WHAT'S SO IMPORTANT ABOUT NAMES?

What's so important about names?

Giving something a name allows us to talk about it. If we didn't know the names of all the animals, plants and fungi, we wouldn't know when something was new, or if something had become extinct – we wouldn't be able to measure life on the planet. Having a standardised way of naming things means we are able to study them and communicate with others about them, all over the world.

What's in a name?

In the 17th and early 18th centuries plants were given long Latin phrases for names that described their particular features. As more plants became known, names tended to become longer, and much more difficult to remember and use. Then, in the 18th century, a Swedish biologist named Carl Linnaeus created a system called **binomial** naming (bye-no-me-al). Binomial means 'two words' – every plant and animal that he knew about was given a **genus** name and a **species** name, in Latin. Linnaeus' system has made it easier for scientists all over the world to communicate about life on Earth. His system is still in use today.

GENUS: A group of organisms that have certain characteristics in common but can be divided further into other groups (i.e. into species)

SPECIES: A useful definition of a species is a group of organisms which can interbreed to produce fertile offspring

Binomial names

The use of only two words (the binomial name) made it much easier to categorise and compare different plants and animals.

Imagine, for instance, talking about a type of geranium using the old name:

Geranium pedunculis bifloris, caule dichotomo erecto, foliis quinquepartitis incisis; summis sessilibus

The binomial name is much easier to use:

Geranium maculatum

WHAT'S SO IMPORTANT ABOUT NAMES?

Every Name has a Story

Linnaeus used Latin for his names, but many names were also Latinised versions of other languages, like Greek. He used Latin because not only was it the language of science, but because it was a common language throughout the world. It meant a Latin name could be understood by anyone. Though Linnaeus avoided long, wordy descriptions, his binomial names still tell us something about the plant, or animal, itself. The name of an organism is chosen for a particular reason:

Carl Linnaeus would look at a species and see what was different about it. It might be a certain colour, size, texture or be from a certain place. He would use this information in the **binomial** name.

How about this ladybird? In America, this is called a ladybug; in other countries it's a lady beetle. So how do we know it's the same thing?

Its binomial name tells us: ***Coccinella septempunctata***

Genus: Coccinella (co-chi-nella) means **BRIGHT RED**
Species: septempunctata (sept-em-punk-tata) means **SEVEN POINTS**

Activity 1

1. Giving every type of living thing two names is a bit like you having a first name and a surname. Which of your two names (first name or surname) is equivalent to the genus and which to the species?

2. Can you think of any other examples of binomial names you see in every day life? They don't have to be living things! Think of at least one.

WHAT'S SO IMPORTANT ABOUT NAMES?

Insects named for their APPEARANCE

Linnaeus used descriptive names because they are simple and easy to remember.

Colour can be used in names as seen in the example of the ladybird on the previous page - *Coccinella septempunctata* (Coccinella = bright red, spetempunctata = seven points).

The Latin name for the Eyed Hawkmoth is *Smerinthus ocellatus*. Ocellatus means eye and refers to the eye-like markings on the moth's hindwings.

The beetle *Callosobruchus maculatus* is named because of its spots. Maculatus means spotted.

Top right: *Smerinthus ocellatus*, the eyed hawkmoth named due to its eyespots.

Bottom right: The beetle *Callosobruchus maculatus* named due to its spotted appearance.

Photograph by Didier Descouens commons.wikimedia.org

Photograph by limbatus commons.wikimedia.org

Photograph by The High Fin Sperm Whale. commons.wikimedia.org

Photograph by Gilles San Martin commons.wikimedia.org

Insects named for WHERE THEY LIVE

Some insects are found only in certain places and are named for the area in which they live, using Latinised versions of the place names.

For example *Lethocerus americanus* (a giant water bug) is from North America.

Insect names can also be used to tell us something about the habitat the insect is found in. Montanus means 'from the mountains'. The grasshoper *Chorthippus montanus* occurs in the mountain range of the Pyrenees.

