THEME: THE WORLD OF LIVING THINGS

TOPIC: CLASSIFICATION OF ANIMALS

Classification of animals.

- This is the grouping of animals according to their common characteristics.

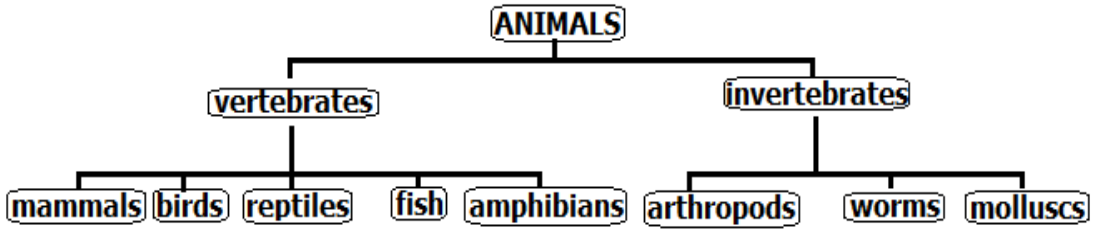
Characteristics used (factors considered) to classify animals.

- Body structure
- Body segmentation
- Body covering
- Mode of reproduction
- Mode of feeding.
- Mode of fertilization

Reasons why animals are classified.

- For easy identification of animals.
- For easy naming of animals
- For easy studying of animals
- For easy understanding of animals.
- For easy comparison of animals.
- To avoid confusion.

A flow chart below shows classification of animals at primary level.



NOTE: Animals are classified into two main groups.

Groups of animals include:

- Vertebrates
- Invertebrates (non vertebrates)

Vertebrates.

- Vertebrates are animals with a backbone.

Characteristics of vertebrates.

All vertebrates have the following common characteristics.

- They have a backbone
- They have an endoskeleton
- They have a skull that houses the brain.
- They have a central nervous system.

Examples of vertebrates are rat, whale, frog, chameleon, eagle, bat, lion etc.

NOTE: Vertebrates are broadly classified into five groups.

Classes/groups of vertebrates.

- Mammals
- Birds
- Reptiles
- Amphibians
- Fish

NOTE 1: Warm blooded vertebrates are vertebrates which maintain a constant body temperature.

Groups of warm-blooded vertebrates.

- Mammals
- Birds

Reason why mammals and birds are warm blooded vertebrates.

- Their body temperature is constant.
- They maintain a constant body temperature.

NOTE 2: Vertebrates whose body temperature changes according to that of the surrounding are called **cold blooded vertebrates.**

Groups of cold-blooded vertebrates.

- Reptiles
- Amphibians
- Fish

Reason why reptiles, amphibians and fish are cold blooded vertebrates.

- Their body temperature changes according to that of the surrounding.

MAMMALS.

- These are warm blooded vertebrates whose babies are fed with milk from mammary glands of the mother.
- These are warm blooded vertebrates which have mammary glands and fur on their bodies.

Characteristics of mammals.

- They have mammary glands
- They have fur/hair on their bodies
- They have three middle ear bones.
- They breathe by means of lungs.
- They are warm blooded.
- They undergo internal fertilization

NOTE: Most mammals produce (bear) live young ones except **monotremes.**

Groups of mammals.

1. Primates

They have the following characteristics.

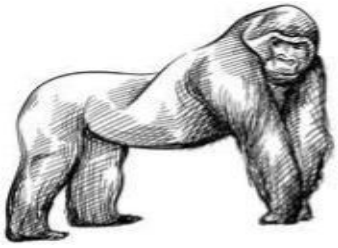
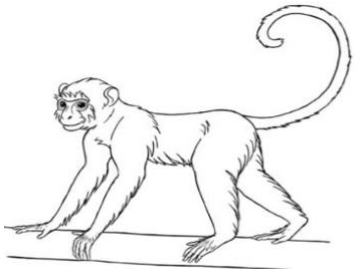
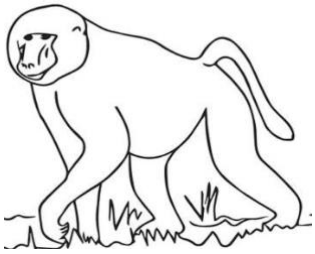
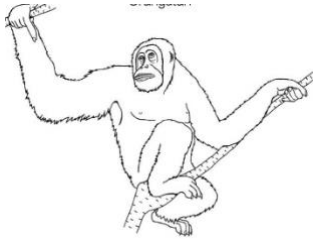
- They have two forward facing eyes.
- They have two five-fingered forelimbs (hands)
- They have two five-toed hind limbs (feet)
- They have well developed (large) brain.
- They are most advanced/ intelligent mammals.
- They are omnivorous (they eat both plant and animal matter)

