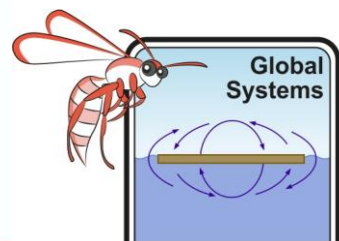


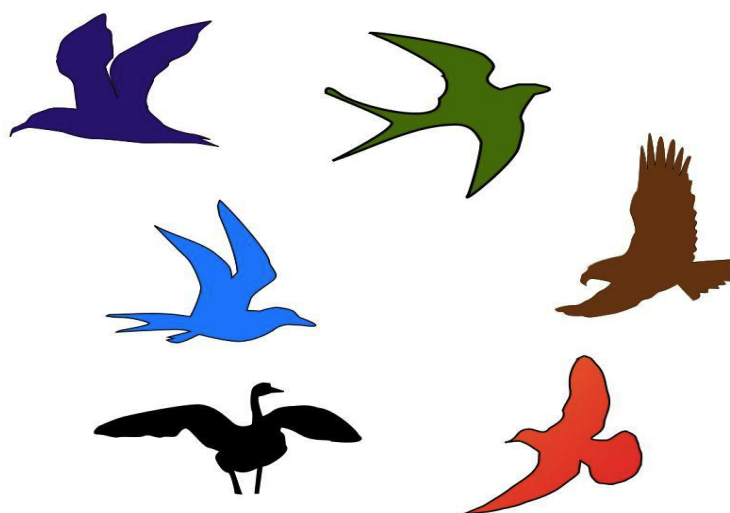
Fire & Biodiversity Loss – Student Activity



Communities survive change if they are given time to adapt. It is the increased rate of change in the environment that creates a loss of biodiversity. Species cannot survive if their numbers fall below the “tipping point” because genetic diversity is reduced limiting ability to combat natural loss and change.

Many Australian plants and animals are well adapted to cope with fire. With the advent of man, however, fires in some places have become more frequent and hotter, and the areas available to the species have become more restricted. Climate change due to the enhanced Greenhouse Effect could result in longer hotter summers and increased frequency of lightning strike. Devastating fires could become more frequent. The Environmental Protection Authority’s *State of the Environment Report 2007* stated that fire is a major factor in the loss of biodiversity in Western Australia. Fire reduces both the numbers within a species and the numbers of species.

Aim To model the effect of fire on biodiversity



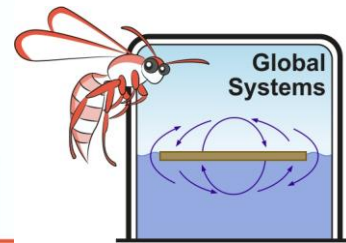
Each colour represents a bird of a different species and each toothpick represents an individual bird. Birds can only mate with another of the same species. Mating occurs annually and only one chick survives to grow to be an adult. Fire attack is assumed to be random (at the toss of a coin). The activity may be a teacher demonstration where the class individually note the results on their tables or the table provided might be used.

Materials per group

- Six different coloured sets of 15 toothpicks.
- A desk top or paving slab divided into two sections marked ‘Heads’ and ‘Tails’
- A coin for tossing
- Table for data (provided)

Method

1. Separate the toothpicks into 5 breeding pairs of each colour. Retain the extra toothpicks for “young” at the end of the breeding season.
2. Mix the breeding pairs and spread randomly across the desk top marked into “Heads” and “Tails”
3. Toss a coin to decide which area is devastated by fire and remove the toothpicks/animals from that half. These have perished.



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4. The surviving birds form pairs, breed and the numbers for each species are entered in the table (don't forget to add toothpicks back in for young born)
5. Continue this process for five fires over five years, recording your data.

Numbers	Black	Blue	Purple	Red	Brown	Green	Total
Numbers at beginning of year 1							
Numbers after first fire							
Young born to each pair							
Numbers at beginning of year 2							
Numbers after second fire							
Young born to each pair							
Numbers at beginning of year 3							
Numbers after third fire							
Numbers born to each pair							
Numbers at beginning of year 4							
Numbers after fourth fire							
Young born to each pair							
Numbers at beginning of year 5							
Numbers after fifth fire							
Young born to each pair							
Numbers alive after five years							

What assumptions were made above? _____

Biodiversity can refer to variety within a species and between species.

After five years:

Within each species, what percentage of biodiversity lost?
