

BADGERS AND CLIMATE CHANGE

- A STUDY OF JUST ONE ANIMAL



Badgers, perhaps more than any other animal, represent the British

countryside. Many of us have been lucky enough to experience the thrill as they cautiously emerge from their sett at dusk, and we enjoy eavesdropping on a scene played out nightly for thousands of years.

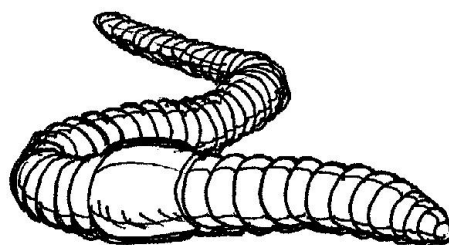
On the other hand, we know that many people blame the badger for the problem of the spread of bovine tuberculosis, (bTB).

Over the last few years, we've had some unusually long, mild autumns, warm, if stormy and wet winters and very dry summers. All of these are evidence of climate change. *(Climates do change naturally, of course, but over long periods of time. The global warming we are seeing is unnatural, and we appear to be the cause of it!)*

Badgers can tell us lots about climate change. Although badgers will eat just

about anything, they do like earthworms! They get a lot of their water from worms, as well as the food. Earthworms don't like dry soil. They dry out too easily and it irritates their skin. On damp evenings, lots of the worms come to or near the surface and wriggle around, looking for dead leaves to drag into their burrows. *(They don't come out in daylight, as sunlight paralyses them!)* If the sun beats down for days on end, the soil gets dry and the worms move down to where it is damper. The soil also becomes very hard, and, even with their huge claws, the badgers can't dig down to reach them.

Rainfall In 1995, 65% of the newly-born cubs died by October. The summer had been very long and dry, and the soil baked hard. The cubs couldn't dig enough earthworms from the ground to stay alive. They were in poor condition, so couldn't fight off the common *coccidian* infection that cubs often get. The death rate for cubs that year was very high. In 2002, March and April were very dry, just when the cubs, (born in February), are beginning to think about coming above ground. Once again, large numbers of them died. Dead newly-born cubs were found thrown out of setts. Much as we like it, long spells of dry weather are not good news for badgers!



Temperature Records show that temperature, too, affects badger numbers. Each year seems to be milder than the last, and every year the number of badgers has **INCREASED!** But how does temperature have such an effect? The key is in *mild winters*. When the average January temperature is 2.5°C, the average weight of the badgers is 8kg. When the average temperature is 6.5°C, the average weight is 10kg.



die. At the moment, this seems to be just in the badgers' favour, but, if summers carry on becoming hotter and drier.....

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The reason for this difference is that, in mild winters, when the soil is not frozen solid, badgers can still *forage* for worms at night. When the weather is colder, they can't get to the worms. They must live off the body fat they stored the previous autumn. This is even more important for the females, which might be *pregnant* during the winter months. If they have plenty of food, they are much more likely to produce healthy cubs and be able to feed them well. If winters are short and mild, so much the better, as more cubs are born. (Of course, if the following summer is dry, many more will die!)

It also seems that, in good years, more males are born, but in poor years, more cubs are females. This might also happen in other species, but no one is quite sure why.

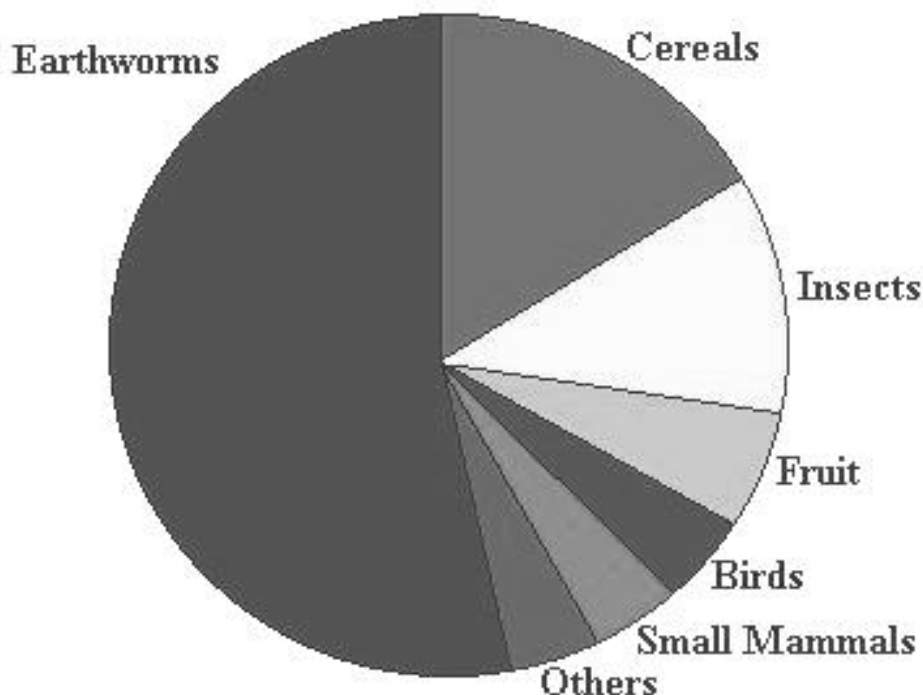
So: Mild winters lead to increasing population. In dry summers, more badgers

Tasks

Answer these questions:

1. What is a badger's home called?
2. Look at the pie chart. a) About what percentage of a badger's food are earthworms?

Draw a graph to show the trend for the



b) What else to they like to eat?

3. Why don't worms like to be out in the sunshine?
4. How does hot weather make things hard for badgers?
5. In 1995, 65% of the newly-born cubs died by October. Draw a pie chart to show this. Think about it: a) Draw a circle. Draw a line from the circumference to the centre.
b) Work out the angle needed to show a segment of 65%. (There are 360° in a circle. You want to find 65% of that. So: 360 ÷ 100. Then X by 65.
c) Now use your angle indicator or protractor to draw another line at that angle.
d) Colour and label your pie chart.
6. How do mild winters affect badger numbers? Explain why.

numbers given. (When the average January temperature is 2.5°C, the average weight of the badgers is 8kg. When the average temperature is 6.5°C, the average weight is 10kg.)

- a) Interpolate the expected weight if the average temperature was 1) 3.5° 2) 4.5° 3) 5.5°
- b) Extrapolate the expected weight of a badger, if the average temperature was: 1) 0.5° 2) 7.5°
- c) Extrapolate the temperature needed if badgers were to weigh 1) 11kg. 2) 11.5kg.
- d) Can you identify a trend in the numbers? Explain it, in your own words.