ADELAIDE ZOO

adelaidezoo.com.au

Adaptations

PRIMARY

For the Teacher

General Information

Welcome to Adelaide Zoo!

The Zoo is a great place for learning. Adelaide Zoo Education aims to support student learning by providing resources to assist classes to have educational and enjoyable experiences at the Zoo.

This booklet will provide a range of activities which may be undertaken by your students during their visit to the Zoo. A map and suggested order of activities is provided to give a logical circuit to travel during the visit.

Animal species change from time to time, and sometimes animals are “off limits” or out of sight during visits, so a flexible approach to completion of activities is recommended.

In planning, please consider whether

- you would like your class to regroup for lunch, animal feeds, the Discovery Zone or at the Entrance at the end of the visit. If so, relay the times and meeting places to students or supervisors (in writing if possible.)
- you would like a session with one of the Zoo’s Learning Team to support your study theme. The 45 minute interactive sessions need to be booked when you make your class booking.

Specific information relating to this Zoo Trail will follow for the teachers and for adult supervisors. Please ensure that supervisors have a copy of the relevant pages **before they come to the Zoo** so they can also be mentally prepared to maximise the learning for the students in their care.

Adaptations Trail- Primary

TEACHERS INFORMATION

Consider the amount of material in this trail, the time you will spend in the Zoo and the age and capacity of your students. You may like to put the activities in order of preference, make a selection from the activities for your class or share the activities amongst groups so each group does say 4 or 5 activities.

Pre-visit ideas

- Research an animal. Find out about its natural habitat, predators, food source and the adaptations it has to help it survive.
- Collect recycled materials and use these to construct habitats.
- Write letters to wildlife protection programs, local councils or newspapers.
- Consider the food chains of various regions and find out what happens if one of the species disappears. Look at the adaptations each animal has to help it find and eat its food.
- Make a list of all the adaptations humans have and how they help us.
- Design and implement a recycling program for the school/community/home.
- Group animals into the habitats that they come from, then compare adaptations that they have.
- Write one day of the diary of an animal, explaining how it uses its paws/teeth/claws or other adaptations in everyday life.

The following words and terms would be useful as prior knowledge to your visit to the zoo:

- Threatened Species
- Habitat
- Adaptations

Post visit ideas

- Design an enclosure for a zoo animal, considering its needs and natural habitat. Construct the enclosure using recycled materials.
- Collect newspaper articles related to animals
- Research what wildlife organisations and zoos are doing to help Threatened Species.

Assessment Ideas

The questions and tasks in the trail are designed to encourage original ideas and thinking. There is not necessarily a correct answer for each question. In most cases answers should vary from group to group, indicating independent thinking.

Other ways to assess the students work on this topic could include:

- Writing a report about the visit to the Zoo.
- Giving an oral presentation on the adaptations of their favourite animal.

Links to the Australian Curriculum

Adaptations

Science

Science Understanding (Biological sciences)

Yr 5

Living things have structural features and adaptations that help them to survive in their environment.

Yr 6

The growth and survival of living things are affected by the physical conditions of their environment (ACSSU094)

Geography

Yr 5-6

Environment

Studying an extreme environment

Yr 7

Comparative analysis of the local place with other local-scale places

Background notes for teachers and supervisors on the day.

This trail is designed for students to work individually, in pairs or in small groups.

Students visit a number of native and exotic species, looking at the habitats they live in and adaptations they have to help them.

Students are encouraged to use their observational skills, to read signs and to talk to Zoo staff. Supervisors should encourage students to discuss ideas and express their own point of views.

Key

Observe carefully

Discuss and share ideas with your group

Write down your thoughts

Little Blue Penguin

They are covered in oily feathers to help keep them warm and dry.

Penguins have a small hook on the end of their beak to help grip on to prey.

The dark feathers on top and the light feathers below them to camouflage so they stay safe from predators.

The Penguin's wings are small and powerful for agile swimming. They have webbed feet to them swim and steer.

Koala

Koalas spend lots of time in the trees because it is where they find their food. They are also safe from predators when hidden in the trees.

Koalas have two thumbs on each hand. This gives them extra grip when climbing.

