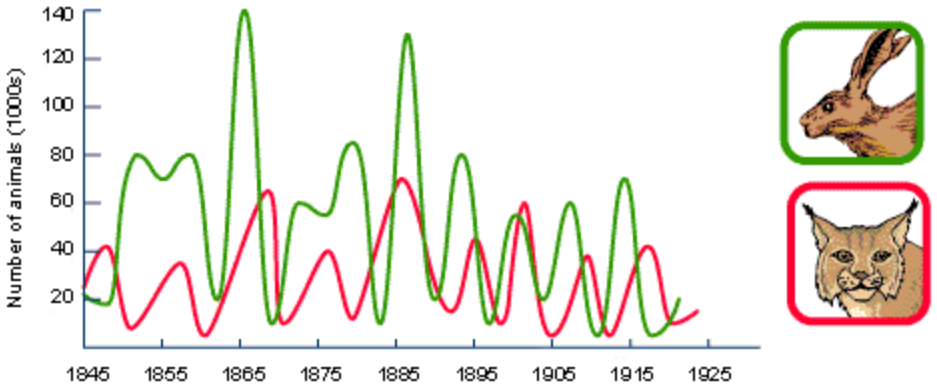
1. Predator Prey Relationships

Learning Objectives

- Be able to describe the relationship between predators and their prey.

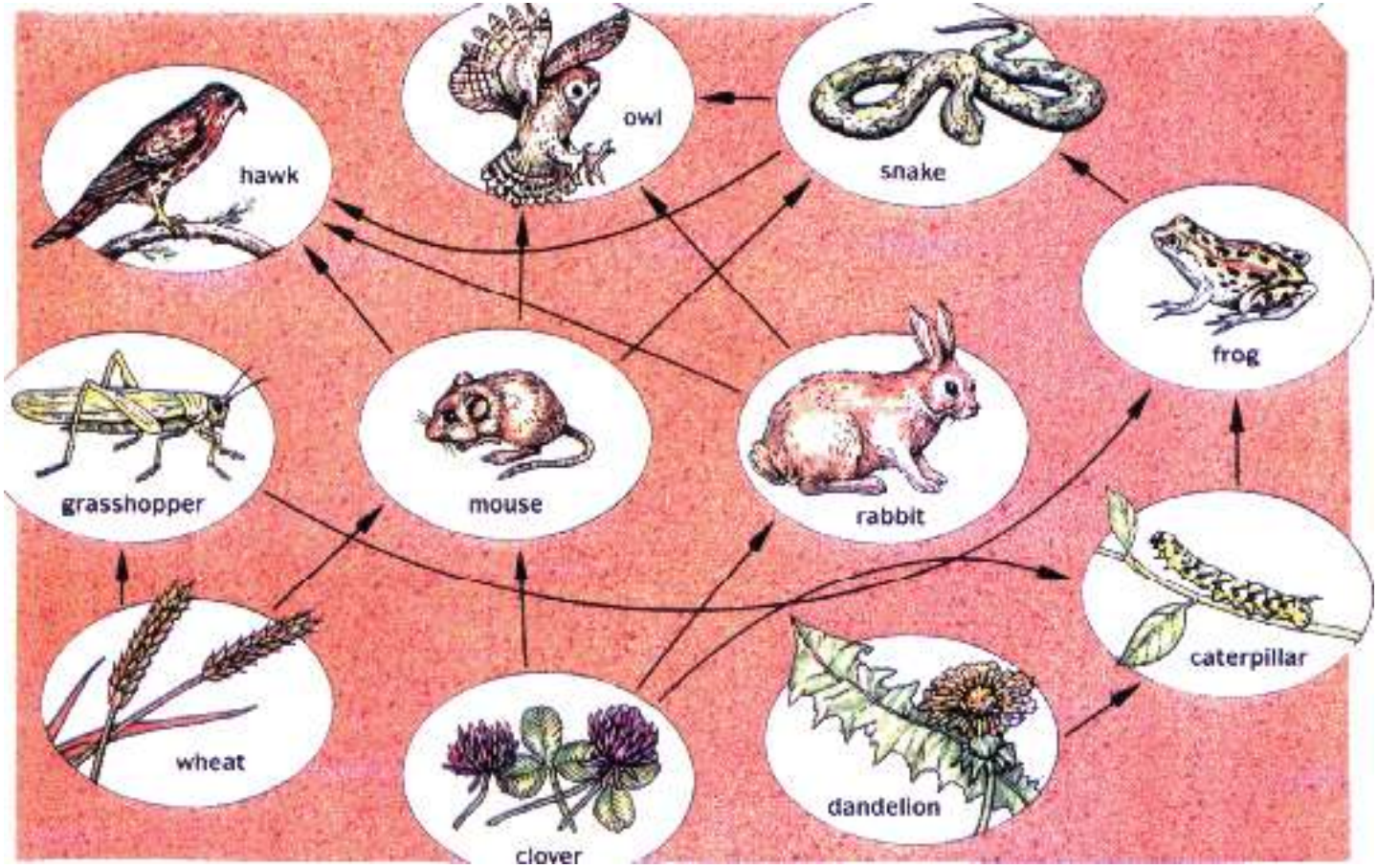
- Be able to explain the shape of a predator – prey graph.



