B2: INTERDEPENDENCE (2)

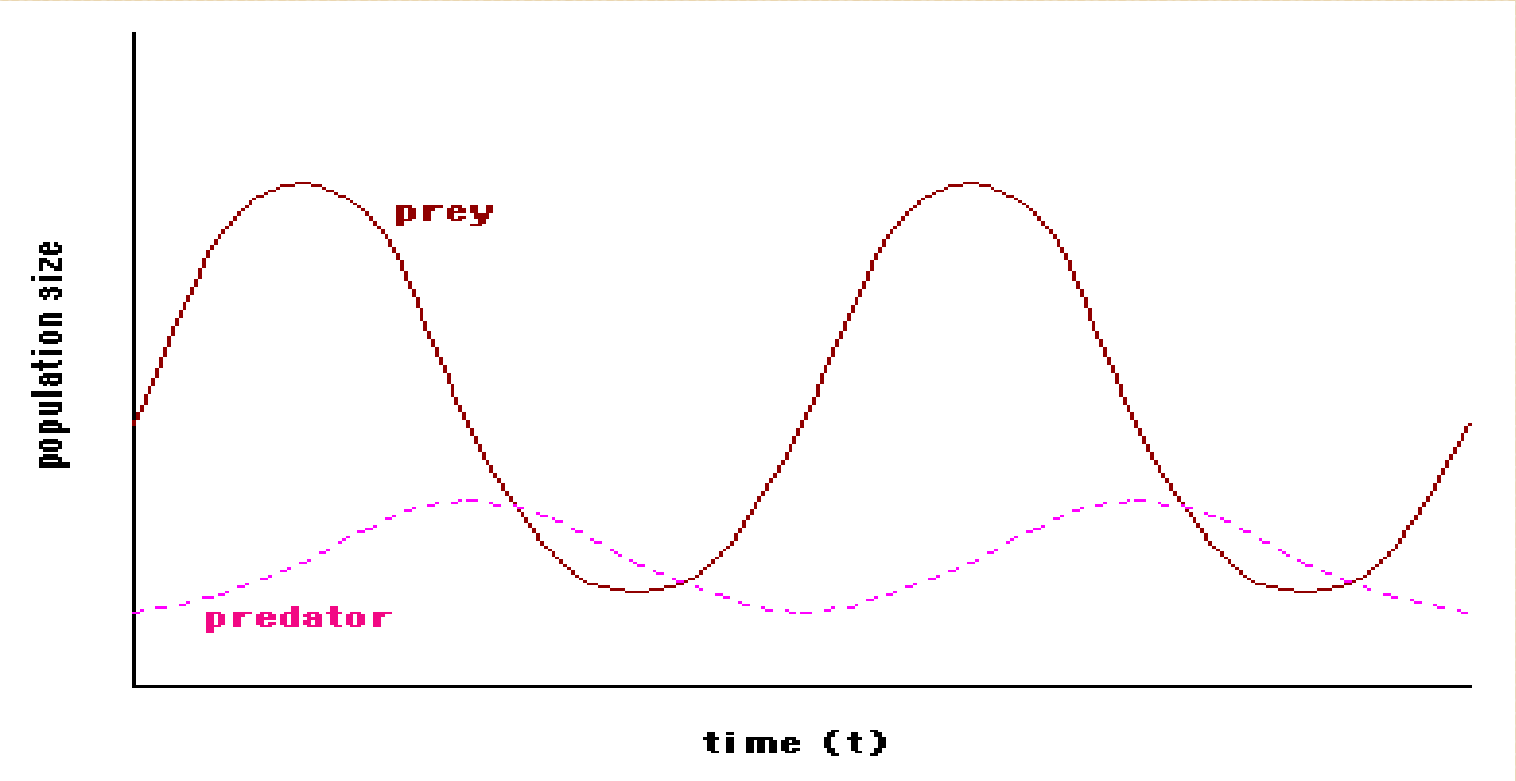
Learning Objectives

- Know the pattern of a predator-prey graph
- Know how parasitism and mutualism are examples of interdependence
- Understand the out-of-phase fluctuation of a predator-prey graph