Koalas have adapted to be able to eat *Eucalyptus* leaves while most other animals can not. We call this a bodily function adaptation.

Siamangs

Siamangs like to stay high in the trees where they find the fruit, seeds, nuts and leaves to eat. They are also safe from predators such as tigers and bears.

Baby siamangs need to cling tightly to their mothers within hours of their births otherwise they would fall from the trees. The parents need both hands to swing through the trees and to gather food, so young siamangs need to hold on for themselves.

Siamangs, like many primates, can not swim. Therefore they do not try to get across the water that surrounds their island enclosure at the Zoo.

To help them swim out of their enclosure the Siamangs may need flippers, webbed feet or waterproof fur.

Reptile House

Structural adaptations of reptiles could include patterns on the skin, shells, shape of skulls, teeth or body size.

Behavioural adaptations could include where a snake spends most of its time, how it rattles its tail or lies very still so it cannot be seen.

Bodily function adaptations could include the venom some snakes' bodies make, or the way they produce a white paste instead of urine to get rid of wastes from their blood (saving water inside their bodies).

Australian Aviary - birds

You may notice that many of the wetland birds have webbed feet and longer, skinnier beaks. The webbed feet help them to paddle through the water, while the long beaks are used to catch fish and insects from the water and mud.

The beaks of the rainforests animals are more likely to be shorter. They would be used to catch insects or break open seeds and fruits.

The Nocturnal House

Nocturnal animals are ones that sleep during the day and come out at night. Nocturnal animals usually live in hot, dry climates where it is cooler at night.

This behavioural adaptation helps them stay cool. In the heat of the day they will hide under ground or in the trees then they can forage or hunt for food in the cooler part of the day when the sun is down.

Nocturnal animals are very good at hiding in the darkness of night. They will move around silently in search of food and therefore they are very hard to find - for people as well as their predators or prey. People like the Aboriginal Australians are more likely to see and catch animals that are out during the daytime and easy to find.

Giant Panda

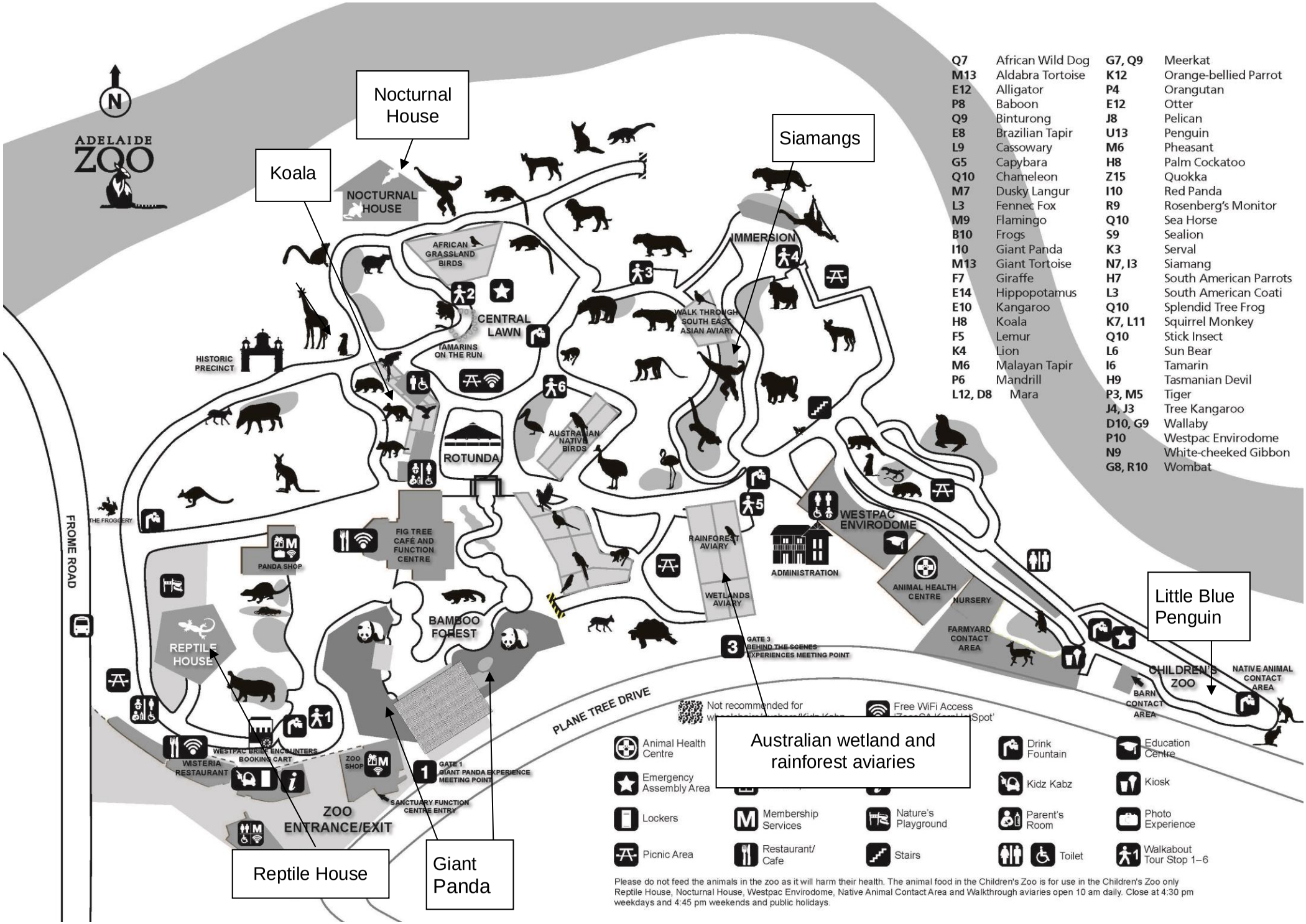
Giant Pandas are classified as bears, with their large head and body like bears and ears that resemble those of brown bears. Their teeth are like those of an omnivore, although they eat almost exclusively bamboo. Other plants, fruits and small mammals and birds are also eaten in the wild. They have a large skull and wide jaw bones with large masticatory muscles that enable the Panda to crush bamboo stems that would otherwise be hard to separate.