2. Food web - Interdependence

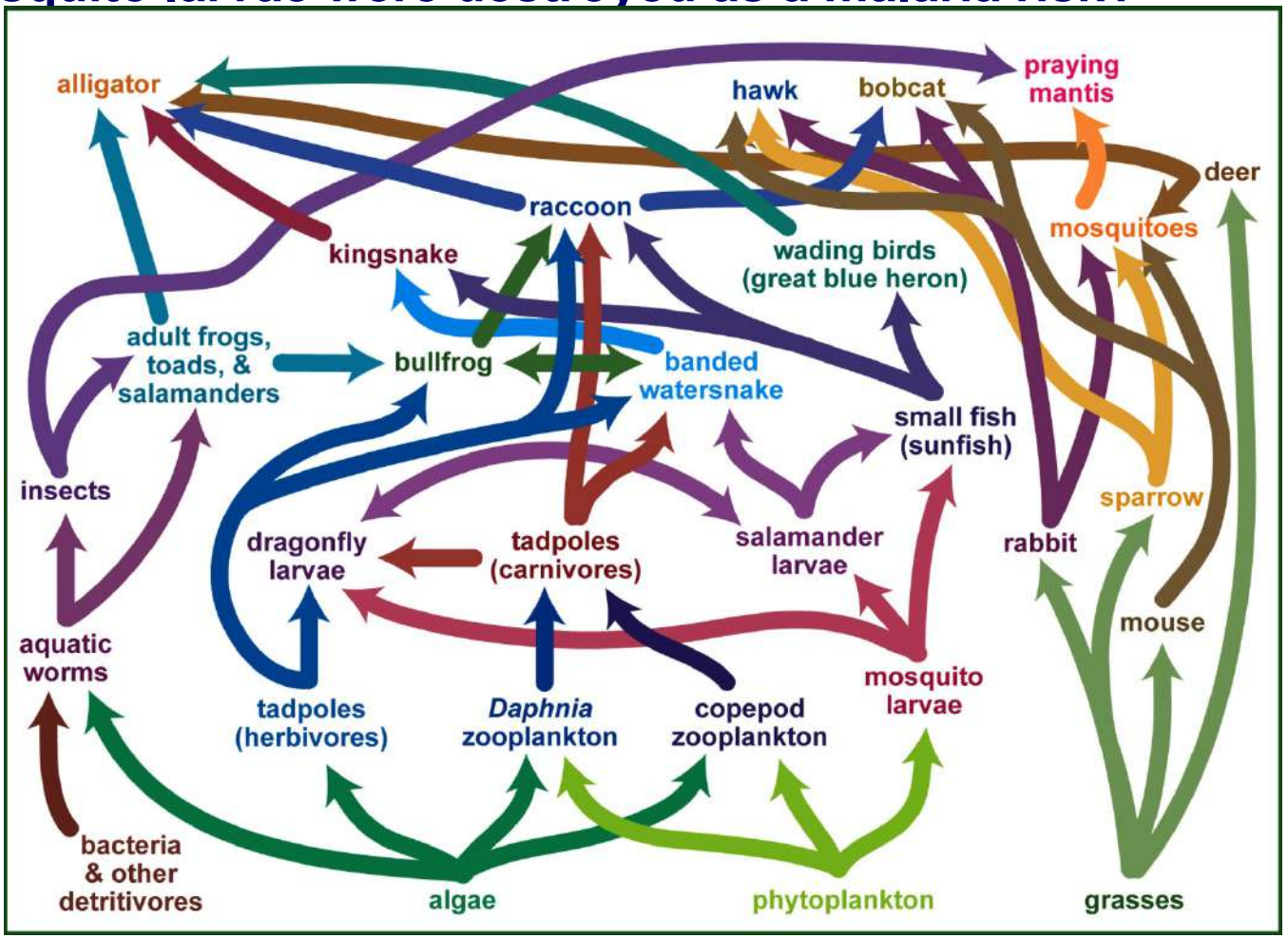
Starter

- **If the mouse is considered a pest and baited, find as many effects on the food web as you can, in 3 minutes.**



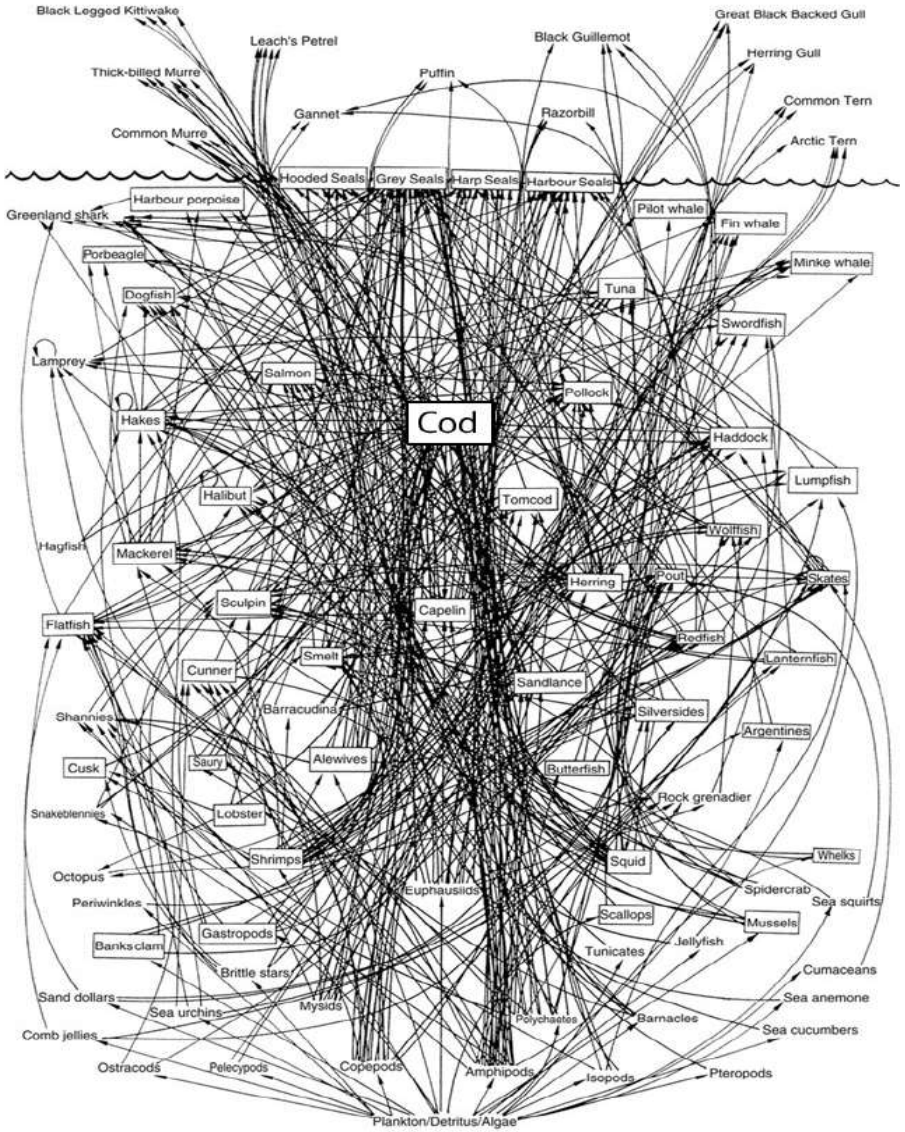
3. Food web – Interdependence

- … and that was a simplified food web. Imagine the interactions in a less simplified web. Do you think the bobcat would be affected if the mosquito larvae were destroyed as a malaria risk?



