For Creative Minds

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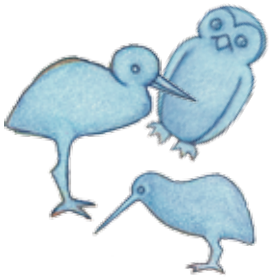
Scientific Classification



Just as we sort money or candy, scientists sort all living things into groups to help us understand and connect how things relate to each other. Scientists ask questions to help them sort or classify animals.

Based on the answers to the questions, scientists can sort the living organisms. The first sort is into a Kingdom. There are five commonly accepted Kingdoms: Monera, Protista, Fungi, Plantae, and Animalia. All of the living things in this book belong to Animalia or the Animal Kingdom.

The next big sort is into a Phylum. One of the first questions that a scientist will ask is whether the animal has (or had at some point in its life) a backbone. If the answer is "yes," the animal is a vertebrate. If the answer is "no," the animal is an invertebrate.

Each Phylum is broken down into Classes, like mammals, birds, reptiles, fish, insects, or gastropods (snails). Then each class can be broken down even further into orders, families, genus and species, getting more specific.

The scientific name is generally in Latin or Greek and is the living thing's genus and species. People all over the world use the scientific names, no matter what language they speak. Most living organisms also have a common name that we use in our own language.

Questions scientists ask:

Does it have a backbone?

What type of skin covering does it have?

Does it have a skeleton? If so, is it inside (endoskeleton) or outside (exoskeleton) of the body?

How many body parts does the animal have?

Does it get oxygen from the air through lungs or from the water through gills?

Are the babies born alive or do they hatch from eggs?

Does the baby drink milk from its mother?

Is it warm-blooded (endothermic: maintains a nearly constant body temperature), or cold-blooded (ectothermic: uses the heat of the sun or surrounding water to warm itself)?

Mammals:

hair, fur, whiskers, or quills at some point during their lives

backbone (vertebrate)

inside skeleton (endoskeleton)

lungs to breathe

most give birth to live young

produce milk to feed young

warm-blooded

Fish:

most have scales covered with a thin layer of slime

backbone (vertebrate)

inside skeleton (endoskeleton)

gills to breathe

babies are either born alive or hatch from eggs

cold-blooded

Reptiles:

dry scales or plates

backbone (vertebrate)

inside skeleton (endoskeleton); most turtles also have a hard outer shell

lungs to breathe

most hatch from leathery eggs

cold-blooded

Gastropods (Snails):

most have hard shells

no backbone (invertebrate)

outside skeleton (exoskeleton)

hatch from eggs

cold-blooded

Birds:

feathers

backbone (vertebrate)

inside skeleton (endoskeleton)

lungs to breathe

hatch from eggs

warm-blooded

Amphibians:

soft, moist skin

backbone (vertebrate)

inside skeleton (endoskeleton)

most hatchlings are called larvae or tadpoles and live in water, using gills to breathe

as they grow, they develop legs and lungs and move onto land

cold-blooded

Insects:

hard outer covering

no backbone (invertebrate)

outside skeleton (exoskeleton)

adults have 3 body parts: head, thorax & abdomen

most hatch from eggs

cold-blooded

Kingdom

Phylum

Class

Order

Family

Genus

Species

Skin Coverings

Hair (Mammals):

comes in different colors or patterns

helps some animals camouflage

helps protect the skin

helps animals to stay warm

can be:
thin (like on our arms or legs)
thick fur
whiskers
eyelashes
quills

Feathers (Birds):

come in different shapes, sizes, and colors

help keep birds warm (insulate)

are used to fly

are used for camouflage

are used to attract female's attention

are kept clean by preening

four different types of feathers:
long, stiff feathers for flight
tail feathers for balance and steering
short, soft under-feathers for warmth
longer feathers to smooth things out

Hard Casing (Adult Insects):

protects body

wings attach to casing

sheds (molts) as animal grows

bright colors may warn of poison

some colors camouflage

Wet Scales (Fish):

scales overlap from head to tail
for easy swimming

some scales are big and can be
removed one by one, but some
are so tiny they are barely visible

a slimy mucus over the scales
helps protect the fish

Dry Scales or Plates (Reptiles):

protect the animal while crawling
on the ground

waterproof to keep the animal's
skin from drying out

snakes and skinks have
overlapping scales

turtles have hard outer shells
that grow with them (the scales
on the shells are called scutes)

snakes shed (molt) their skin all
at once as they grow

other reptiles shed (molt) their
scaly skin in chunks as they grow

Shells (Snails):

shells are bones found on the outside of an
animal's body (exoskeleton)

just as our bones grow with us, the shells
grow with the animals

the hard shells protect the soft bodies

Soft, Moist Skin (Amphibians):

protects animals

adult skin secretes a slime (often
poisonous as protection)

adult amphibians breathe oxygen
through their skin

Animal Classification

Use the information found in the book to match the animal to its classification.
Answers are upside down.

Does the animal have a backbone?

- yes → vertebrate
  - Is the animal warm-blooded or cold-blooded?
    - warm-blooded
      - Does the animal have feathers?
        - yes → It is a bird.
        - no → Does it have hair, fur, whiskers, or quills?
          - yes → It is a mammal.
    - cold-blooded
      - Does the animal have scales?
        - yes → Are the scales moist or dry?
          - moist → It is a fish.
          - dry → It is a reptile.
        - no → Does it have smooth, wet skin?
          - yes → It is an amphibian.
- no → invertebrate (includes insects and snails)

duck

warm-blooded

snake

cold-blooded

frog

cold-blooded

polar bear

warm-blooded

snail

cold-blooded

ladybug

cold-blooded

porcupine

warm-blooded

fish

cold-blooded

Invertebrates: snail, ladybug Vertebrates: Bird: duck; Mammals: polar bear and porcupine; Fish: fish; Reptile: snake; Amphibian: frog