides but waves are usually mild. Large-rooted mangrove trees are common here, providing lots of hiding places for small creatures. Plants and algae provide food for the smallest creatures that end up as food for the bigger ones. (food webs and food chains)

2. What animals may be found here

Many species of birds nest here, finding it easy to fish in the shallow water. Many ocean fish breed here in the shallow weeds. Crabs and shelled animals are plentiful.

3. Why do dolphins like to hangout and reproduce in estuaries?

Dolphins and manatees can find calm protected water canals that are hidden from people and large predators like sharks.

4. What is a “weedy sea dragon”?

type of fish, related to the familiar sea horse.

- a. What is very unusual about how it reproduces?

The female places eggs into the male’s pouch where they are fertilized. The male keeps the eggs until they hatch in the pouch. The babies are expelled when they are mature enough to survive on their own.

- b. How is it adapted to living in beds of seaweed?

They have long trailing fins that resemble the color and shape seaweed that “flows” with the current. Their camouflage is very effective at hiding from predators and disguising themselves from prey.

5. Draw a food chain that includes stingrays or sharks.

Algae /diatoms → micro-zooplankton (tiny bugs) → macro-zooplankton → minnows → larger fish → sharks

Ocean:

1. Observe the Morey Eels.

- a. Do Moray Eels have good vision? (YES / NO)

No. They mainly rely on their sense of smell to locate their prey.

- b. Are they a variety of sea snake? (YES / NO)

No. They are a type of fish.

- c. Where do they hangout?

They are nocturnal and prefer to hide in tunnel-like spaces between large rocks. They usually have their head at the opening to be ready to catch a passing fish.

- d. Do they deserve their “scary” reputation? (YES / NO) Why or Why not?

No. They are not aggressive. They are shy of people but could bite in self defense if threatened.

2. What do sea turtles like to eat?

Depending on the species they may be carnivores, herbivores or omnivores.

- a. Why are they endangered? ¹

They are considered a food delicacy in some countries. Their success at reproduction is dependent on people protecting their beach nesting sites from human and animal disturbance, keeping beaches dark at night in populated areas, and fending off predators when hatchlings escape to the sea.

3. Why don't the big sharks eat the other fish in the zoo aquarium? ²

They are well fed! You can watch shark feedings at regularly scheduled times (11:30 a.m.)

¹ For more information on sea turtles visit- <http://www.seaworld.org/animal-info/info-books/sea-turtle/diet.htm>

² For more information on sharks visit- <http://www.seaworld.org/animal-info/info-books/sharks-&-rays/index.htm>

THE TROPICS

1. What is a “Hotspot”?

It is a region that supports at least 1,500 “endemic” (native) plant species (0.5% of the global total) and must have lost more than 70% of its original habitat. Species endemic to a hotspot are found exclusively within the hotspot boundaries.

a. Where are some of them located?

South America contains 5 of the world’s 25 “hotspots, Madagascar contains many more. The Philippines and the Caribbean also contain hotspots.

2. If a unique animal becomes rare or extinct, what effect can that have on other kinds of animals?

A successful ecosystem is made up of a large variety of species that compete with each other for limited resources. A delicate balance exists among its inhabitants that include complex food webs, predator-prey relationships, and interdependent relationships among species (i.e. symbiosis and pollination relationships). When a species is lost its role (niche) in the community will be replaced by another, upsetting the “checks and balances” among other species. This balance is what enables a biological community to be sustained long-term. A ratio change between predators and prey might lead to starvation for some or even the eventual breakdown of the entire ecosystem.

3. Why does it matter if nonnative organisms, plants or animals, are introduced into “Hotspots”?

Nonnative organisms (exotic species) often do not have the predators their ancestors had to keep their population numbers in balance with the new community. They may also introduce new diseases or pests that the new community has no defenses for.

4. What are endemic species? (HINT: see “Creatures Beneath the Canopy” on web zoo site)

These are found only in very restricted areas, like a single island, mountaintop, river or lake. Species endemic to a hotspot are found exclusively within the hotspot boundaries

5. What kind of tree is called the “Oasis of Life”?

Baobab Tree (Madagascar) It has a bloated trunk and a crown of branches that look more like roots. It can reach 100 feet in height and 25 feet in girth.

a. What kind of biome or ecosystem does it live in?

It provides both food and shelter for a myriad of amazing creatures in dry land ecosystems - spiny forests and deserts of southern Madagascar. Acting as a living water tower, it is able to soak up and store large amounts of the occasional and much needed rainwater.

6. What kind of animal has stink fights?

The lemurs of Madagascar. Practiced by males challenging each other over females.

7. Lemurs:

- Which kind of Lemur comes from dry scrubby forests in Madagascar? **RingTail Lemur**
- Which kind of Lemur comes from rain forests in Madagascar? **Red Ruffed Lemur**
- Which one is the noisiest! **Red Ruffed Lemur**
- Which one loves fruit? **Red Ruffed Lemur**

8. What animal smells like popcorn?

Binturong, commonly known as a bear cat. It is related to the civet and mongoose. They like to sleep in tree during the day.

9. What animal is often mistaken for an anteater?

The Malayan tapir (pronounced TAY-per) is one of the most endangered animals in Southeast Asia. It has a very distinctive nose!

a. Why is it called a “living fossil”?