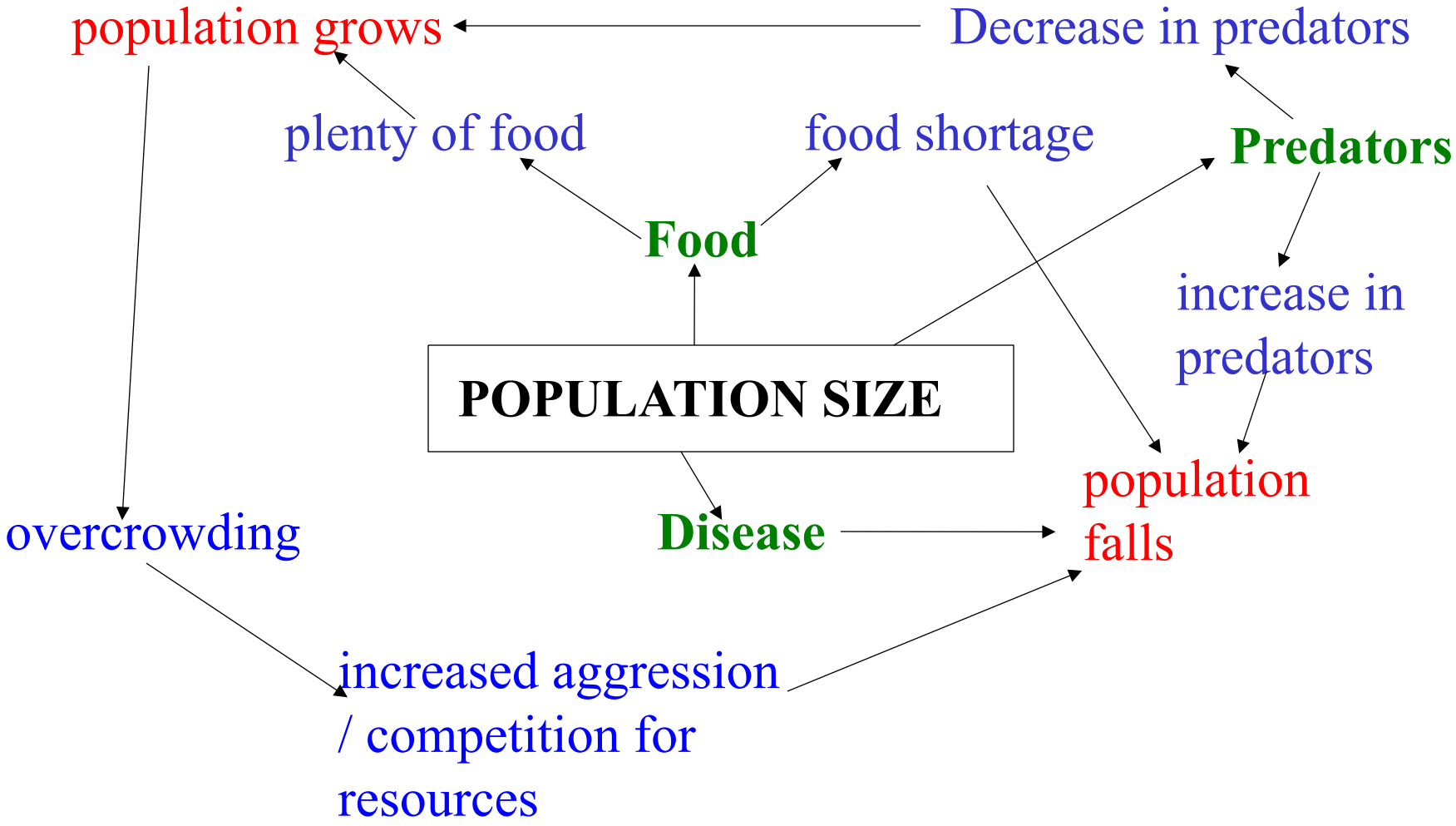
4. Food web - Interdependence

- … or even a more complete web again.



5. Population Size

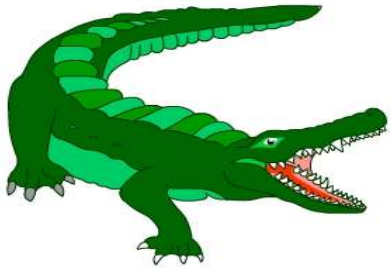
To do: Draw a concept map of what effects the size of a population.

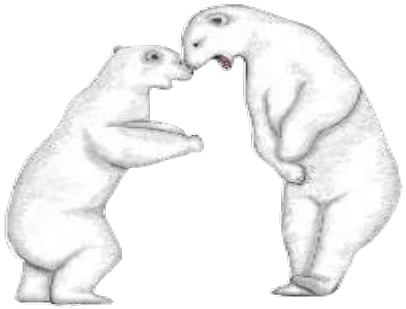


6. Animals that eat other animals

- Populations of animals are often limited by the amount of food.
- What are animals that eat other animals called?

predators





- What are the animals that predators eat called?

prey

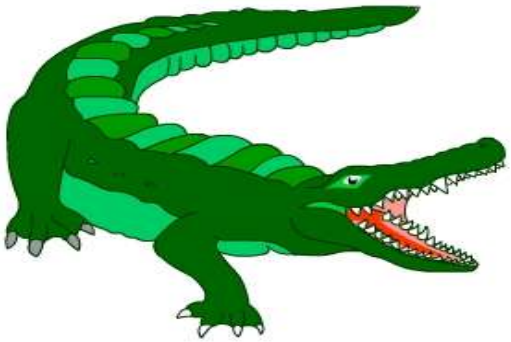
To do: Define the words Predator and Prey and give an example of each.

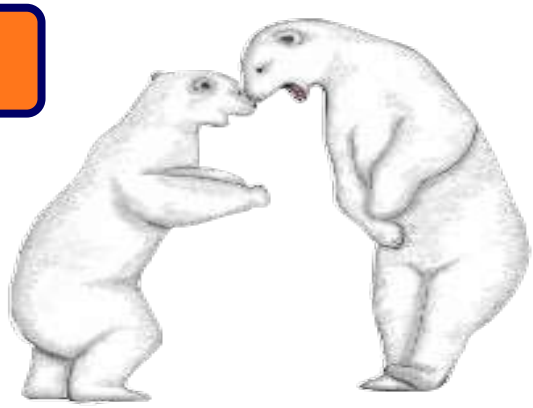
7. Predator and prey adaptations

- How are predators and prey adapted to survive?

  Predators are adapted to **catching** and **consuming** their prey.