NOTE: Primates are the most advanced mammals.

Reason: They have well developed brain.

They include monkey, humans, chimpanzee, baboon, gorilla, orangutan, bush baby, gibbon, colobus monkey etc.

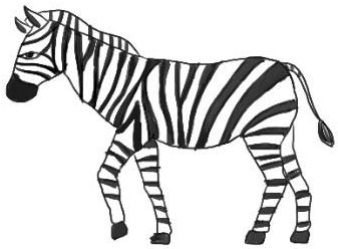
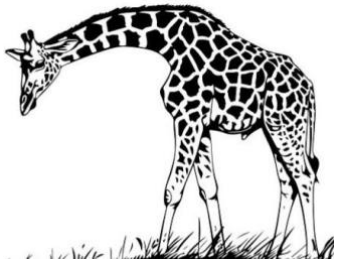
Examples of primates

Gorilla	**Monkey**	**Bush baby**
		
Chimpanzee	**Baboon**	**Orangutan**
		

2. Hoofed mammals (ungulates)

- These are mammals which have hooves on their feet.
- They include zebra, antelope, giraffe, gazelle, rhinoceros, goat, sheep, bison, deer, pig, horse, donkey, camels etc.
- Hooves provide traction and support to ungulates.

Examples of hoofed mammals

Zebra	Antelope	Giraffe
		

3. Flesh eating mammals (carnivorous mammals)

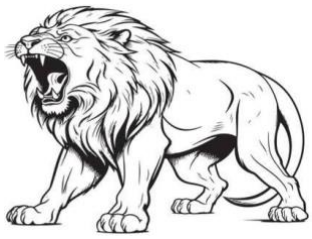
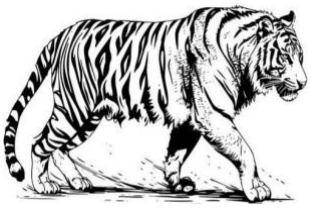
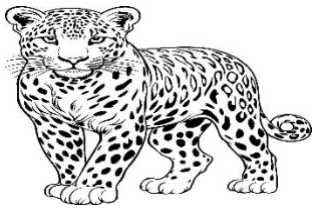
- These are mammals that eat meat (flesh of other animals)

Examples of carnivorous mammals are lions, tigers, cheetahs, leopards, cats, dogs, mongoose, jaguars, jackals, fox, wolf, hyenas

Characteristics of flesh-eating mammals (carnivorous mammals)

Characteristic	Function
• They have well developed canine teeth.	- For killing the prey. - For tearing the flesh of their prey
• They have sharp claws	- For grabbing their prey firmly - For holding their prey firmly
• They have a keen eye sight	- For spotting their prey.
• They have strong sense of smell	- For tracing/tracking the prey.
• They have soft pads on their feet.	- To attack the prey without being detected. - To stalk their prey quietly/silently/stealthily

Examples of flesh-eating mammals (carnivorous mammals)

Lion	Tiger	Leopard
		

4. Gnawing mammals (rodents)

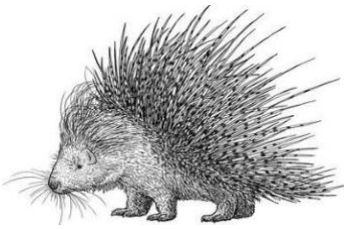
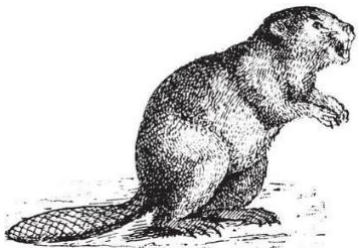
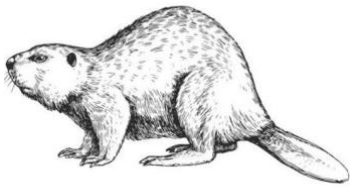
- These are mammals which have two pairs of well-developed incisor teeth for gnawing.
- They have two incisor teeth in the upper jaw and two in the lower jaw.

