Science lesson 3 – Answer sheet

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Dallan is a junior executive working in the marketing department of a company called Ace Engineering which has 3 different sites around the country. The company are publishing a newsletter and want him to provide some good news to boost public relations entitled, 'The impact we've had on the planet.'

Dallan asked the sustainability champions at the 3 sites 6 months ago to develop an area that would increase biodiversity. They have now sent him the details of what they did and some graphs and data about numbers of organisms before and after the project to show if biodiversity has increased. You must help him find out what biodiversity is and then analyse the data the sustainability champions have sent him.

Dallan also needs you to help him write a blurb and some additional details for the company newsletter. (A blurb is a short description that promotes a creative work, person or business.)

Question 1 – Read the information and highlight words that are living things or needed by living things.

Biodiversity on our planet is very important but what is it?

"Bio" means life and diversity means range, so biodiversity means all the different types of living things on our planet including the animals, plants and even bacteria. Living things keep Earth alive by providing food for us, each other, making the oxygen in the air we breathe and even keep the water clean and without these things some species may become extinct (which is when a species dies out and there are none left).

A species is a group of living things that look alike and reproduce to have fertile young (fertile means the young can reproduce).

Humans have started to understand how important it is to increase biodiversity. For example, when trees are cut down birds have nowhere to nest but also other organisms e.g., insects that lived in the trees that birds fed on are gone. When coal is burned to make electricity, it releases carbon dioxide gas which is causing global warming increasing the temperature of the Earth. Insects like bees need wildflowers and are important in helping plants we use for food to grow.

Conservation means trying to prevent a loss of biodiversity. Examples of how humans are trying to conserve populations include re-planting of trees, sowing wildflowers instead of growing grass, using wind and solar power instead of burning coal.

Population means a group of the same species that live in one place.

Question 2 – Use the passage you have read to find out and complete the meaning of the key words below.

Keywords	Meaning
Biodiversity	biodiversity means all the different types of living things on our planet
Species	a group of living things that look similar and can reproduce to have fertile young
Extinct	when a species dies out and there are none left
Fertile	can reproduce
Conservation	trying to prevent a loss of biodiversity
Population	a group of the same species that live in one place.

Question 3 - Use the passage to give 2 examples of how living things keep Earth alive.

     i)   provides food (plants and animals)

     ii)   makes oxygen (plants)

     iii)   can also keep water clean

Question 4 - Use the passage to give 2 examples of how humans are reducing biodiversity on the planet.

     i)   cutting down trees

     ii)   burning coal

Question 5 - Use the passage to give 2 examples of how humans are trying to conserve the planet.

  i)   re-planting trees
  ii)   using alternative energy such as wind and solar power

Question 6 - Each site had different ways of trying to increase biodiversity at their offices. These are shown below.

  Site 1 - planted 10 different wildflowers in the car park.
  Site 2 - made a living wall by planting 3 different types of plants that grew down the wall by the reception door.
  Site 3 – built a small pond containing 2 water plants and 3 fish.

Predict which site you think will have made the biggest impact on biodiversity. Give a reason why.

Site 1 as they have a greater range of plants they have introduced. Sites 2 and 3 have less and site 3 is limited as it only has a pond.

Question 7 – Look at the graphs which show the numbers and types of insects at the 3 sites. Each site reported on the numbers of 4 of the same type of insects and the numbers of all species of plants and insects before and after the project, to make it easy to compare the impact.

   a) Complete the last column of each table by finding the change in
      number of species at each site.