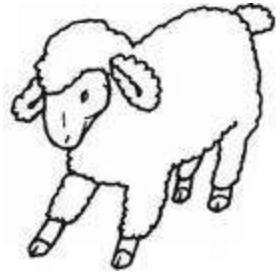
predators





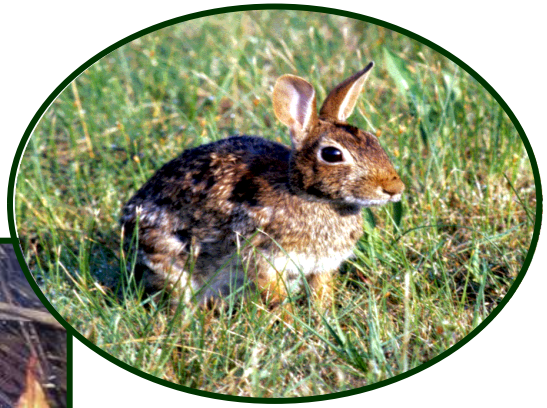
- **Prey** have adaptations to **detect** and **prevent being eaten by** predators.

prey



8. Prey Adaptations – General

Prey have adaptations to **detect** and **prevent being eaten by** predators.



speed & keen senses

venomous coral snake mimicry

scarlet kingsnake

camouflage

warning colors & patterns

9. Predator Adaptations – General

Predators have adaptations to catch and consume their prey.

birds of prey have keen eyesight and sharp beaks and talons

camouflage allows predators to blend in with their surroundings

venomous snakes have poisonous venom to subdue their prey

treefrogs have special pads on their feet so they can cling to vertical surfaces

kingsnakes are immune to the venom of venomous snakes

10. Can you find the camouflaged predators?

Some predator and prey adaptations are the same.

11. Predator & Prey adaptations - Eyes

- The eyes of predators face forwards. This gives them good depth perception allowing them to judge distances well. Can focus on a single point.




- The eyes of prey are located on the side of the head. This allows them to see to the side and rear while eating, without moving their head. Some prey have almost 360° vision.



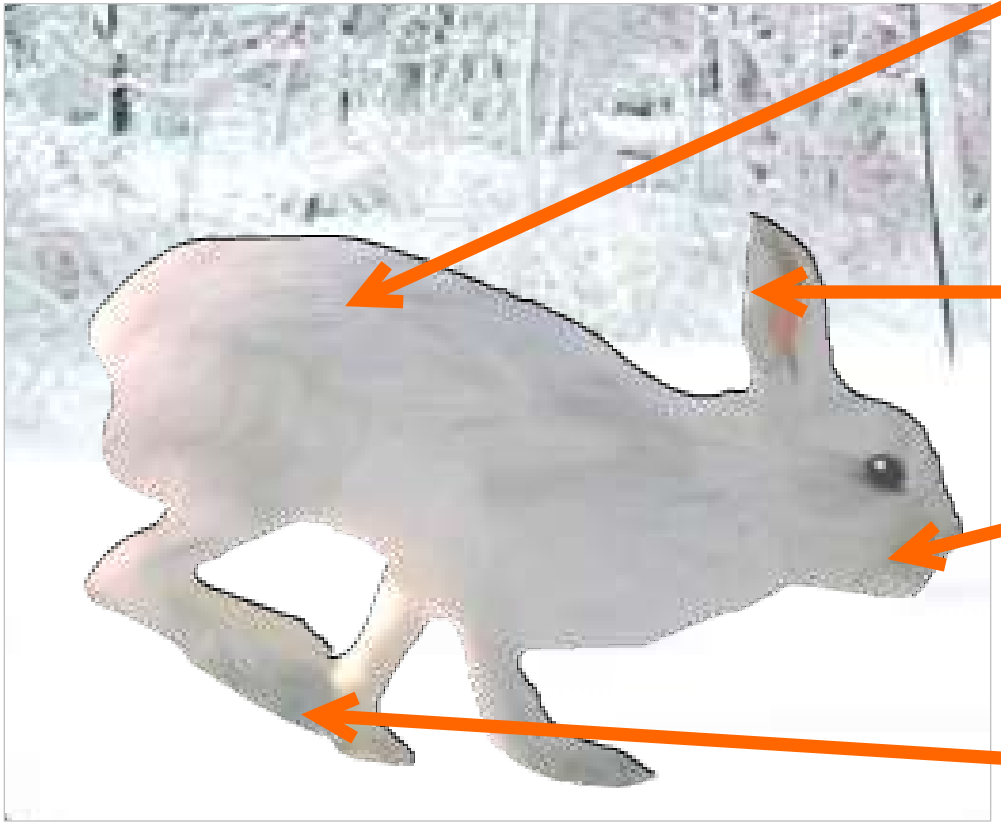


12. The Lynx and the Snowshoe hare

- This is the most common example of the predator prey relationship.

13. Prey Adaptations – Snowshoe Hare

- The **snowshoe hare** lives in northern parts of North America. How is it adapted to the cold and to avoid being eaten by predators, such as **lynxes**?



Coat changes colour with the seasons from greyish-brown in summer to white in midwinter.

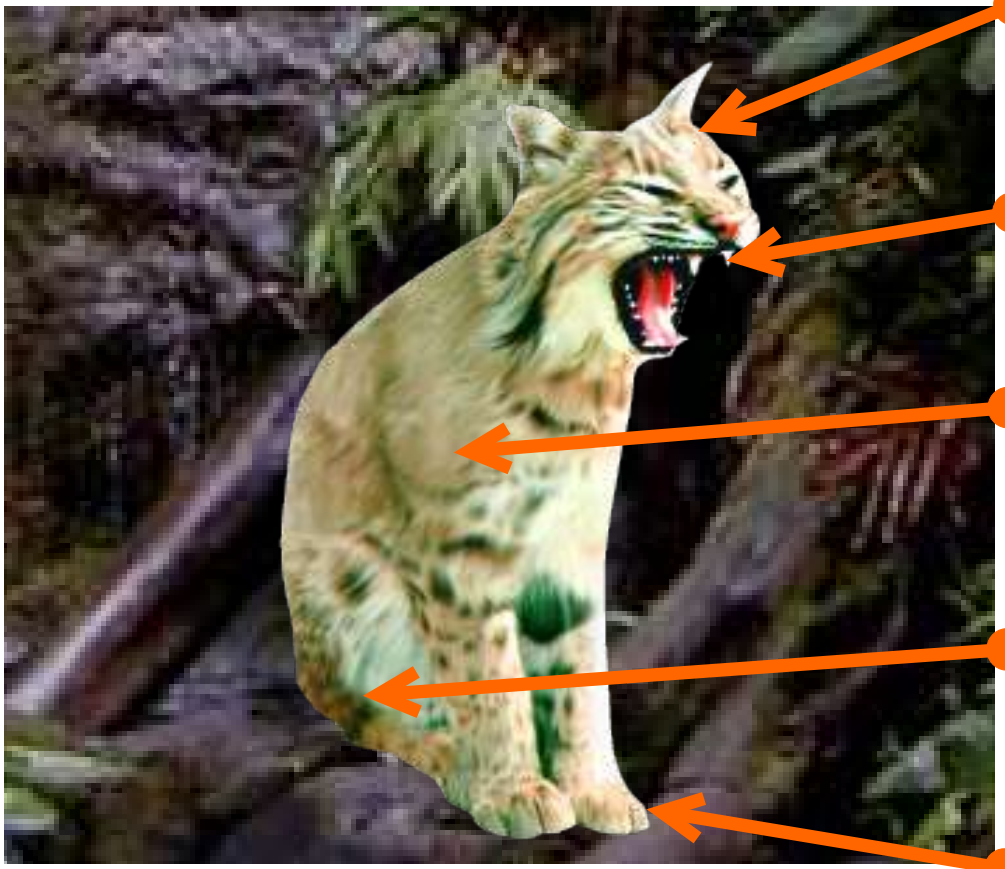
Large ears help to detect predators.

