## Interspecific competition work sheet:

1. Reds now confined to coniferous forest and are absent from much of home range / been excluded. Grey is more adapted to the habitat than the reds and therefore is naturally selected for whereas the reds are selected against and population declines.
2. The region of overlap is larger in 1940 than in 1984 so another factor had contributed to the red squirrel decline.
3. Plant and preserve more coniferous forest to minimise human involvement in the struggle.All other methods of improving red population numbers involve managed systems e.g. grey relocation or destruction.
4. Grey squirrel culling (killing), grey relocation, red relocation to strengthen numbers and reintroduce to suitable habitat, feeding programme for reds only, treatment / inoculation for squirrel pox virus
5. a) Upper zone
b) Chthalamus are pushed up by Balanus - this is shown by their moving doiwn shore when Balanus are removed. Balanus are not able to survive in the upper shore but competitively exclude Chthalamus from the middle and lower shore by crowding them poiut.
6. Cane toad
a) No natural predators
b) Voracious appetite and wide range of prey species

## Predator - prey interactions worksheet answers

1 a) 1-3 years
b) The k-selected lynx population requires time to reproduce, when provided with the new resources. They have a slow generation time and longer life cycle, with offspring taking longer to reach reproductive age than a hare would.
2. The hare is their principal prey item

3 a) If palatable food becomes less available, the birth rate would slow and the death rate in crease
b) They would be less resilient to predator pressure. A decrease in food would mean less reproduction and a less rapid recovery. Although predator numbers would also be affected and would decrease as prey population declined.

A population is a group of organisms of the same species occupying a particular habitat at the same time
) The graphs below show how each of the two populations ( $A$ and $B$ in graph (i), $C$ and $D$ in graph (ii)) grow and interact together.
In each case, state the nature of the interaction and explain fully the changes in the numbers of each population shown in the graphs.
(i)


## Predator-prey interaction

As prey pop. increases and establishes, the predator pop. does after a lag, then follows with a decline also after the prey species pop. declines


Interaction: . Interspecific competition

## Explanation:

Both populations begin at the same size. Population $C$ is more successful and pop grows at a higher rate than Pop. D. As time increases, Pop. C are able to fully outcompete pop. D which goes into rapid decline, leading to extinction
(a) List three differences between $r$ - and $K$-strategists.

1.     - e.g. Length of life cycle...
-Generation time...
2.     - Numbers of offspring...
3. Population density...
4.     - Competitive ability...

Two prob.

- habitat destruction, e.g. loss of rainforest and removal of hedgerows
- decline in animal populations such as the giant panda, Siberian tiger and blue whale
(b) Outline how both of these issues could adversely affect a K-strategist species.


## K-strategists need specialised, and stable

 environments to surviveThey cannot tolerate a reduction in viable population size i.e. below a critical level from which recovery is possible
(a) Explain what is meant by the term "population".

## As before...

The diagram below represents four processes which influence the size of a population.

(b) Using the letters, B, I, D and E, write a mathematical relationship which represents a population which is

- stationary $B+I=D+E$
- increasing in size $B+I>D+E$
(c) Give three differences between $r$ - and $K$-selected pop NeXt slide...
terms of the processes presented in the diagram above
$r=$ High rate of births compared to $K$ $r=$ High rate of dispersal i.e. I and E, compare to K
$r=$ High death rate following a bus $\dagger$ scenario-K species populations exhibit a constant birth rate
$r=$ Generally larger population sizes compared to K