Characteristics of gnawing mammals (rodents)

- They have two well developed incisor teeth in each jaw.
- They have sharp claws for digging, climbing and defense.
- Most rodents have long tails.

Examples of rodents are rats, mice, squirrels, porcupines, gophers, beavers

Examples of gnawing mammals (rodents)

Porcupine	Squirrel	Gopher
		

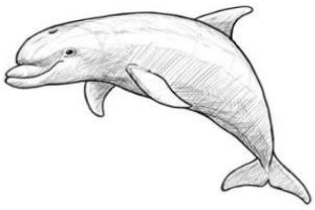
5. Sea mammals (cetaceans)

- These are mammals that live in water
- They are also called **marine mammals (aquatic mammals)**

Characteristics of sea mammals

- They have blubber
- They have streamlined bodies
- They have flippers
- They live in water of the sea or ocean.

Examples of sea mammals are dolphins, whales, seals, sea lions, porpoises, dugongs, polar bears etc.

Whale	**Dolphin**	**Seal**
		

Adaptations of sea mammals to living in water.

- They have blubber which keeps them in cold water.
- They use echoes for navigation in water.
- They have flippers for swimming in water.
- They have streamlined bodies to reduce resistance when swimming.

6. Insect eating mammals (insectivorous mammals)

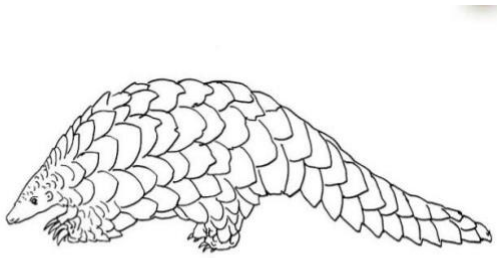
- These are mammals which feed mainly on insects.

NOTE: Their main diet consists of insects but they can eat other small animals and some even plant matter.

Characteristics of insect eating mammals.

- They have strong claws
- They long sticky tongues.
- They are nocturnal
- They have a sensitive snout
- They have spines for protection

Examples of insectivorous mammals are hedgehog, elephant shrew, aardvark, pangolin.

Pangolin	**Hedgehog**
	

7. Flying mammals (chiropteran)

- These are mammals whose forelimbs are modified into wings.
- The bats are the only flying mammals.

Reasons why bats are classified as mammals.

- They have mammary glands.
- They have hair/fur on their bodies.
- They produce live young ones
- They feed their young ones with milk from mammary glands.

8. Pouched mammals (marsupials)

- These are mammals which have a pouch in which they carry their young ones.
- The young ones of pouched mammals are called **joeys**.

Examples of pouched mammals are kangaroo, wallaby, koala bear, wombat, opossum, tasmanian devil.

A kangaroo	**A wallaby**
	

A kangaroo produces young ones when they are not fully developed.
Part of their development takes place in the pouch.
The pouch keeps and protects the joey to continue growing.
The long tail provides balance and stability during hopping.

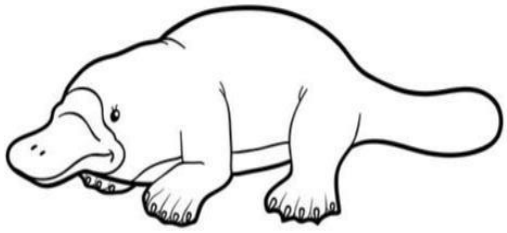
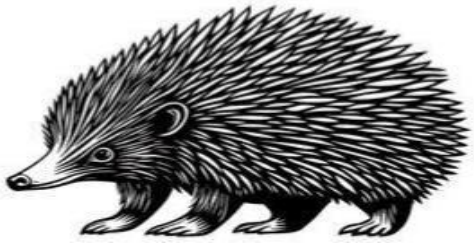
9. Egg laying mammals (monotremes)

- These are mammals which reproduce by laying eggs.

Reasons why monotremes are classified as mammals

- They feed their young ones on milk from mammary glands after hatching.

Examples of egg laying mammals (monotremes) are duck billed platypus, spiny anteater.

The duck billed platypus	**Spiny anteater (echidna)**
	

Characteristics of monotremes.

- They lay eggs .
- They have a single cloaca.
- They have beaks similar to those of birds.
- They feed their babies on milk from mammary glands of the mother.

Reasons why monotremes are considered the most primitive mammals.

- They have characteristics of birds, reptiles and mammals.
- They lay eggs and have a break similar to that of birds.

Importance of mammals

- Some mammals are source of food.
- Some mammals provide labour on farms
- Some mammals are used for transport.
- Some provide hides and skins used to make leather products.
- Their dung, droppings and urine are used to produce biogas.

BIRDS

Classification of birds

This is the grouping of birds according their common characteristics.

Factors to consider when classifying birds

- Shape of the beak
- Mode of movement
- Nature of the feet and claws (talons)
- Mode of feeding

Characteristics of birds.

- Their bodies are covered with feathers
- They have scales on their legs and feet.
- They reproduce by laying eggs
- They have streamlined bodies to reduce friction in air during flight.
- They use lungs to breathe.
- They are warm blooded
- They have beaks and claws (talons)
- They have a pair of wings and legs.
- They have hollow bones to reduce weight in air during flight.
- They undergo internal fertilization.
- They have a nictitating membrane that protect their eyes against wind during flight.

Name six classes/groups of birds

• Climbing birds	• Birds of prey (preying birds)
• Flightless birds	• Scavenger birds
• Scratching birds	• Swimming birds
• Perching birds	• Wading birds

1. Birds of prey

- These are birds which hunt and kill their prey to feed on it.

A prey

- **A prey** is an animal which is hunted and killed by another animal for food.

A predator

- This is an animal which hunts and kills other animals for food.

Examples of birds of prey include eagles, owls, kites, buzzards, secretary birds, falcons, Hawks, Ospreys etc.

Mention examples of animals eaten by birds of prey.

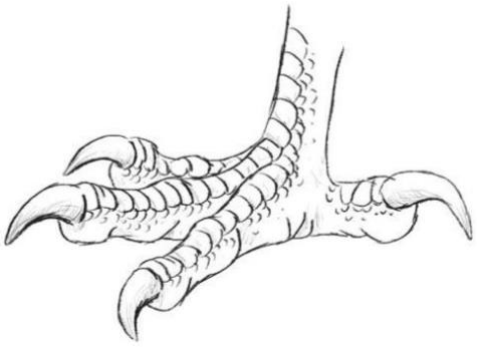
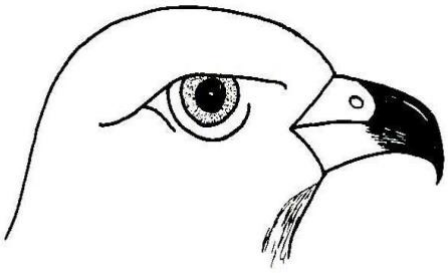
- rats - mice - fish - lizards	- geckos - frogs - chicken - snakes

State three characteristics of a bird of prey

- They are carnivorous /they feed on meat.
- They have strong sharp hooked beaks.
- They have strong sharp curved claws (talons)
- They have strong (keen) eyesight
- They are powerful/They have powerful wings.

Give the importance of the following features to birds of prey

Strong sharp curved claws (talons)	Enable them to grasp/grip their prey firmly Enable them to hold and kill their prey
Strong sharp hooked beaks	Enable them to tear the flesh of their prey
Keen eyesight/vision	Enable them to spot their prey from far
Strong feet	Used to carry their prey for long distances

Feet of a bird if prey	**Beak of a bird of prey**
	

Give two dangers of birds of prey

- They hunt and kill people's chicks.
- Some can harm people

2. Scavenger birds

- These are birds which feed on meat of dead animals they have not killed themselves.
- They feed on leftover/abandoned meat and dead animals in the environment.
- They feed on meat of animals already killed by other causes.
- They have strong hooked beaks for tearing dead animals (carcasses).

Examples of scavenger birds include vultures, crows, marabou storks

A marabou stork has a throat pouch (sac) for courtship, temperature regulation etc.

How are scavenger birds important in the environment?

- They help to clean the environment by eating abandoned meat or dead animals that would rot and smell.

Name two places where scavenger birds are commonly found.

- Abattoirs
- Rubbish heaps
- Dustbins

A break of a scavenger bird	A foot of a scavenger bird
	

3. Swimming birds

- These are birds which are good at swimming in water.

Why are swimming birds called so?

- They are good at swimming in water.

State two characteristics of swimming birds.

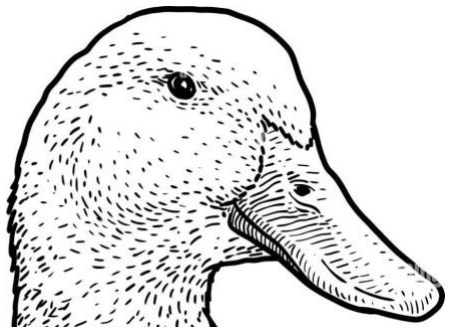
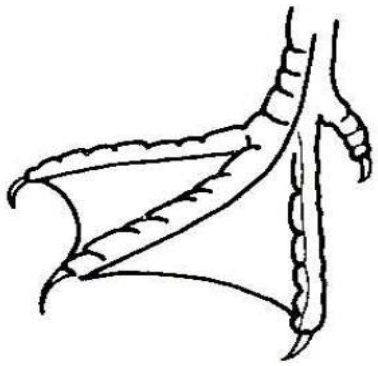
- They have webbed feet
- They have broad breastbones.
- They have oil glands.
- They have waterproof feathers.

- They have spoon-shaped beaks.

Examples of swimming birds include ducks, geese, seagulls, swans, cormorants, penguins, loons, pelicans, gadwalls etc.

Give the importance of the following features to swimming birds.

Webbed feet **Webs between feet**	- They enable them to swim easily in water - For paddling when swimming.
Oil glands	- Produce oil which waterproofs feathers. - Produce oil to keep their bodies warm.
Spoon shaped beak **Broad flat beaks**	- Enables them to sieve/filter food from water or mud.
Waterproof feathers	- To keep them buoyant/afloat in water.

Beak of a swimming bird	**Foot of a swimming bird**
	

4. Wading birds

- These are birds which walk through water or mud to find food.

State three characteristics of wading birds.

- They have partly webbed feet.
- They have long thin beaks.
- They have long thin legs.
- They have long necks.

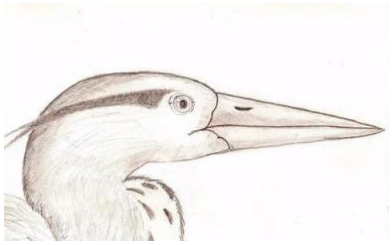
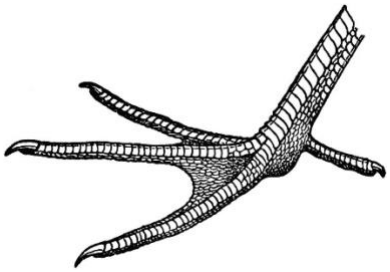
Give the importance of the following to wading birds.

Partly webbed toes that are spread out.	- Prevent them from sinking in water.
Long thin legs	- To walk through water or mud.
Long necks **Long beaks**	- To reach their prey in deeper water or mud. - To catch their prey in water or mud.

Examples of wading birds include crested cranes, flamingos, herons, Kingfishers, egrets, ibis, jacana

Mention two animals eaten by wading birds

- Frogs
- Small fish
- Worms

The beak of wading bird	**The foot of a wedding bird**
	

5. Climbing birds.

- These are birds which climb trees to look for what to eat.

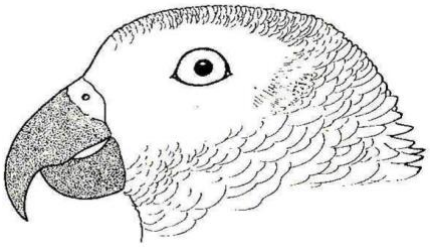
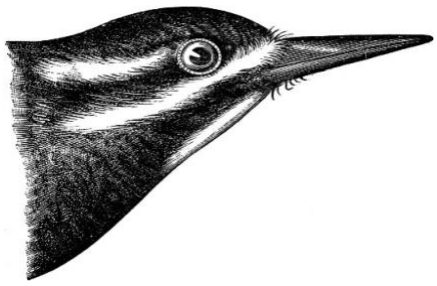
Characteristics of wading birds

- They have two toes pointing forward and two facing backwards.
- They have strong short pointed beaks
- They live in trees and run about on tree branches

Examples of climbing birds are parrots, woodpeckers, turaco, toucan etc.

State the importance of the following to climbing birds

Strong pointed chisel shaped beaks.	- To pick insects from cracks and holes in trees and to break seeds. - To dig holes in tree trunks. - A parrot has strong short hooked beak for climbing trees and breaking hard seeds. - A wood pecker has a long, strong and chisel shaped beak for making holes in trees trunks.
Two toes pointing forward and two facing backwards	- For climbing trees - For holding trees firmly.
Long stiff tails	- For support when climbing.

A beak of a parrot	**A beak of a woodpecker**
 **Strong short hooked beak** - For breaking hard seeds - For aiding in climbing	 **Long strong chisel shaped** - For making holes in trees trunks

6. Scratching birds

- These are birds which scratch the ground to get food.
- These are birds that scratch the soil/earth to get food.

Characteristics of scratching birds.

- They have strong blunt claws.
- They have strong short pointed beaks.
- They have heavy bodies and weak wings.

Give the importance of the following to scratching birds

Strong blunt claws	- For scratching/digging the ground
Strong short pointed beaks	- For picking up food from the ground.

Beak of a scratching bird	**Foot of a scratching bird**
	

Examples of scratching birds are turkeys, guinea fowls, chickens.

Examples of foot for scratching birds

- Insects
- Seeds
- Worms

7. Flightless birds

- These are birds which are unable to fly.

Reason: They have weak and small wings compared to their body size.

Examples of flightless birds are ostrich, cassowary, kiwi, emu, Rhea, penguin

8. Perching birds

- These are birds which rest or stay on branches of trees.
- **A perch** is a place where birds rest or stay.

Characteristic of perching birds

- They have three toes pointing forward and one toe pointing backwards.
- This helps them to hold onto tree branches firmly.

Groups of perching birds

- **Seed eaters**

- They feed on seeds and grains.
- They have strong short conical beaks for breaking seeds.
- Examples of seed eaters include; doves, pigeons weaver birds, finches etc.

- **Insect eaters**

- They feed on insects
- They have short narrow beaks for picking insects from backs of trees
- They help to feed on insects that are harmful to people.

Examples of insect eaters include; sparrows, robins, swifts and swallows.

- **Fruit eaters (foresters)**

- They feed on fruits
- They have long stout beaks for collecting fruits from trees.
- They help in seed or fruit dispersal

Examples of fruit eaters is a hornbill.

- **Nectar suckers**

- They feed on nectar from flowers
- They have long slender and slightly curved beaks for sucking nectar from the bottom of flowers.
- They help to pollinate flowers.

Examples of nectar suckers include; sunbird, hummingbird.

Reasons why birds are able to fly

- They have flight feathers
- They have hollow bones
- They have streamlined bodies
- They have wings.

Importance of birds in the environment.

- Domestic birds are source of meat and eggs
- Some birds pollinate flowers.
- Scavenger birds clean an area by feeding on abandoned meat and dead animals.
- Some birds are agents of seed and fruit dispersal
- Some birds like a peacock attract tourists.
- Birds are used for cultural purposes.
- Birds provide feathers for decoration and making costumes.
- Domestic birds are sold to get money.

Dangers of birds in the environment.

- Some birds are crop pests e.g. weaverbirds, doves, Guinea fowls, partridges
- Birds of prey eat chicks.
- Some birds make a lot of noise (cause noise pollution)
- Some birds cause accidents on runways at airports
- Some birds keep vectors.
- Some birds attack and harm people e.g. a cassowary.