Top left: *Lethocerus americanus* the giant water bug native to North America.

Bottom left: The grasshopper *Chorthippus montanus* that lives in mountains.

WHAT'S SO IMPORTANT ABOUT NAMES?

Insects named for WHAT THEY DO

The Latin name for the honey bee is *Apis mellifera* 'mellis' means honey and 'fero' means to produce.

The Latin name for the silverfish is *Lepisma saccharina*. 'Saccharum' means sugar and indicates the silverfish's diet of carbohydrates such as sugar or starches. Items that the silverfish may feed on include: book bindings, carpet, clothing, coffee, dandruff, glue, hair, paper, photos, plaster, and sugar.

Top right: *Apis mellifera*, the honey bee named because it makes honey.

Bottom right: *Lepisma saccharina*, the silverfish named because it eats sugars.

Photograph by Christian Fischer commons.wikimedia.org

Photograph by Erick. commons.wikimedia.org

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Insects named for PEOPLE

Linnaeus often named plants after the people who collected them, or even after his friends! This still happens today and even celebrities may have species named after them.

Can you guess who the trapdoor spider *Aptostichus angelinajolieae* has been named after? That's right - actress Angelina Jolie. Or how about the horse fly *Scaptia beyonceae*? The singer Beyoncé Knowles, of course.

Insects are often be named to honour the work of scientists and environmentalists. The trapdoor spider *Aptostichus edwardabbeyi* is named after the writer and environmentalist Edward Abbey.

Top left: The horse fly *Scaptia beyonceae* named after Beyoncé Knowles.

Bottom left: The trapdoor spider *Aptostichus edwardabbeyi* is named after Edward Abbey.

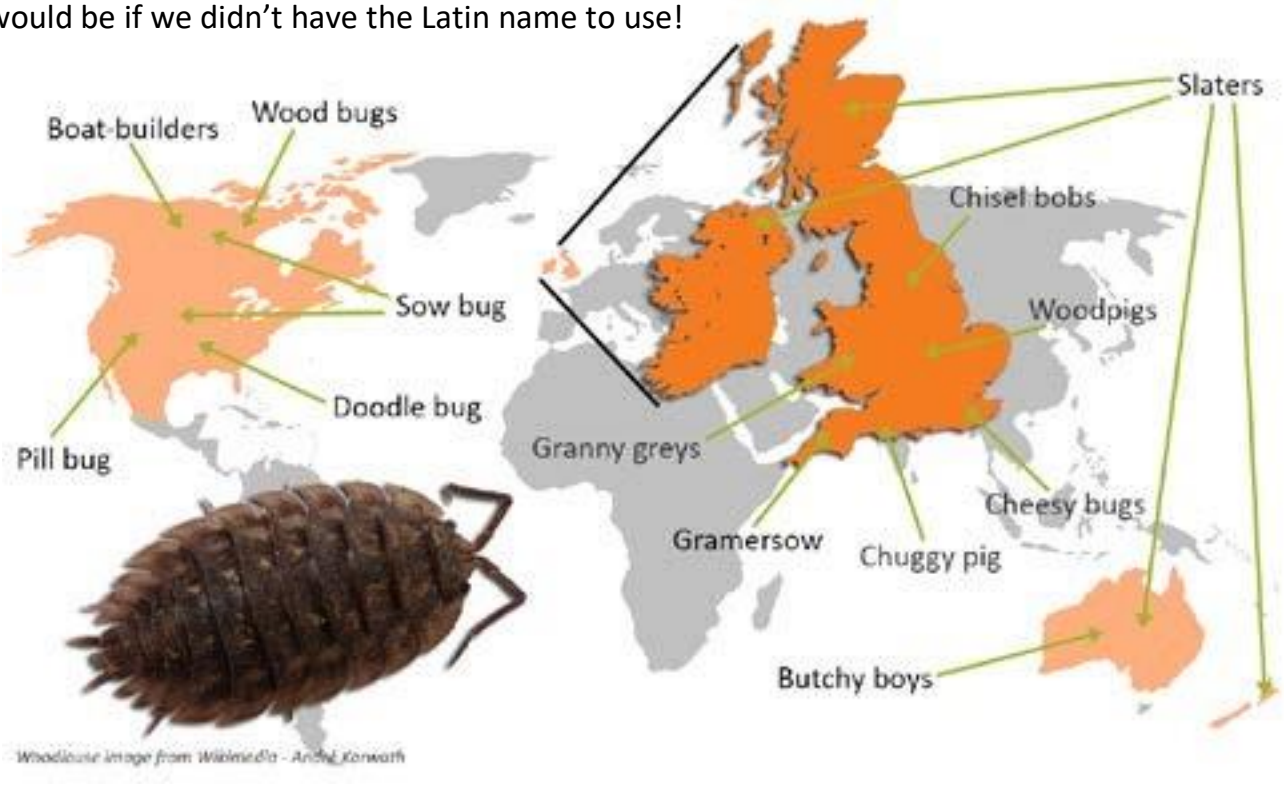
Why Latin (and Greek)?

Why use Latin – surely it makes things more complicated?

The woodlouse, which is not really an insect, has many different common names depending where in the world you are - take a look at the map below. The advantage of Latin is that it is international. It was the language of the Romans who conquered most of Europe and North Africa. Their language, Latin, continued to be used long after the decline of their empire. It became the convenient international language of science, philosophy, religion and diplomacy throughout the Middle Ages and on into the eighteenth century. Educated men such as Linnaeus wrote their books and letters in Latin. About half the words we use in everyday life come from Latin.

The other great civilisation of the western world that preceded the Romans was that of ancient Greece. The study of Roman and ancient Greek cultures came to be an essential part of a 'classical education'. Well-educated people were taught both Latin and ancient Greek, and words derived from these two ancient languages were, and still are, used frequently in science, continuing the tradition of using an international language.

These are just some of the local common names for the woodlouse. Imagine how confusing it would be if we didn't have the Latin name to use!



Woodlouse image from Wikimedia - Anthal Konrath

Boat-builders, Wood bugs = Canada
Sow bug = Canada and USA
Pill bug and Doodle bug = USA
Granny greys = Wales
Gramersow = Cornwall
Chuggy pig = Dorset
Cheesy bugs = Kent
Chisel bobs, Woodpigs = England
Butchy boys = Australia
Slaters = Scotland, N Ireland, Australia, NewZealand

WHAT'S SO IMPORTANT ABOUT NAMES?

Activity 2

Try matching the names to the plants shown here (a table of useful Latin/Greek descriptions is there to help you). The Latin/Greek will form PART of a word, so bear this in mind when you look at the names. Remember, look at all the characteristics - what colour is it? Is it smooth or spiny? Does it have a certain number of features? Place the correct letter in the box in each picture.

A ***Solanum lasiocarpum***
B ***Calochortus striatus***
C ***Auricularia auricula-judae***
D ***Banksia coccinea***
E ***Pachystachys lutea***
F ***Trillium ovatum***

Colours

Latin (L) or Greek (G)	English
Albus (L)	White
Coccineus (L)	Bright red
Luteus (L)	Golden yellow

Numbers

Latin (L) or Greek (G)	English
Uni- (L & G)	One
Di- (L & G)	Two
Tri- (L & G)	Three

Textures, shapes and patterns

Latin (L) or Greek (G)	English
Aculeatus (L)	Prickly
Auricula (L)	Ear-like
Lasio (G)	Hairy
Ovi- (L)	Egg-shaped/oval
Rhytis (G)	Wrinkled
Stria (L)	Lines, striped
Tomentosus (L)	Furry
Umbella (L)	Umbrella-shaped

What is CLASSIFICATION?

Have you ever sorted your toys, books or clothes into different groups? Perhaps you have grouped things together by colour, shape or size – this is like classification.

CLASSIFICATION is the study of putting all living things into groups.

Humans are classified as animals. We are also in a group of:

- animals with backbones called **vertebrates**
- warm-blooded, milk-producing vertebrates called **mammals**
- mammals adapted for living in trees and with large brains called **primates**

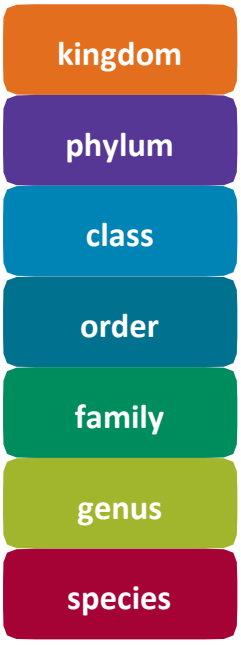
Linnaeus' system of classification

For thousands of years humans have been grouping things together, even in a basic way. You can easily recognise that a rose and a daffodil have similar characteristics, but are not the same. The more things we try to distinguish between, the more difficult it becomes to come up with a classification system. But it is still a good idea to distinguish what any given thing is similar to, and what it is not similar to, because that reflects our real knowledge of the world. Can you tell the difference between an oak tree and a sycamore tree or are they just trees to you?

Linnaeus' system of classification used seven major groups. Linnaeus recognised just two kingdoms of living organisms, the plant and the animal kingdoms. Everything else in his classification belonged to the mineral kingdom.

Modern Classification

Most modern classifications have more than five kingdoms. One modern system is shown on the left.



Each rank groups together organisms with similar characteristics. The members of a species have the greatest similarity. As we progress up the hierarchy from the level of the species, the groups become larger and their members show more variety (are more 'dissimilar').

The classification of humans is as follows:

English name	Group	Latin or Greek name
animals	**Kingdom**	Animalia
chordates	**Phylum**	Chordata
vertebrates	**Sub -phylum**	Vertebrata
mammals	**Class**	Mammalia
primates	**Order**	Primates
great apes/hominids	**Family**	Hominidae
man/humans	**Genus**	Homo
wise	**Species**	sapiens

WHAT'S SO IMPORTANT ABOUT NAMES?

Activity 3

1. What is the name given to the smallest group of closely related organisms which are not actually the same species?

2. What is the name given to the largest group of closely related organisms?

Kingdoms and Domains

There are 5 kingdoms, including the well known plant and animal kingdoms, but also including fungi, bacteria and a group of simple organisms called protists.

Classification systems were based originally on observed features, but a wider range of evidence is now used. Modern research, particularly DNA studies, suggests that living things fall naturally into three larger groups. The three large groups are called **domains**—two of them contain only bacteria. Animals, plants, fungi and protists have much more complicated cells than bacteria, evolved later and form the third domain.

The three domains are:

English name	Latin or Greek name
archaebacteria (or archaeans)	Archaebacteria (or Archaea)
bacteria (or eubacteria, meaning true bacteria)	Bacteria (or Eubacteria)
eukaryotes (or eukaryans)	Eukaryota (or Eukarya)

What is TAXONOMY?

Linnaeus laid the foundations of the science we call **taxonomy**.

Taxonomy involves two things:
- classification - deciding what groups to have
- nomenclature - naming the groups

What's its name?

How can you find out the name of an organism if you don't know what it is? This is a common problem, particularly for people like ecologists and conservationists who need to identify species in their natural habitats. One way is to use a key. At each step of a key, you must answer a question about one or more of the features of your chosen specimen. One of the simplest types of key is the **dichotomous** (dih-kot-uh-muhs) key, where each step of the key has only two alternatives.

Activity 4

You may recognise some of the following organisms. Using the key at the bottom of the page put the correct letters in the boxes to show which taxonomic group/s they belong to.

A. Spider

B. Centipede

C. Beetle

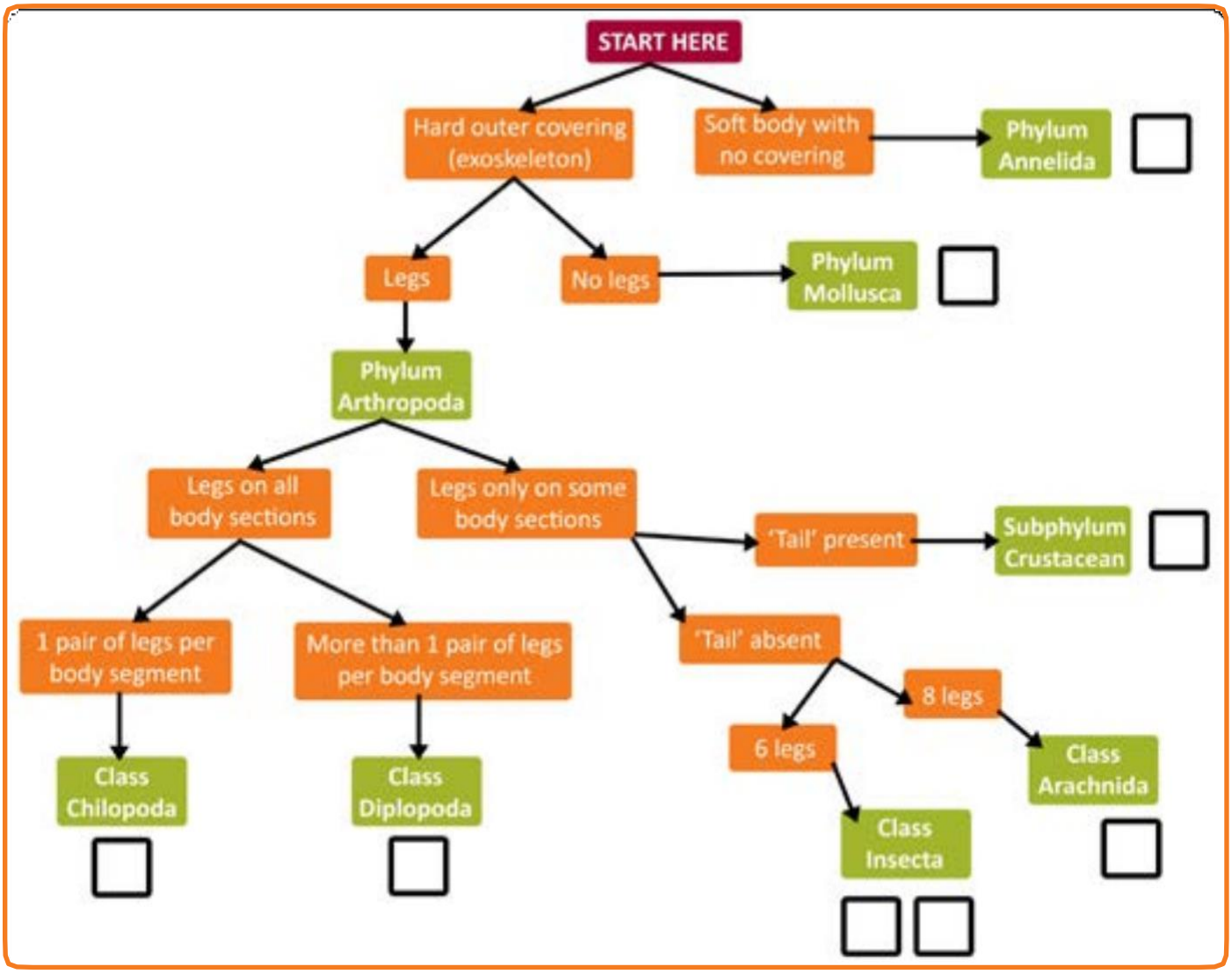
D. Snail

E. Earthworm

F. Mosquito

G. Woodlouse

H. Millipede



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