

**To be opened on receipt****GCSE TWENTY FIRST CENTURY SCIENCE  
BIOLOGY A****A223/01** Unit 3: Ideas in Context plus B7 (Foundation Tier)**RESOURCE BOOKLET****JUNE 2012****INSTRUCTIONS TO CANDIDATES**

- This booklet contains the article required to answer question 1.
- Take this article away and read it through carefully.
- Spend some time looking up any technical terms or phrases you do not understand.
- For the examination on **Tuesday 12 June 2012** you will be given a fresh copy of this article, together with a question paper.
- You will **not** be able to take your original copy into the examination with you.

**INFORMATION FOR CANDIDATES**

- This document consists of **4** pages. Any blank pages are indicated.

## Alien Invaders

Foreign species of plants and animals are being found in Europe.

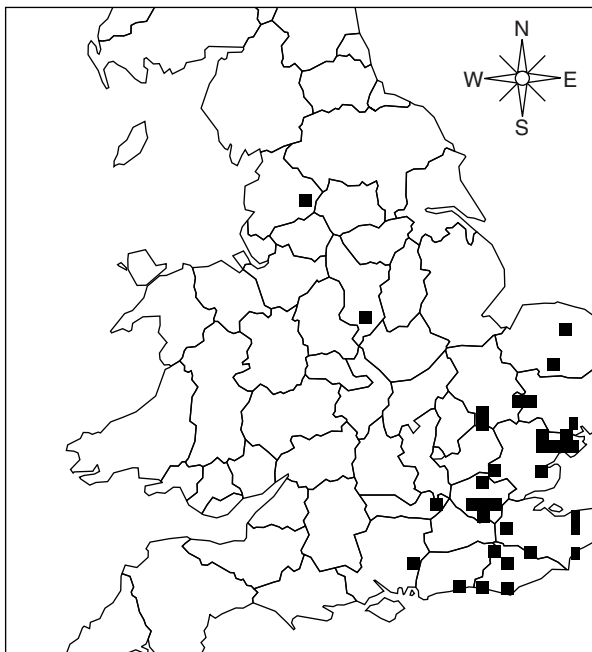
These are invasive species. They have been introduced either deliberately or by accident into an environment where they are not normally found. One such example is the ruddy duck. The ruddy duck is just one of many alien species that have been introduced into Europe that are threatening biodiversity.



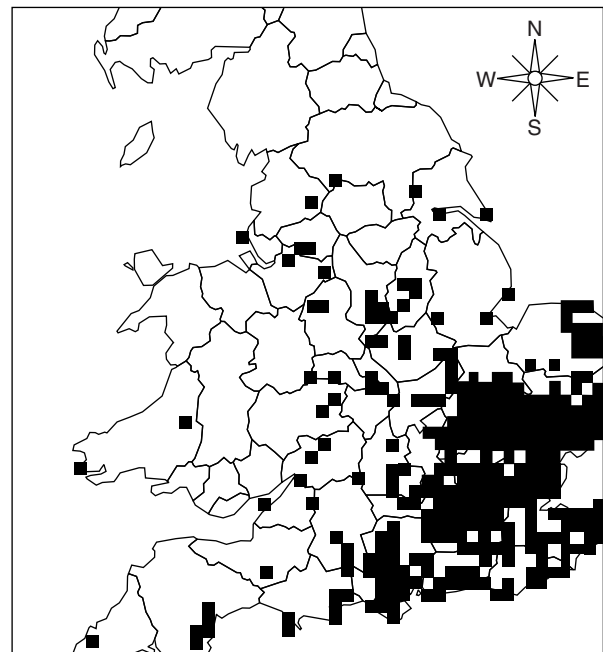
Thirty years ago, 600 alien invasive species were identified in Europe. The number of invasive species has increased by 75% since then. The overall effect of this has been to reduce biodiversity.

Some species have been introduced intentionally. The ruddy duck was introduced into Europe as an ornamental species. It is now one of the worst invaders. This is because it has a very aggressive courting behaviour and it interbreeds with endangered native duck species.

Another invader is the harlequin ladybird. It entered the UK in the summer of 2004 and rapidly spread across the country. Because it is bigger and more aggressive than the native ladybirds, it soon began to replace them.



reports of harlequin ladybirds in 2004



reports of harlequin ladybirds in 2006

It is not just biodiversity that is being affected. Human health is also at risk. The Asian tiger mosquito carries a virus which causes illness in humans. It was originally native to South East Asia but in the last twenty years it has invaded many countries throughout the world. Scientists think that this is because of increasing international travel and transport of goods around the world. This mosquito has now invaded Europe. It can cause a severe illness in humans consisting of fever and painful joints. The symptoms can last for many years.



It has been estimated that invasive species cause more than £12 billion worth of damage in Europe every year. Scientists are demanding Europe-wide legislation to protect native species from these alien invaders.

Scientists are considering using biological control to reduce the numbers of these alien invaders. Japanese knotweed is an invader that is now growing across the UK. It replaces native plant species and can even grow through concrete. In Japan the plant is common but does not grow out of control like it does in the UK. Scientists are releasing an insect from Japan that feeds on Japanese knotweed. The insect does not eat any other plants and only feeds on knotweed. It is hoped that the insect will reduce the spread of this alien invader across the UK.



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