Biology 20

Unit B: Ecosystems and population change

Variation and natural selection

The lynx sees the brown hare

- On patchy snow, the white hare blends in and the brown hare stands out.
- The lynx catches the hare it can see, and that hare leaves fewer young.



Differences first, then sorting

- A heritable mutation can change a trait the offspring receive.
- Sexual reproduction mixes traits so litters are uneven.
- Natural selection keeps the versions that leave more young.

Key terms

natural selection

Heritable traits that help survival or reproduction become more common in the next generation.

heritable mutation

A change in DNA that can be passed to offspring and may help, harm, or do little in a given place.

sexual reproduction

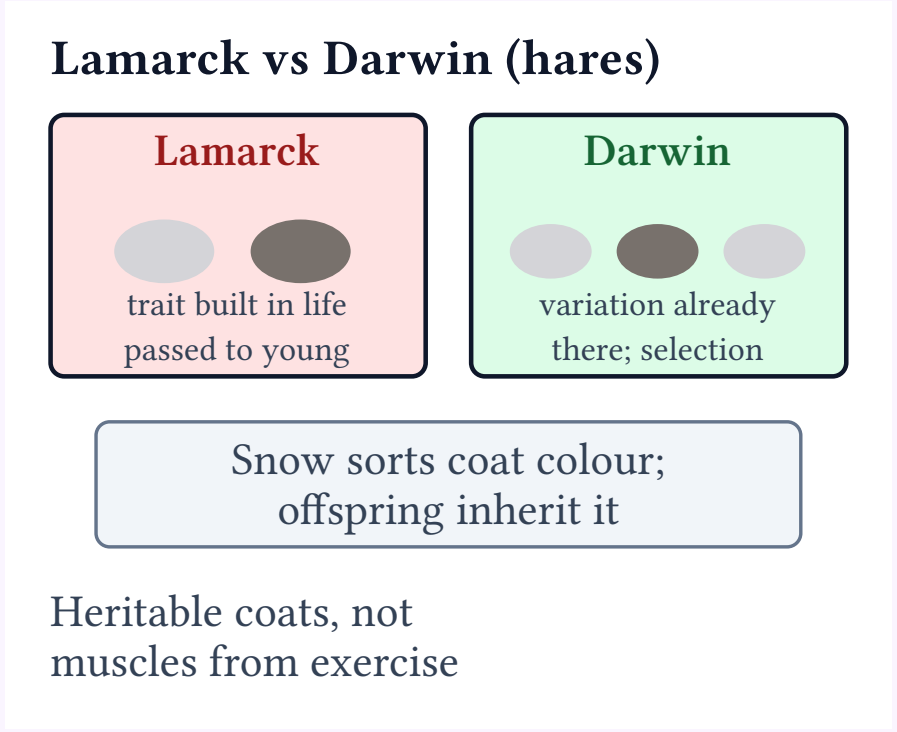
Reproduction that combines genetic material from two parents, so offspring differ.

acquired trait

A feature gained during one lifetime, such as a muscle built by exercise.

Lamarck’s idea and Darwin’s explanation

- Lamarck said a trait built during life is passed to the young.
- Darwin said heritable variation is already present, and some individuals leave more young.
- The hare example sorts coats that the young can inherit.



Measuring inherited variation

- Pick one trait you can measure on many individuals of one species.
- Say how you will know the differences are worth graphing.

Explanations for hare colour

- Point to the coat the young hares can inherit.
- Leave the exercise story on the acquired-trait side.



Sorting and sources

- Explain the hare coats with natural selection.
- Name mutation and sexual reproduction as sources of heritable differences.

The long record of this sorting

- Fossils, limbs, embryos, and DNA are the next evidence.
- Speciation is what this sorting can do when populations are split.

Image credits

Colin Canterbury/USFWS, Snowshoe hare transitioning, public domain