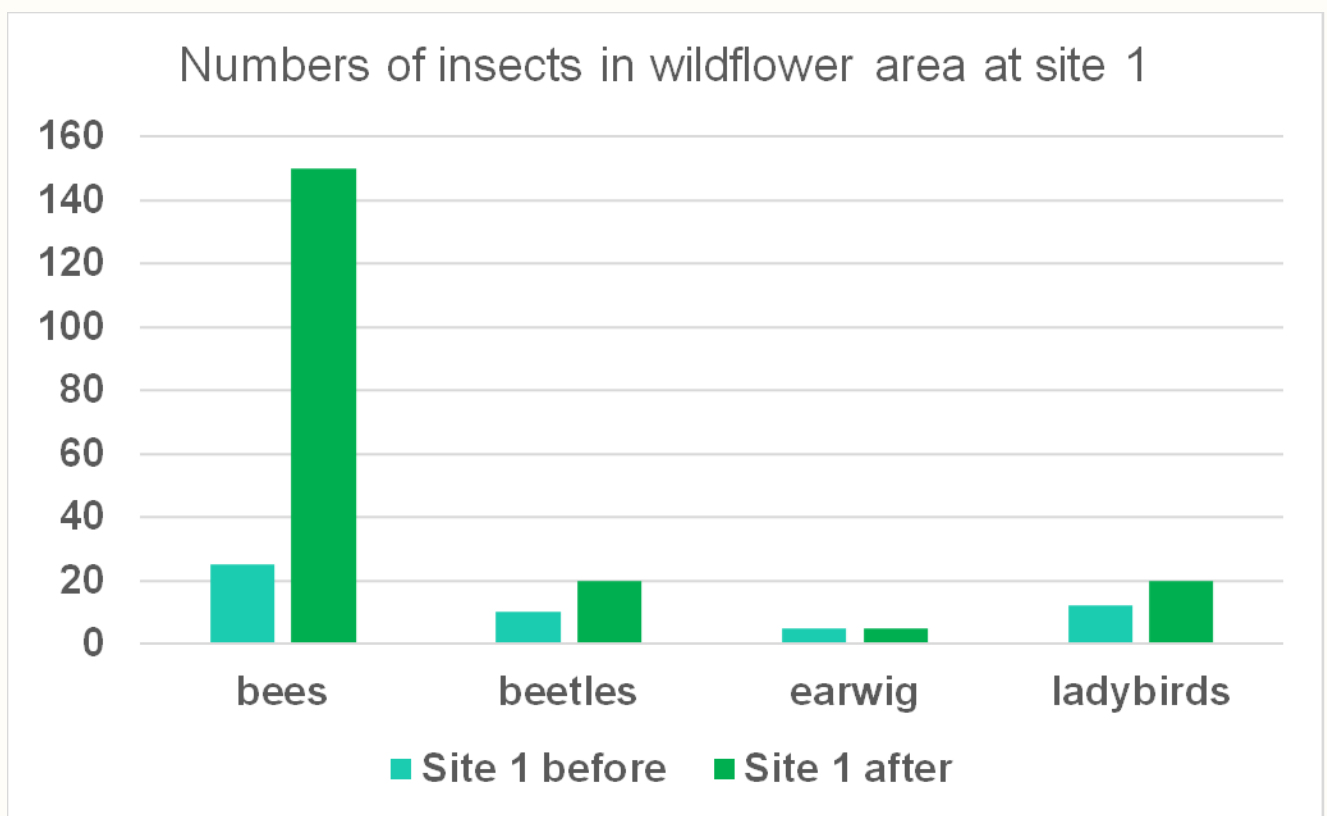Site 1 – planted 10 different wildflowers in the car park.

Numbers of insects in wildflower area at site 1

■ Site 1 before   ■ Site 1 after

Table 1

Numbers of different species of plants and insects before	Numbers of different species of plants and insects after	Change in numbers of species
10	18	8

Site 2 – made a living wall on the building by planting 3 different types of plants that grew down the wall.

Numbers of insects in living wall at site 2
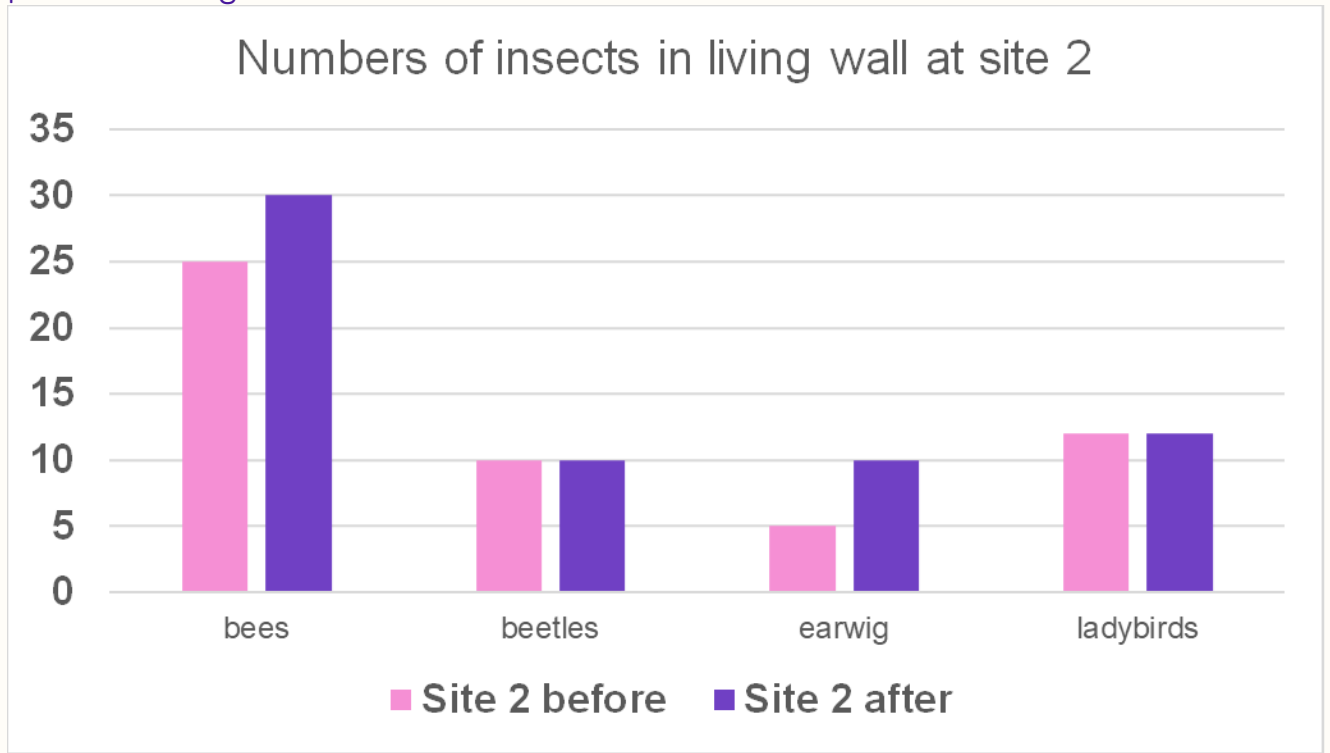
Table 2