Retaining many prehistoric characteristics, tapirs are called "creatures that time forgot." The movie 2001: A Space Odyssey used them to inhabit its prehistoric world along with proto-humans.

10. Is the nocturnal Pygmy Slow Loris endangered? (YES / NO)

Yes. They are native of Laos, Viet Nam, and Cambodia. They live in trees and habitat loss is their greatest threat.

11. What are some other nocturnal animals?

Cloud rat, flying squirrel, fishing cat, greater Indian fruit bat (flying fox), water monitor,

12. How are they adapted to being active at night?

Good night vision, prefer to sleep during the day, good sense of hearing or smell, Often are good tree climbers, helpful to hide from predators

13. What do the bats in the exhibit eat?

Fruit. Greater Indian fruit bat (flying fox). These bats also use vision to navigate rather than echo-location.

14. What is a canopy?

The upper layer of a rainforest -- a dense ecosystem made up of mostly tree dwellers

a. Why can it be called a “highway in the sky”?

Animals spend most of their lives moving freely from tree to tree without having to go to the ground to eat or drink.

15. What is an epiphyte?

***Any plant that grows upon or attached to another living plant.
“Air” plants include orchids and normally don’t root in the ground.***

16. What are some animals in the Canopy Exhibit?

Cotton-top tamarins, golden lion tamarins, Linne's two-toed sloth, green aracarís (toucan), poison frogs. Ground dwellers included are agouti, southern three-banded armadillo, Chilean or southern Pudu.

NORTHERN TRAIL

1. Describe how the TIGER LAIR exhibit has been designed for both visitors and the Amur tigers³.

The exhibit includes a very large open wooded field suitable for running and chasing. There is a river that the tigers love to swim and play in. A key feature of the exhibit is a long glass window at the edge of the grassy field that makes possible close encounters of the cat kind!

2. Observe “tiger to tiger” and “tiger to human” interactions. Jot down your notes.

Tiger to Tiger

Tiger to Human

Occasionally a tiger will “play” with a friendly visitor by running back and forth along the glass wall of the exhibit and jumping up on the glass opposite the observer. The tiger sisters (born in 2004) like to chase and play with each other. Since they were bottle fed as cubs they seem to “like” people.

- a. Are they endangered? (YES / NO) Why?

Habitat destruction, hunting, and resale of body parts for special “potions” believed by some to have special powers or benefits.

3. What are some of the ways tigers communicate? (*Use posted information*)

- *Scratch and claw trees to show others that they're nearby*
- *Produce various sounds including moans and a loud roar*
- *Purring, meowing, grunting and woofing are more intimate sounds*
- *Typically greet by rubbing their faces and cheeks on each other, ears and tails held up.*
- *Aggression is expressed by growls, snarls, hisses. When on the offensive the tail lashes, ears show white spots, eyes are wide. When on the defensive, teeth are bared, eyes are narrowed, nose wrinkles and tail is low.*
- *Mark their territory by rubbing or spraying a strong odor (urine, anal glands, other scent glands)*

³ Information on tigers - <http://www.seaworld.org/animal-info/info-books/tiger/index.htm>

4. What kind of environment are meerkats adapted for?
Dry desert (Kalahari Desert in Africa)

5. What kind/s of environment/s are aardvarks adapted to?

They are found in many environments, including dry scrubby areas, savannas, grasslands, and forests.

- a. What do they like to eat?
Insects and termites
- b. What physical feature suits them to their lifestyle?

They use their large hoof-like claws to dig into ant hills and termite mounds and then stick their long, sticky tongue into the nest to get the insects. The aardvark is hairy, nocturnal, and likes to dig a tunnel-like burrow for shelter.

6. Are Mexican wolves⁴ endangered? (YES / NO)
Yes

- a. What are ways wolves communicate with each other? (See posted information)
-Howling, to know where the others are
-Growls, barks, squeaks
-Wolves use a variety of facial gestures and body postures to show where they stand in the pack's hierarchy. The position of a wolf's tail or ears can be used to tell whether or not it is a dominant or a subservient wolf, or what mood it is in.
- dominant wolves (regardless of sex) urinate with the raised leg position and subservient wolves squat down to urinate

7. How are hoofed mammals at the zoo adapted to particular habitats? Give examples of how their individual features help them survive in certain environments.

The wild horse, pronghorn, bison, camel, takin, and woodland caribou are grazers that eat vegetation and have the ability to run fast from potential prey. They thrive in temperate grasslands and can withstand Minnesota winters.

8. Name a hoofed mammal that is well-adapted to cold winters?

The takin, musk oxen, and woodland caribou can do well in the cold arctic tundra.

⁴ More information on wolves - <http://canidae.ca/>

9. Why does the MN Zoo not keep African savanna animals like zebras and giraffes during the winter?

They are adapted to warm Savanna grasslands typical of northern Africa and could not survive or thrive here. The MN Zoo prefers to provide its animals with exhibit space that suits their particular physical needs and preferences. These animals like to run in wide open spaces.

10. Zebras and giraffes are uncomfortable when the temperature dips below 50 degrees F. Do you think they should try to keep zebras and giraffes year round at the Minnesota Zoo? (YES / NO)

Answers will vary

- a. What would they have to do to make this happen?

They would need to provide a large, spacious, heated indoor savanna-type environment.