The soles of Panda paws are covered with fur and serve as protection against the cold and prevent slipping on snow and ice. Giant Pandas have a pseudo-thumb on each of the front paws which helps them to hold onto their food.

Their black eyespots (black around their eyes) serve as protection against the strong reflection of sunlight in snow during winter.

Giant Pandas have very thick fur that consists of stiff bristles up to 5 cm long and serves as insulation. It also has an oily covering that repels water.

Pandas scent mark to communicate their presence and territory. They also have a repertoire of at least 11 different calls used during mating or between mother and young.


ADELAIDE ZOO
N
Nocturnal House
Koala
Siamangs
Little Blue Penguin
Australian wetland and rainforest aviaries
Reptile House
Giant Panda
NOCTURNAL HOUSE
AFRICAN GRASSLAND BIRDS
CENTRAL LAWN
TAMARINS ON THE RUN
HISTORIC PRECINCT
IMMERSION
WALK THROUGH SOUTH EAST ASIAN AVIARY
ROTUNDA
AUSTRALIAN NATIVE BIRDS
THE FROGGERY
FIG TREE CAFÉ AND FUNCTION CENTRE
PANDA SHOP
RAINFOREST AVIARY
WETLANDS AVIARY
ADMINISTRATION
WESTPAC ENVIRODOME
ANIMAL HEALTH CENTRE
NURSERY
FARMYARD CONTACT AREA
BAMBOO FOREST
REPTILE HOUSE
GATE 3 BEHIND THE SCENES EXPERIENCES MEETING POINT
CHILDREN'S ZOO
BARN CONTACT AREA
NATIVE ANIMAL CONTACT AREA
FROME ROAD
PLANE TREE DRIVE
WESTPAC BRIEF ENCOUNTERS BOOKING CART
WISTERIA RESTAURANT
ZOO SHOP
GATE 1 GIANT PANDA EXPERIENCE MEETING POINT
SANCTUARY FUNCTION CENTRE ENTRY
ZOO ENTRANCE/EXIT
Not recommended for
Free WiFi Access
Animal Health Centre
Emergency Assembly Area
Lockers
Picnic Area
Membership Services
Restaurant/ Cafe
Nature's Playground
Stairs
Drink Fountain
Kidz Kabz
Parent's Room
Toilet
Education Centre
Kiosk
Photo Experience
Walkabout Tour Stop 1–6
Q7 African Wild Dog
M13 Aldabra Tortoise
E12 Alligator
P8 Baboon
Q9 Binturong
E8 Brazilian Tapir
L9 Cassowary
G5 Capybara
Q10 Chameleon
M7 Dusky Langur
L3 Fennec Fox
M9 Flamingo
B10 Frogs
I10 Giant Panda
M13 Giant Tortoise
F7 Giraffe
E14 Hippopotamus
E10 Kangaroo
H8 Koala
F5 Lemur
K4 Lion
M6 Malayan Tapir
P6 Mandrill
L12, D8 Mara
G7, Q9 Meerkat
K12 Orange-bellied Parrot
P4 Orangutan
E12 Otter
J8 Pelican
U13 Penguin
M6 Pheasant
H8 Palm Cockatoo
Z15 Quokka
I10 Red Panda
R9 Rosenberg's Monitor
Q10 Sea Horse
S9 Sealion
K3 Serval
N7, I3 Siamang
H7 South American Parrots
L3 South American Coati
Q10 Splendid Tree Frog
K7, L11 Squirrel Monkey
Q10 Stick Insect
L6 Sun Bear
I6 Tamarin
H9 Tasmanian Devil
P3, M5 Tiger
J4, J3 Tree Kangaroo
D10, G9 Wallaby
P10 Westpac Envirodome
N9 White-cheeked Gibbon
G8, R10 Wombat
Please do not feed the animals in the zoo as it will harm their health. The animal food in the Children's Zoo is for use in the Children's Zoo only Reptile House, Nocturnal House, Westpac Envirodome, Native Animal Contact Area and Walkthrough aviaries open 10 am daily. Close at 4:30 pm weekdays and 4:45 pm weekends and public holidays.