Strong teeth are able to chew bark and twigs.

Large back feet spread out to act as snow shoes. Fur on the soles also protects from the cold.

14. Predator adaptations – the lynx

- **Lynxes** are adapted to life in a cold climate. How are these predators adapted for catching the **snowshoe hares** that are their main prey?



Excellent eyesight and hearing for detecting prey.

Very sharp teeth – prey watch out!

Thick furry coat protects from the cold.

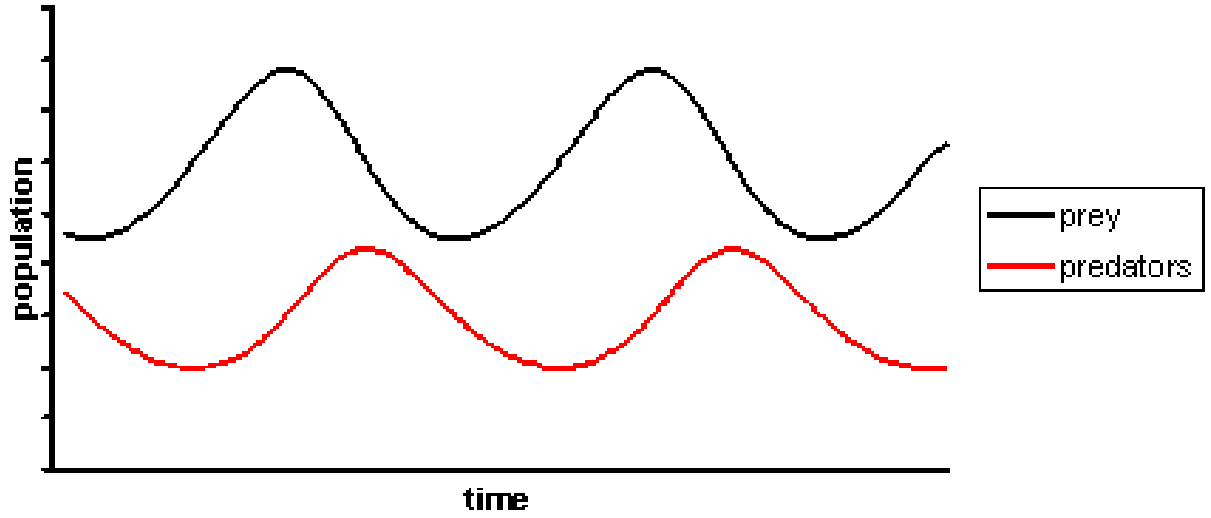
Very strong hind leg muscles are capable of a pounce 6.5 metres long!

Extra large paws act as snow shoes on soft, deep snow.

15. Predator–prey graph

These graphs are a common exam question.
You should know that:

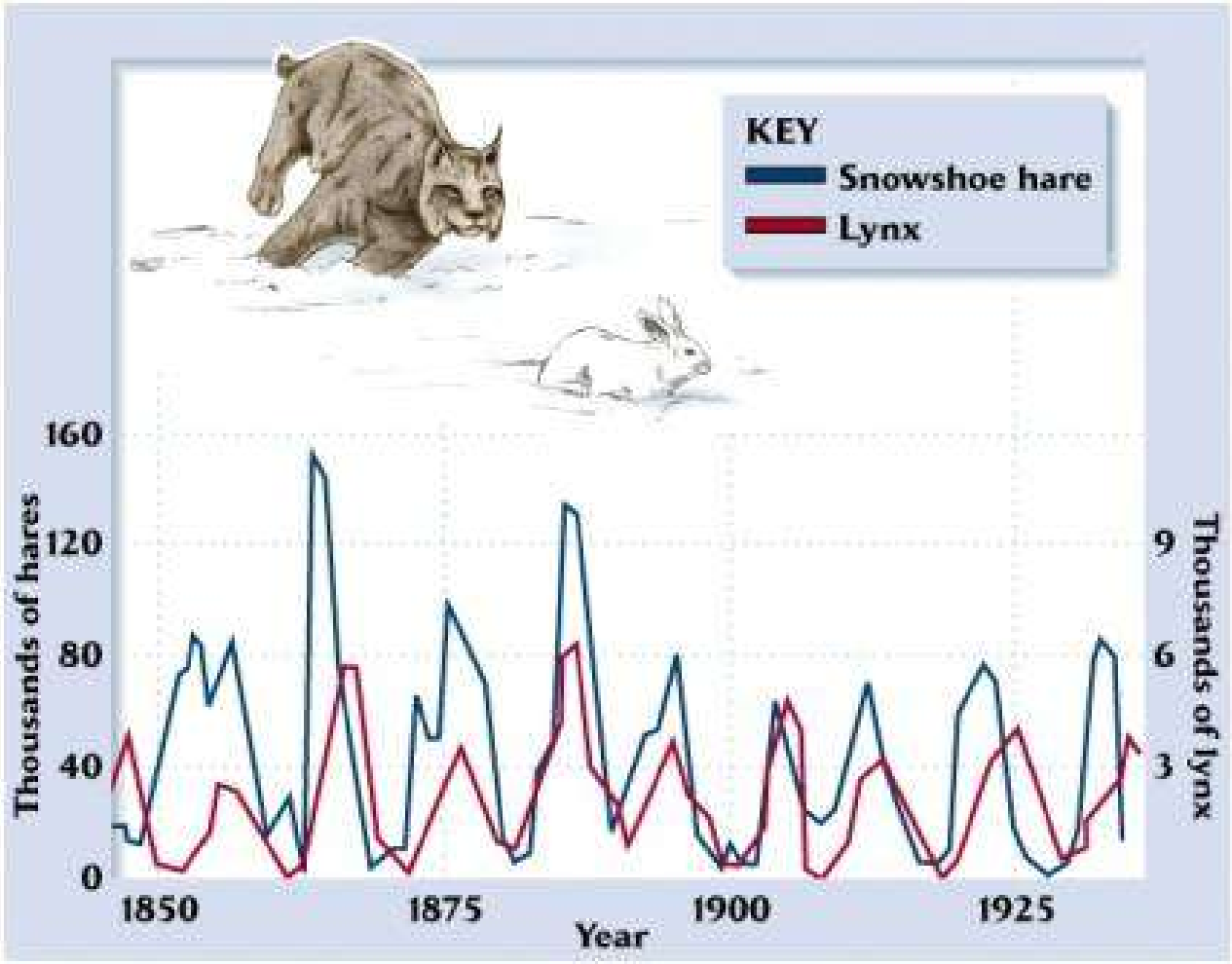
- There are always more prey than predators.
- The prey always increases before the predators do.