Success Criteria

- You can draw and describe a predator-prey graph
- You can answer questions on mutualism
- You can answer questions on fluctuations in the predator-prey graph

TO START: Describe the relationship between predator and prey in 3 sentences



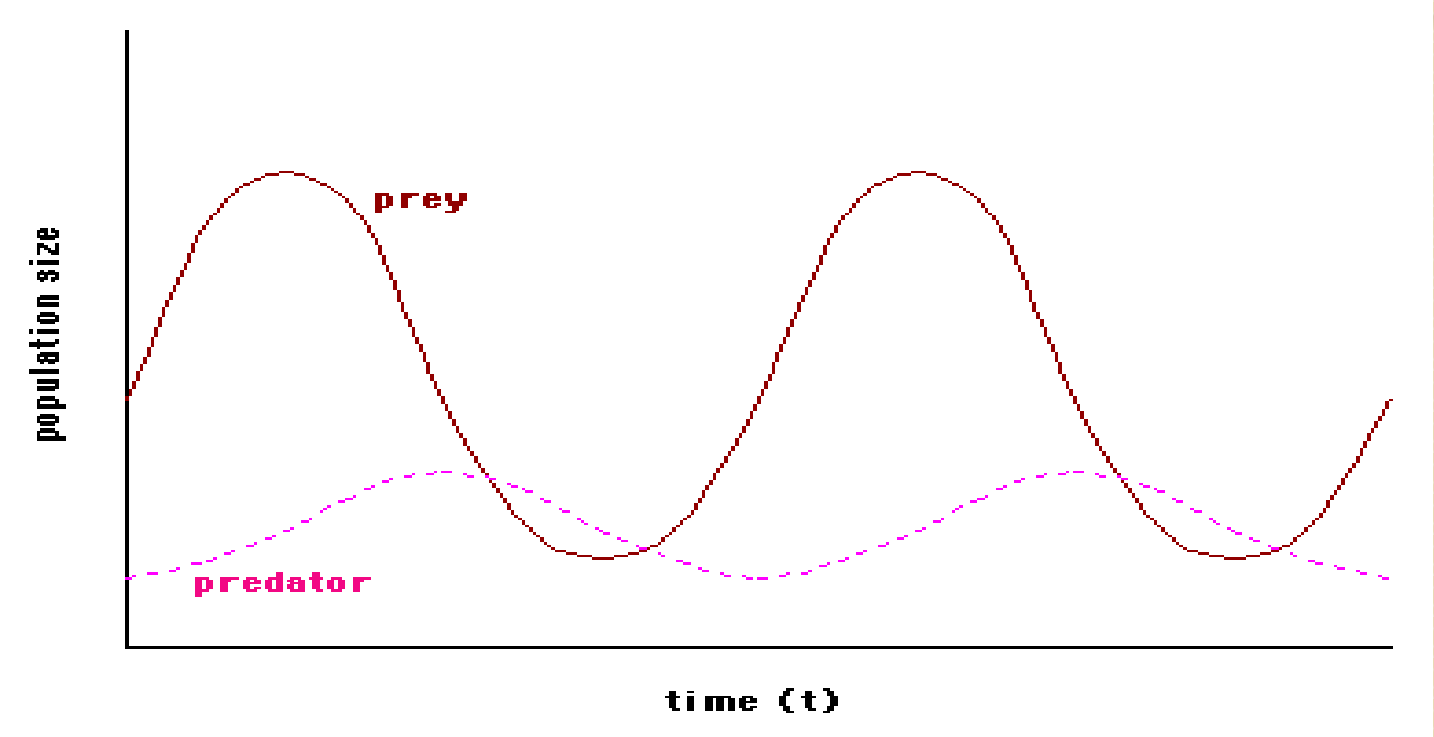
Foundation Level – use these sentences to help you and identify any that are false

- Overall the population size of both predator and prey are cyclical
- The predator population generally tracks the peaks in prey population
- The prey population generally tracks the peaks in predator population
- Most of the time the size prey population is greater than the predator population

CONSIDER THIS EXAMPLE

- Badgers eat shrews – the badger is the predator and the shrew is the prey
- When there are more shrews, the badgers have more food therefore can raise more young
- The badger population therefore increases
- The next year there are now more badgers which eat more shrews therefore the shrew population decreases