Adaptations

When walking around the Zoo today, look closely at the animals and their surroundings.

Adaptations are things about animals which make them better suited to the environment that they live in, and more likely to survive. There are 3 ways that animals are adapted.

- Behavioural adaptations
- Body structural adaptations
- Bodily function adaptations

Fill in this table when you are in the Zoo today.

Animal	Need	Adaptation
Siamang	To reach the fruit in the trees	
	To stay cool in the desert	Nocturnal- comes out at night time
Lion		
		Webbed feet
	To stay warm in the cooler weather	

Water animals – Little Blue Penguin

You can watch the penguins being fed each day at 2.15pm.

Find the Penguin enclosure and observe these birds for a few minutes. What do you notice? Think about the habitat that has been created for them at Adelaide Zoo.

Can you see where the penguins:

Sleep?

Find shelter?

Find food?

Find material to build a nest?

Animals that live in the sea are faced with many problems.

Write the adaptation that penguins have to help them combat some of these problems.

1. They need to keep warm in cold water and on land

   _____

2. They need to find and catch food

   _____

3. They need to keep away from predators (e.g. sharks)

   _____

Many penguins

die each year from becoming tangled in old fishing tackle and rubbish. In your group discuss why penguins have no adaptations do help them in this situation

Australian Marsupials - Koala

Look closely for the Koalas. They are probably asleep in the trees.

Why do you think Koalas would spend all their time in the trees?

Find out what the special adaptation is on the Koalas hand that helps it to climb. Draw it here.

Most animals would become very sick if they ate Eucalyptus leaves, as their bodies are unable to break down the poisons in them. However, Koalas are able to digest the leaves and they make up 100% of their diet.

What do we call this type of adaptation?

Behaviour **Structure** **Bodily function**

Adaptations evolve in a population over many generations, usually when the habitat has changed.

What are some of the adaptations that humans from different parts of the world have which help them survive in their natural habitats?

Discuss this with your friends and write down some of your ideas.

Rainforest animals - Siamangs

Many animals in the rainforest, like the Siamangs, spend most of their time in the trees.

Can you think of two reasons why animals like the Siamang like to stay up in the trees?

1. _____

2. _____

The Adelaide Zoo has successfully bred Siamangs in the past. Within hours of their birth, they are able to cling tightly to their mother's bellies.