To do: Write down how you could tell which line is the predator and which is the prey on a graph. Explain why the predator increases after the prey.

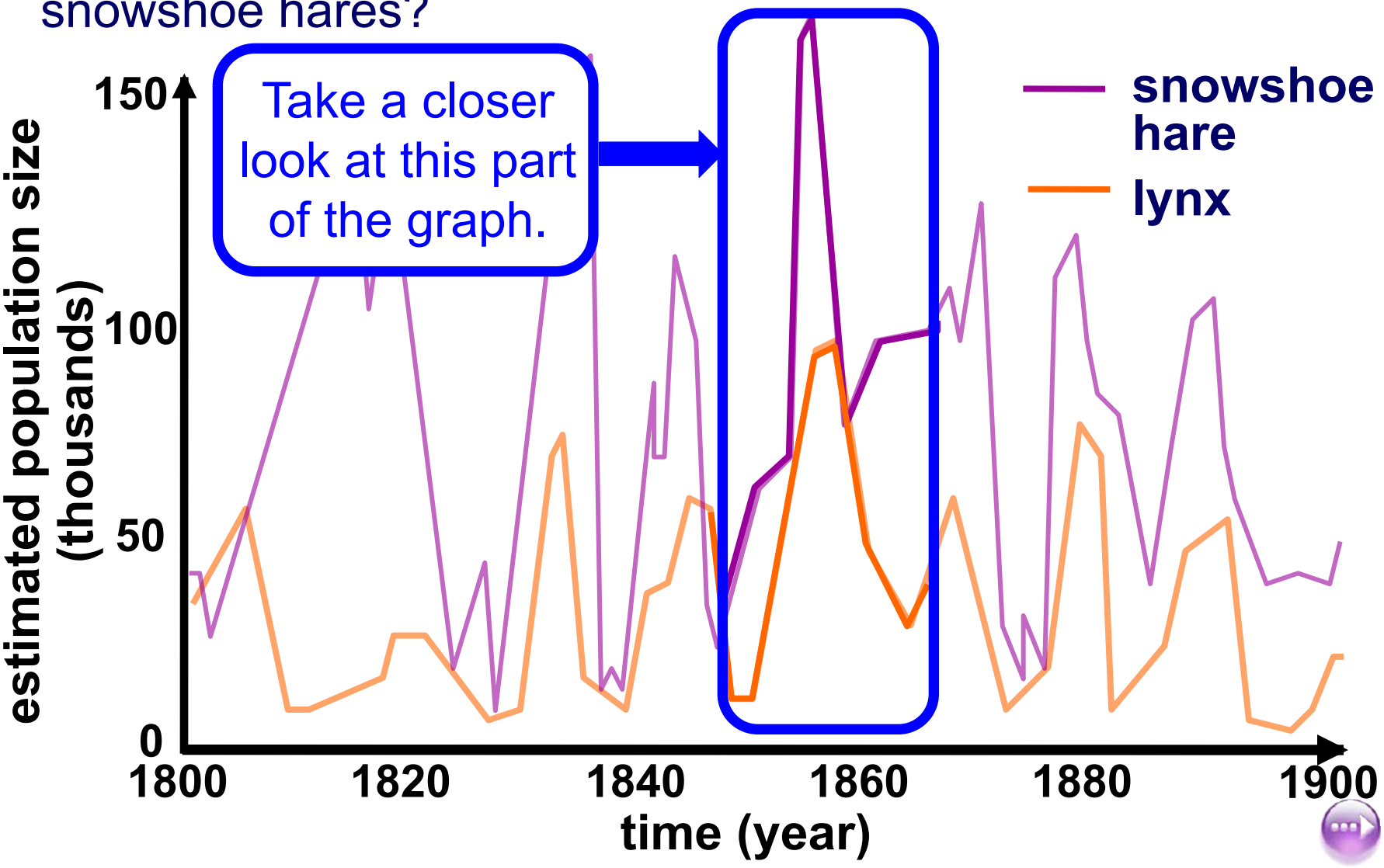
16. Predator–prey graph

- This population data comes from fur trapping records. How are the populations linked?