COPY THE PREDATOR-PREY CYCLE GRAPH INTO YOUR BOOKS AND ANSWER THE QUESTIONS



Lettuce >> slugs >> hedgehogs

1) Why might the slug population increase in the winter?
2) From the previous example, explain what might happen to the shrew population if there was an increase in badgers?
3) Explain the pattern of the above graph (Higher level)

KEY POINT FOR THE FLUCTUATION PATTERN

- The predator population can only rise if there is enough prey to feed their young
- This is why the predator population graph lags behind the prey population graph

WHAT IS SYMBIOSIS?

Symbiosis occurs when two organisms of different species live together in a very close relationship.

There are different types of symbiosis depending on how each organism benefits or not from the relationship. The two most well-known types are:

- **parasitism** – one species benefits at the expense of the other species
- **mutualism** – both species benefit.

Can you think of any examples of these kinds of symbiosis?

WHAT IS PARASITISM?

Parasitism occurs when an organism (the **parasite**) lives on or in another organism (the **host**) at the expense of the host.

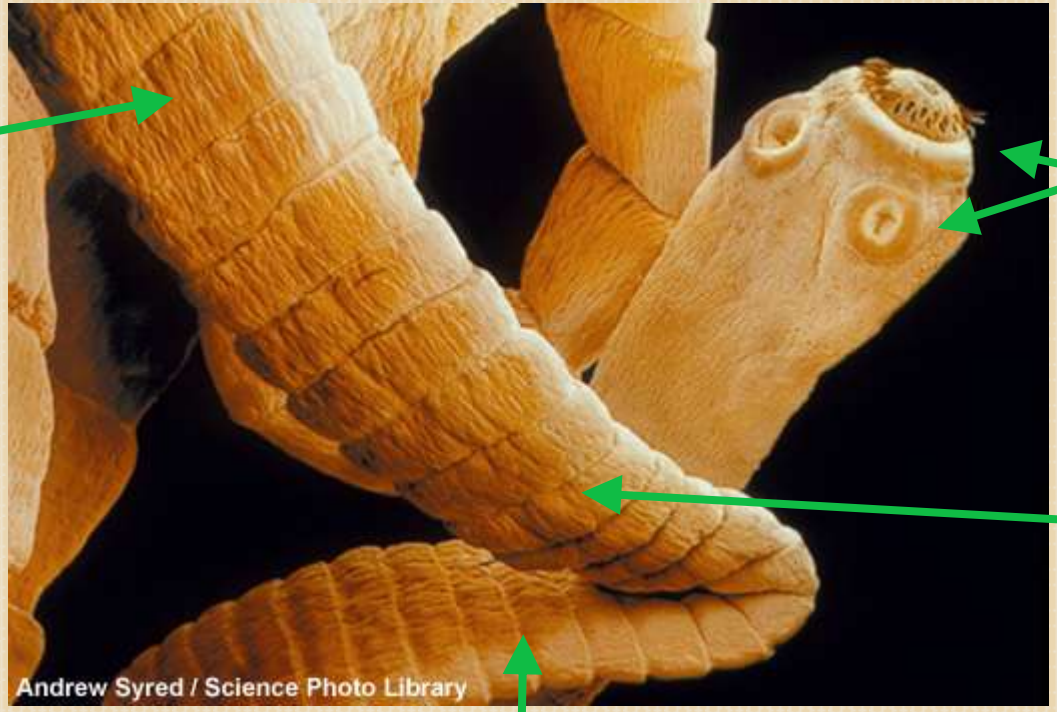
For example, ticks and fleas are tiny insects that live on larger animals, such as dogs and other mammals. They feed by piercing the host's skin and drinking their blood.

This can cause illness and, if the insect carries pathogens, diseases too.

