Activity 1: Population decline and growth

Starting point

Human activity places a large number of species in danger of extinction. Chapter 5 set out some of the issues and mathematics behind biodiversity loss and the potential dangers this poses to human life. As well as measuring biodiversity it is crucial to be able to model and predict the size of the populations of individual species. You could display the data from Table 9.1 on a board.

If you were given this data, in 1985, when would you expect tigers to become extinct in the wild?

Younger students will be able to do this from looking at the difference pattern, or drawing a graph. Older students can be encouraged to find an algebraic model.

Having made their predictions, you can provide the more up-to-date data (taken from the same source) in Table 9.2.

You may want to graph this data and consider why the graph did not continue in the expected pattern? How would you now predict the date when tigers will become extinct? If you wanted to expand this work beyond the standard mathematics curriculum, there would be scope for students to research some of the pressures on tiger populations and what is being done to try and preserve them (see, for example, the Arkive website n.d.).

Table 9.1 Tiger population 1970–1985

Date	Tiger population (thousands)
1970 (t=0)	37
1975 (t=5)	32
1980 (t=10)	27
1985 (t=15)	22

Source: http://wwf.panda.org/what_we_do/endangered_species/tigers/about_tigers/tiger_population/

Table 9.2 Tiger population 1990–2010

Date	Tiger population (thousands)
1990 (t=20)	12
1995 (t=25)	6
2000 (t=30)	5
2005 (t=35)	4
2010 (t=40)	3

Possibilities

Students could be invited to gather data on the numbers of other species (including humans). What predictions can be made about the future? What species (other than humans) are thriving? Why?