



Who knocks down the most trees – humans or elephants?

TEACHER'S KEY

Check your understanding



1 Why do you think elephants push trees down?

2 What are the main reasons why humans cut trees down?

3 Our research found that if there are fewer trees of different heights, it would weaken the ecosystem's ability to survive damage, and that it would be devastating if there were also fewer seedlings, or fewer trees that grew to the larger tree heights. Why do you think this would have such a great effect?

4 There were two rock types (granite and gabbro) that made up the composition of the soil in our study area. We found that the geology of the land had an effect on treefall. Areas with gabbro rocks were more nutrient-rich than the granite, and had more open savanna with fewer scattered trees. The gabbro portions of the study area had higher relative treefall than the granite portions. Why do you think this could be?



Who knocks down the most trees – humans or elephants?

TEACHER'S KEY

1

Some people think that elephants push trees down so that they can access the higher leaves of a tree. But although they might eat some of those leaves, it seems they mostly do it to access the roots and the bark, where the trees store their energy in the form of carbohydrates.

2

- To use the cut trees for firewood or to build new houses
- To clear the land to grow their settlements
- To clear land in order to increase the amount of land suitable for grazing their animals or growing crops

3

When larger trees are lost from the landscape, more pressure is placed on shorter trees. This leads to a loss of structural complexity and an ecosystem that is less able to cope with damage.

When large trees are pushed over by elephants, or cut down by humans, this doesn't necessarily result in a decline in woodland. This is because many of the trees are able to regrow by coppicing. However, when there is a loss of mature, seed-bearing trees at the same time as an increase in rates of small plants (seedlings) being eaten by animals like elephants, antelope and goats, then this can lead to severe woodland decline.

4

The more open canopy of the areas with gabbro rocks and a higher grass biomass resulted in more frequent and intense fires. We found that these fires caused greater treefall in trees that had already been weakened by elephants (perhaps where they had removed the bark or otherwise damaged the tree).

We also found that elephants were more likely to push trees down in nutrient-rich gabbro geology areas. This agreed with the results of other studies recording elephant use of vegetation on nutrient-rich soils.