ADAPTATIONS OF A TAPEWORM

Tapeworms are long, ribbon-like worms that live inside a host's gut. How are they adapted to life as a parasite?

body **covered by mucus** to protect against host's digestive juices



head has **hooks and suckers** to hold onto the gut wall

long, thin body gives large surface areas for absorbing food

no digestive system needed as food has already been digested

MUTUALISM

- Some species are totally dependent on another species for their abundance and distribution

- Example – pea plant (and other leguminous plants) is dependent on nitrogen-fixing bacteria....can you remember what nitrogen fixing bacteria do?
  - Convert nitrogen in air to nitrates for the plant
  - Bacteria is dependent on the pea plant for sugar

WATCH THE VIDEO ABOUT THE OXPECKER

- http://www.youtube.com/watch?v=jbCHI_PucnM

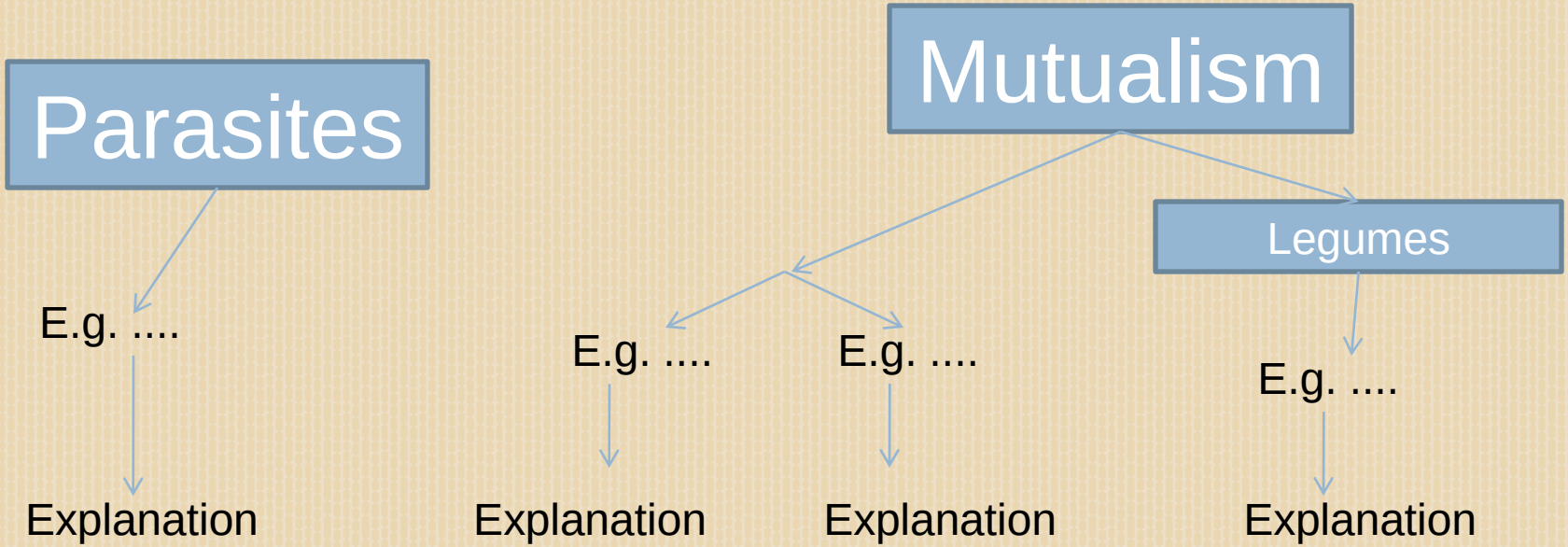
GREAT PARTNERSHIP

These two animals have a unique relationship. The Honeyguide bird calls out in order to attract the badger. It then leads the badger towards a bees nest. The badger then tears open the nest eats the honey whilst the bird is able to feast on the larvae.

Sharksuckers attach themselves to the skin of sharks to feed on parasites on the skin. The sharksucker gets food and the shark is kept clean and healthy.

TASK

- Draw the following and fill in an example and explanation.



If you finish...

1. Describe the mutualistic relationship between a flower and a bee.

2. Describe the parasitic relationship between a human and a tapeworm.

PLENARY

- Working with the person next to you create an imaginary pair of animals/plants which depend on each other in some way.
- Write a short description describing the two animals/plants involved and explain the relationship between them (is one harmed or do they both benefit?)