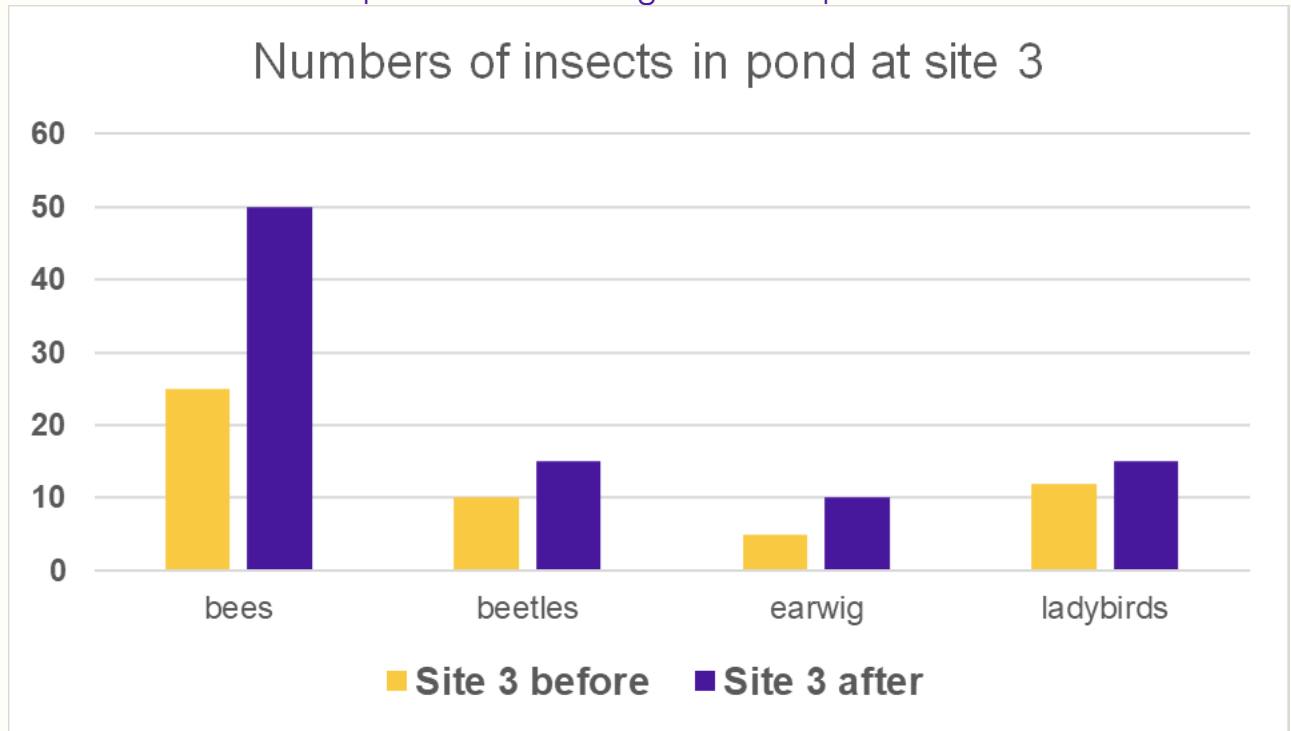| Numbers of different species of plants and insects before	Numbers of different species of plants and insects after	Change in numbers of species
6	12	6

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Site 3 – built a small pond containing 2 water plants in and 3 fish.

Numbers of insects in pond at site 3

Table 3

Numbers of different species of plants and insects before	Numbers of different species of plants and insects after	Change in numbers of species
12	14	2

B - Which site 1,2 or 3 had the biggest increase in:

    i)   Bees   site 1
    ii)   Beetles   site 1
    iii)   Earwigs   site 2 and 3
    iv)   Ladybirds   site 1

C - Which site has the highest increase in the total number of species?

 Site 1

D - Which site was the most successful at increasing biodiversity and why do you think this was?

Site 1 because they planted a greater range of wildflowers (10) that will have attracted more insects/animals. Sites 2 and 3 had less plants. Could suggest that the wall at site 2 limited what could live there and is it was by reception organisms may have been disturbed/frightened off.

E - Which site has the lowest increase in biodiversity AND give a reason why you think this was?

Site 3 as they had a pond which only had 2 plants in it and 3 fish. