Species and Hybrids

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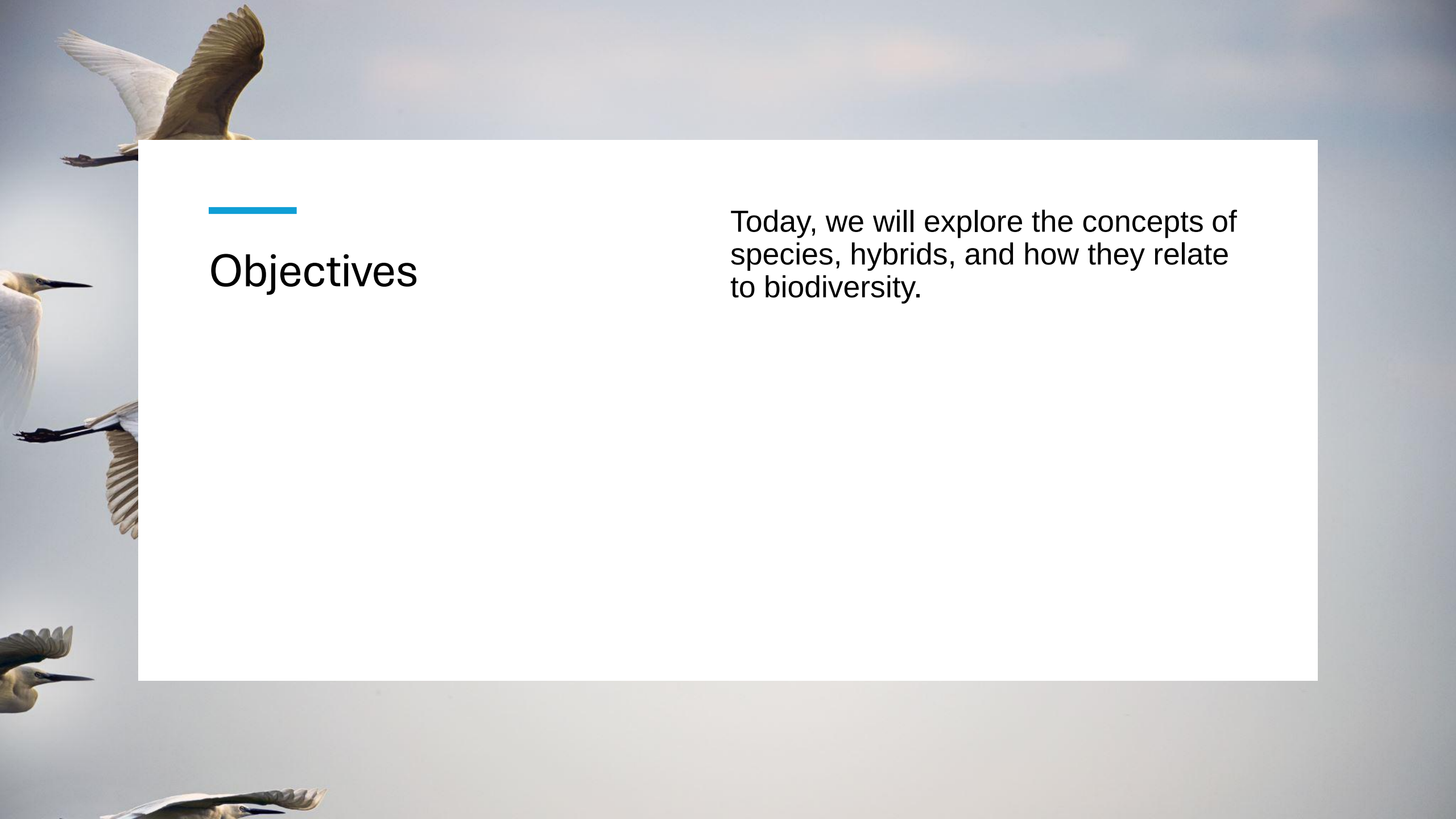


Objectives

Today, we will explore the concepts of species, hybrids, and how they relate to biodiversity.

What is a Species?

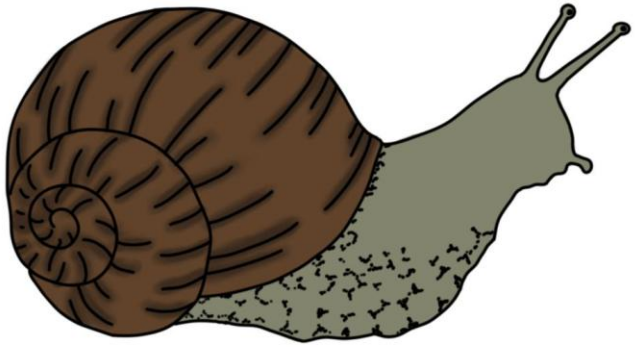
A species is a group of organisms that can interbreed and produce fertile offspring.

Each species has distinct characteristics that separate it from others.

Example: Dogs, most familiars to us, belong to the species *Canis lupus familiaris*.

Wolfs are another species from dogs, which belong to *Canis lupus.*

Levels of Biological Organization: Species



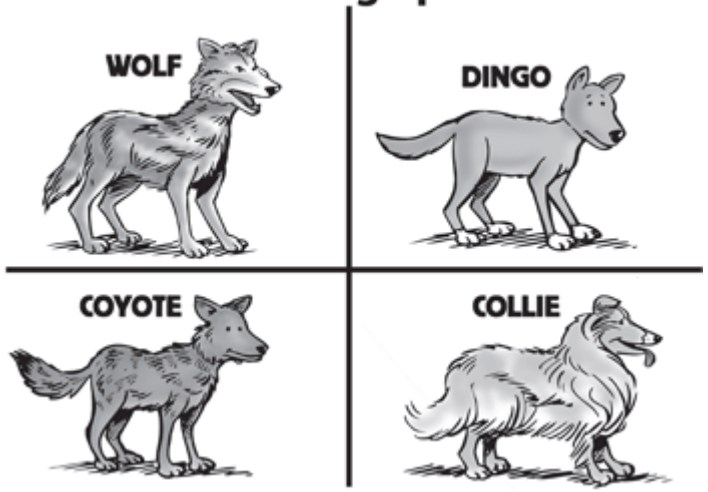
This is a snail.

It's just one member of the species Helix pomatia.

A species includes all the similar organisms which can interbreed and produce viable offspring.

All humans are part of the same species called Homo sapiens!

Several Dog Species



Black Gilliflower

Fallawater

Senshu

Harrison

Mutsu

Parmenter Hill

Cox's Orange Pippin

Cinnamon Spice

Calville Blanc d'Hiver

Granny Smith

Grimes Golden

Pomme d'Or

Cortland

Ashmead's Kernel

Sea Breeze

Golden Supreme

Albemarle Pippin

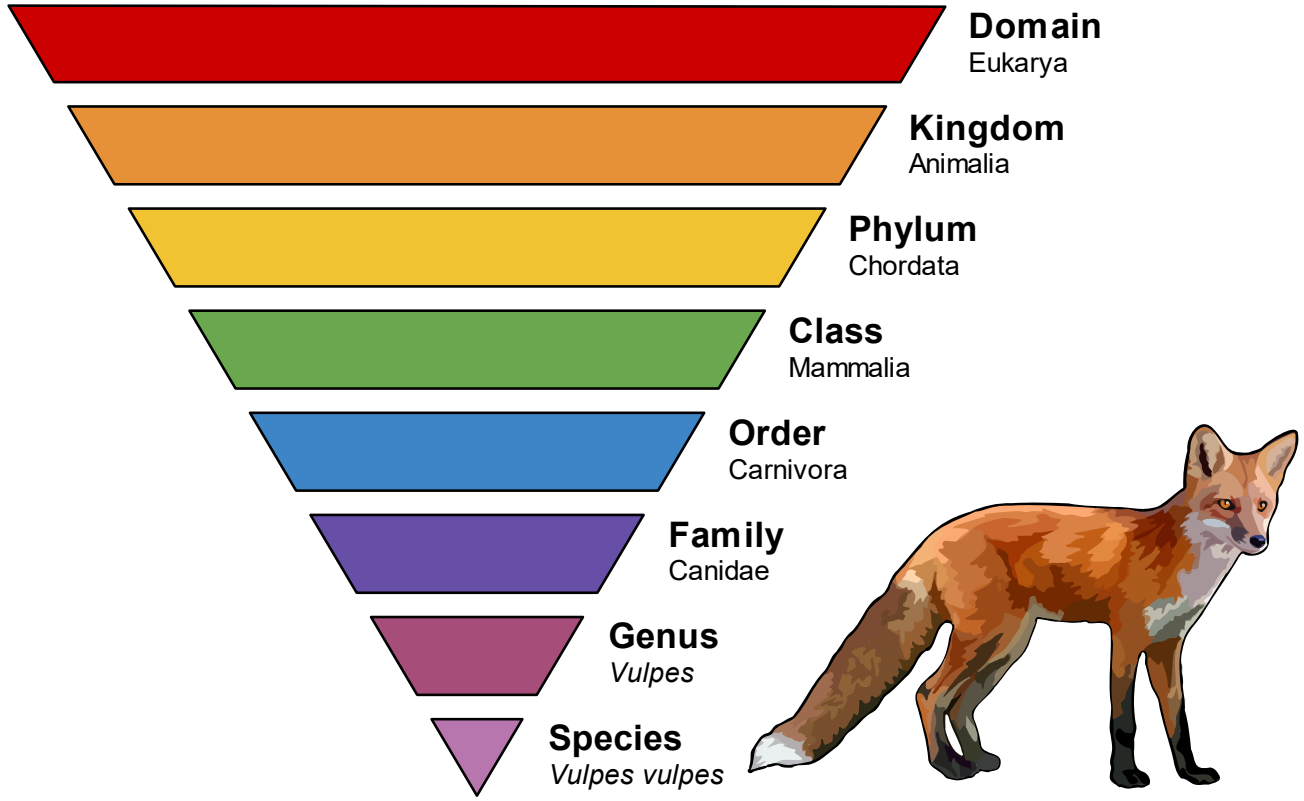
Tolman Sweet

Classification of Species

Species are classified into various groups, including:

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

This classification system helps scientists organize and study different organisms.



Red fox *(Vulpes vulpes)*

What is a Hybrid?

A hybrid is the offspring of **two different species**.

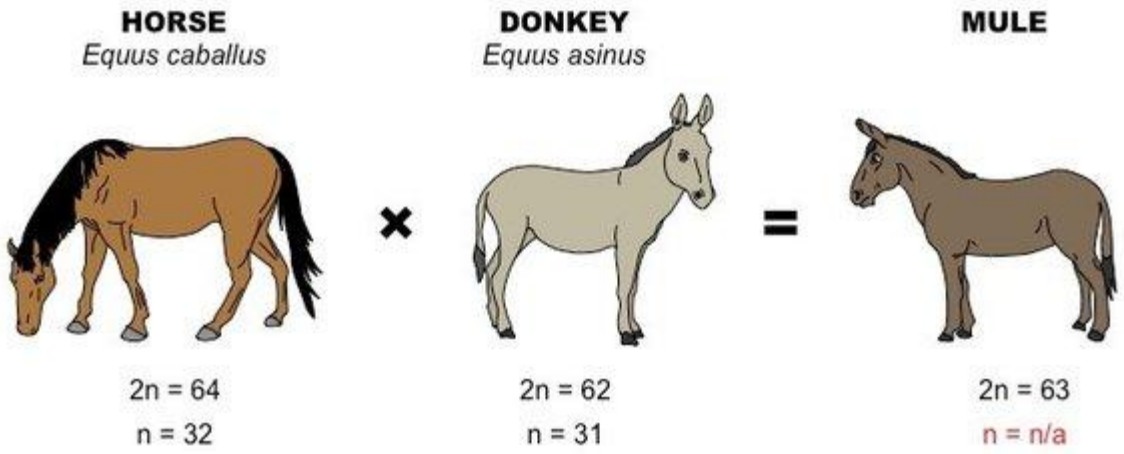
Hybrids often possess **characteristics of both parent species**.

Example: A **mule** is a hybrid between a **male donkey** and a **female horse**.

Female horse – 64 chromosomes

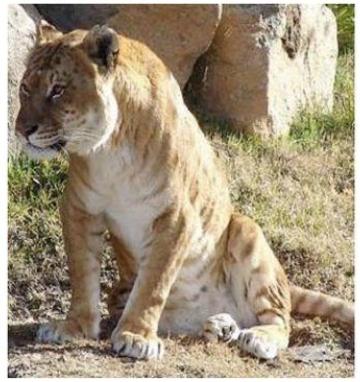
Male donkey – 62 chromosomes

Chromosomes are not evenly distributed, that's why they are not fertile!



Ligers vs Tigons

- Ligers
  - Dad's a lion
  - Mom's a tiger
  - These animals are MASSIVE



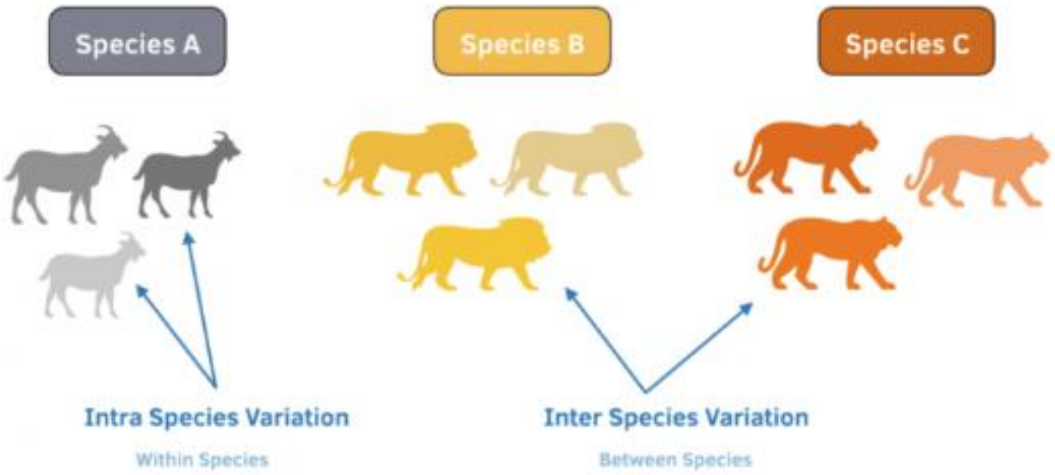
- Tigons
  - Dad's a tiger
  - Mom's a lion
  - These animals are normal 'big cat' size.

Types of hybrids

There are two main types of hybrids:

Interspecific hybrids: Offspring of two different species.

Intraspecific hybrids: Offspring of two different varieties or breeds within the same species.

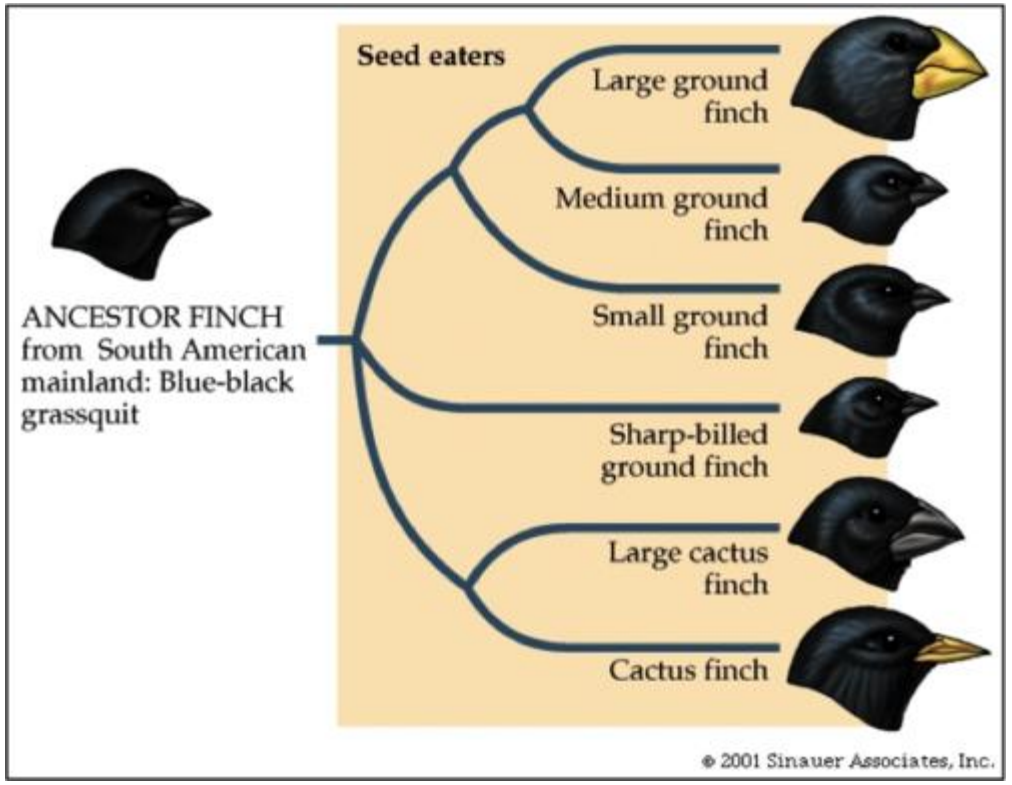


Importance of Hybrids

Hybrids play a crucial role in **biodiversity** and **evolution**.

They can possess **advantageous traits** from both parent species, making them **better adapted** to their environment.

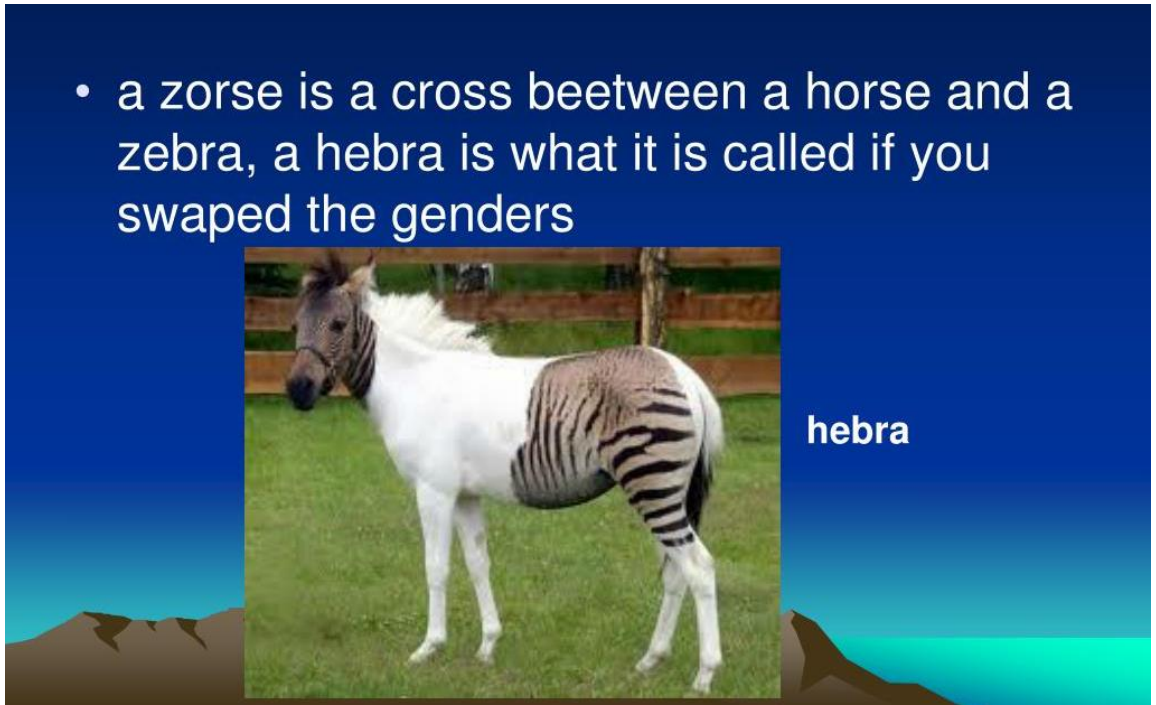
Hybrids can also lead to the **formation of new species** through **hybridization** and **speciation**.



Examples of Hybrids

Some common examples of hybrids include:

- Ligers (lion and tiger)
- Zebroids (zebra and any other equine)
- Wolfdogs (wolf and dog)



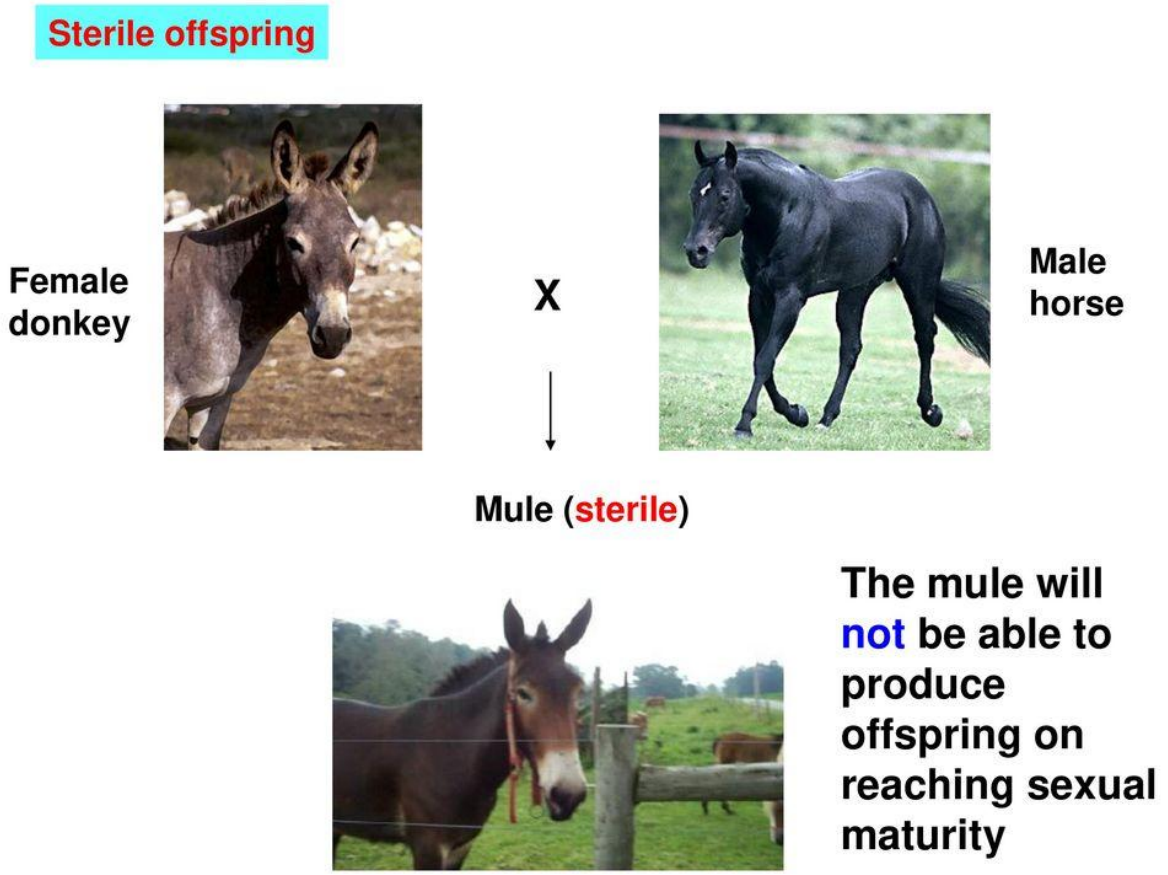
Challenges with Hybrids

While hybrids have benefits, they also pose challenges:

Sterility: Many hybrids are **infertile**, making it difficult for them to reproduce.

Genetic complications: Mixing genetic material from different species can result in **genetic abnormalities**.

Conservation concerns: Hybrids can sometimes threaten the survival of purebred species through competition or hybridization.



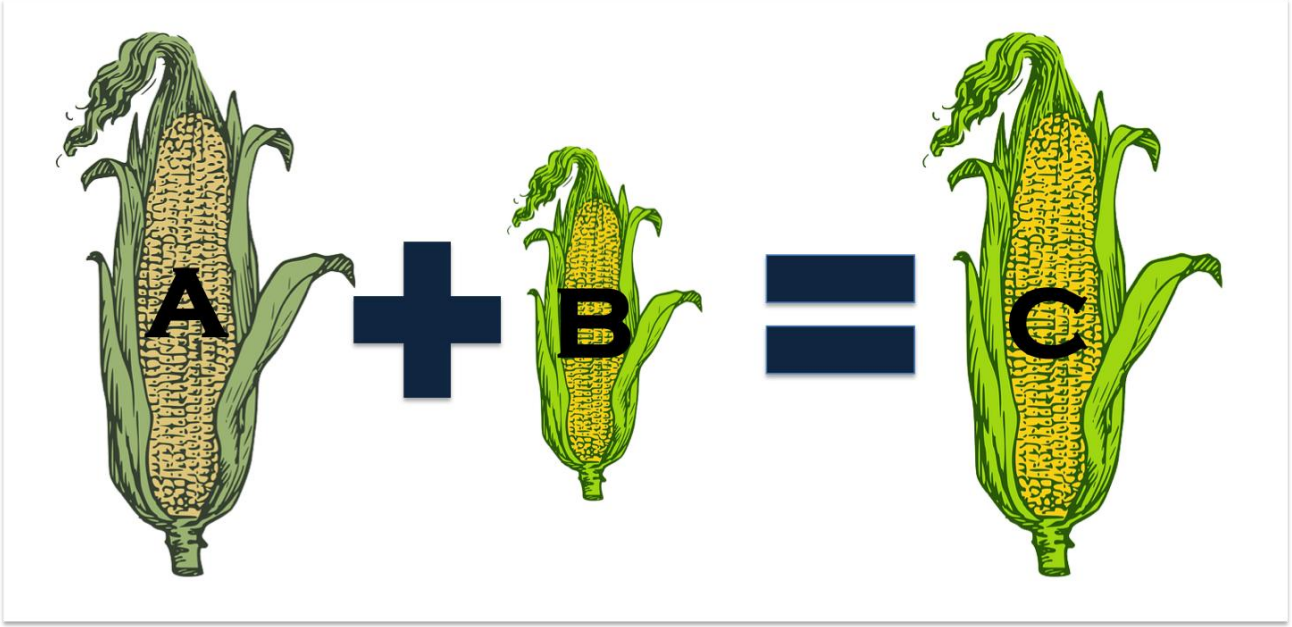
Real-life Applications

Hybrids have practical applications in agriculture, such as:

Creating hybrid crops with improved yield or **resistance to pests**.

Breeding hybrid livestock for better meat or milk production.

Developing hybrid varieties of flowers with unique traits.



Watch the video

- https://www.youtube.com/watch?v=dnfaiJJnzdE