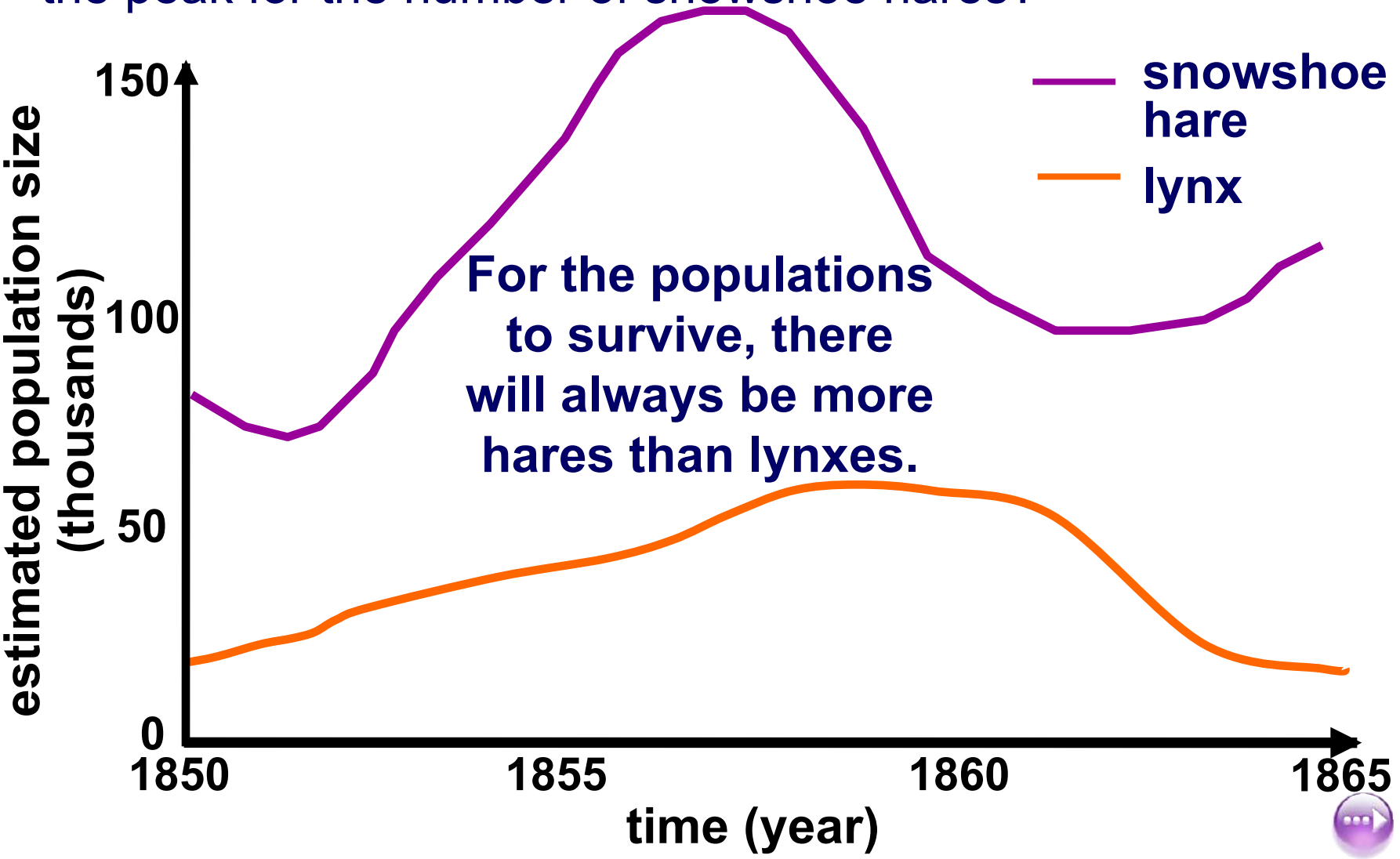
17. Predator–prey graph

- How does the lynx population depend on the number of snowshoe hares?



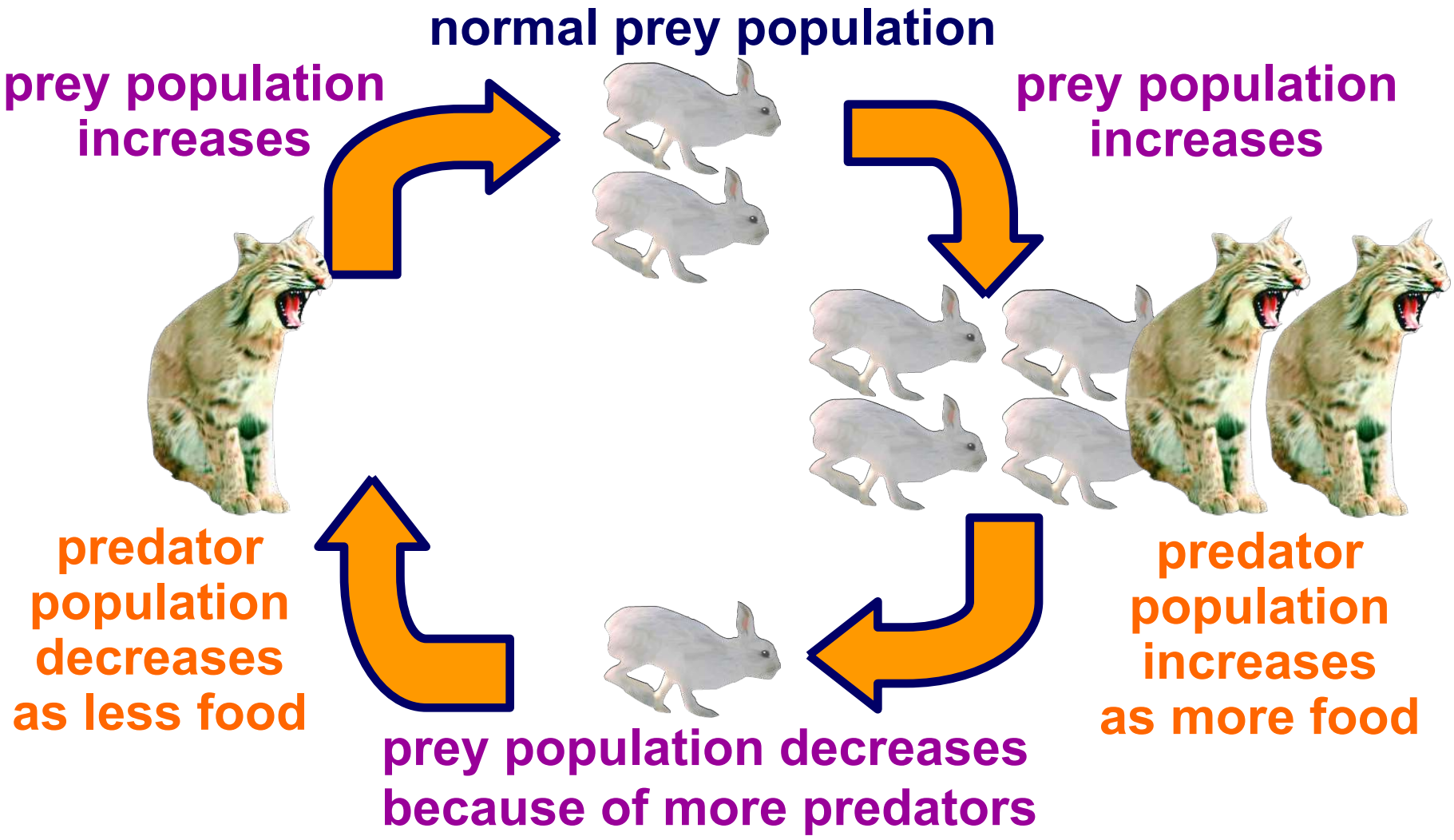
18. Predator–prey graph section

- Why does the peak for the lynx population always come after the peak for the number of snowshoe hares?