Why would this be so important?

_____

_____

Look at the Siamangs enclosure.

How do the keepers know the Siamangs are not going to get out?

_____

_____

What adaptations would the Siamangs need if they wanted to get out of their enclosure?

_____

_____

_____

_____

You might hear the Siamangs calling during your day. You can hear them over the whole Zoo. This is a way of marking their territory and communicating with each other.

Reptile House

In the reptile House you will find snakes, lizards, turtles and tortoises. They all have special adaptations to help them live in a variety of habitats.

Find a reptile with each of these types of adaptations.

Adaptation Type	Animal	Adaptation
Structural adaptation		
Behavioural adaptation		
Bodily function adaptation		

Draw your favourite reptile in the reptile house.

Australian Aviary - Birds

Part of the Aviary has rainforest birds and the other part has wetland birds. By looking at the plants in the 2 parts of the enclosure see if you can work out which is which.

Choose two birds from each Aviary. Draw their feet and beaks in the table below.

	Name of bird	Drawing of beak	Drawing of feet
Rainforest			
Wetlands			

Is there a difference between the feet and beaks of the birds living in the 2 sections?

How would these body parts help the birds in their habitats?

The Nocturnal House

Move quietly into the Nocturnal House. Remember, these animals think it is night time so it is important to keep your voices right down.

What does nocturnal mean?

_____

Which of the following best describes the habitat where most of these animals live?

Hot and dry with cooler nights	Cold, wet, often snowy	Hot, wet and humid

How would being nocturnal help these animals in this habitat?

_____

_____

Indigenous Australians use native animals for food, clothing and medicines. Many of these animals are also portrayed in traditional stories.

Why would nocturnal animals not be used for these things as much as the daytime (diurnal) animals?

_____

_____

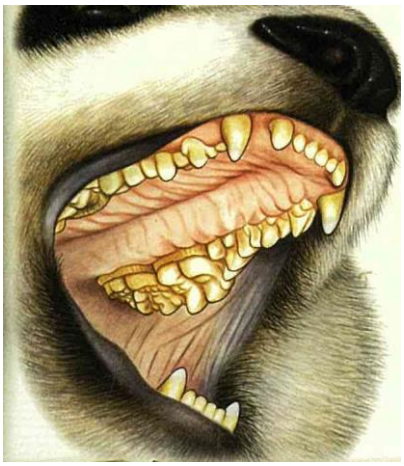
_____

Many of the animals in the Nocturnal house are now Threatened Species. Look at the signage for each animal to work out which ones these are.
Think about why these animals have become Threatened then discuss why their adaptations are not able to help them survive the threats that they are now facing.

Giant Panda

Giant Pandas have a large skull with wide jaw bones and jaw muscles (masticatory muscles). What does this extra jaw strength enable the Pandas to do easily?

_____



Can you see either of the Pandas eating? What are they eating?

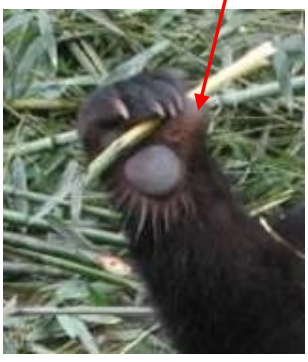
_____

If they're eating bamboo, notice how easy it is for them to rip it apart with their teeth.

If the Pandas are eating, look how they hold on to their food. They have what is called a 'psuedo thumb', an enlarged bone structure (sesamoid bone) on each front paw, that they use to help them hold on to food. Are they 'holding' anything?

_____

"Thumb"



Shade the boxes that contain words that describe how the Pandas' fur appears.....

coarse

fluffy

long

dry

soft

short

thick

stiff

wet

Giant Pandas' very thick fur serves as good insulation and has an oily covering that repels water.

Communication between Giant Pandas does not happen often, due to their solitary way of living. However, scent marking is an important way of marking home ranges (territory) and indicating their presence. They have two glands under their tail that produce a secretion that they rub on trees and other objects. Urine also plays an important part in scent marking.

More than 10 different calls are also used to communicate during mating or between mother and young.

Can you observe or hear any communication taking place with either of the Pandas?

_____