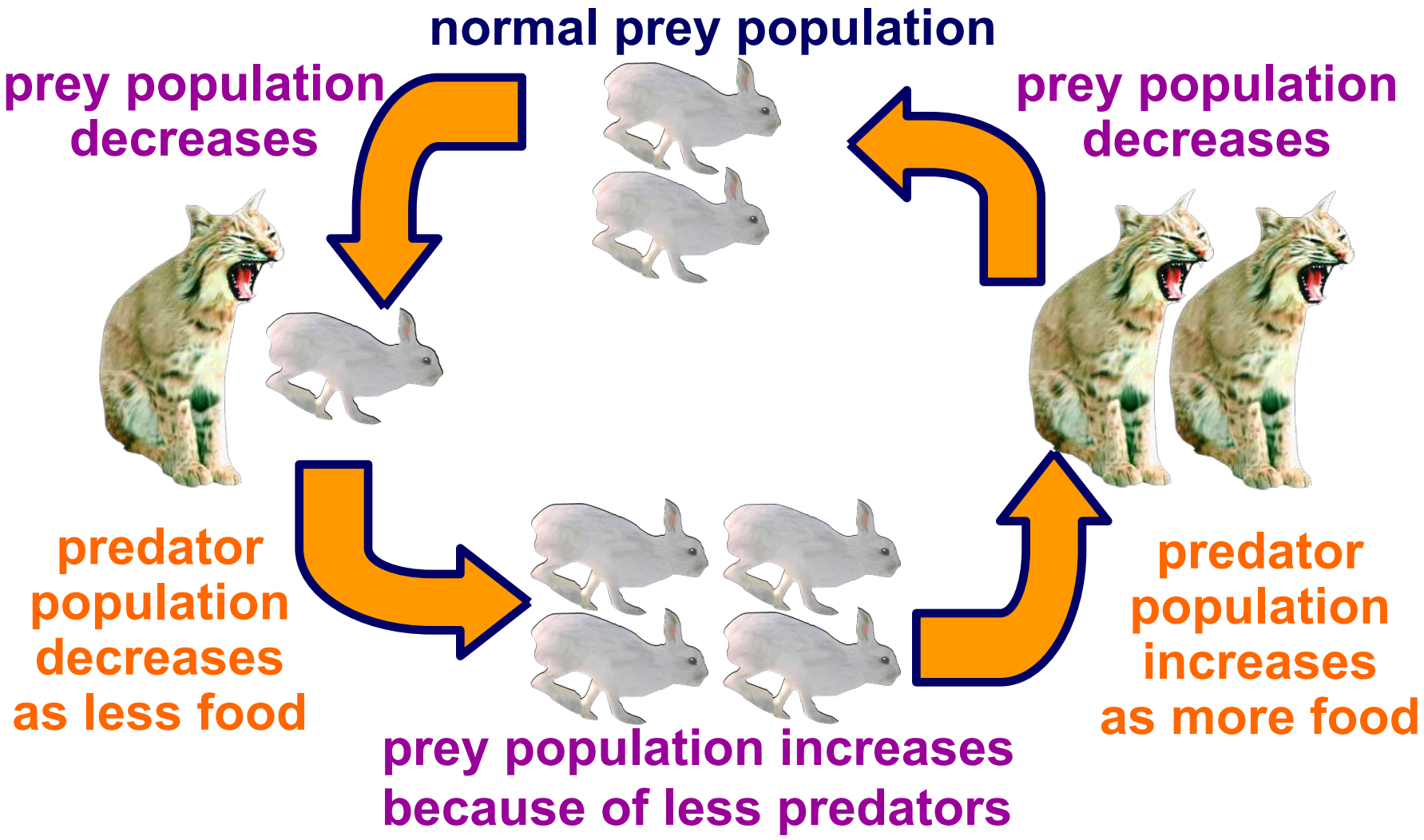
19. Predator–prey cycle

- Predator and prey population sizes follow a cycle. What happens if the prey population **increases**?



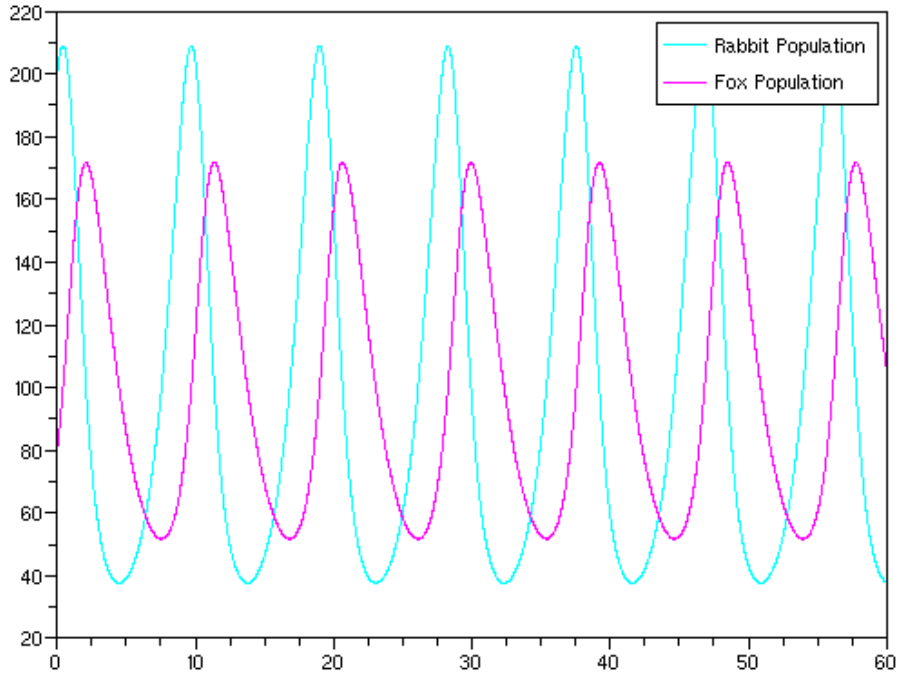
20. Predator–prey cycle

- Predator and prey population sizes follow a cycle. What happens if the prey population **decreases**?



21. Plenary

- The population of any species is normally limited by the amount of food available.
- If the population of the prey increases, then so will the population of the predators.
- However, as the population of predators increases, the number of prey decreases.



Eg.
More grass means more rabbits.
More rabbits means more foxes
But more foxes means less rabbits.
Eventually, less rabbits will mean less foxes again.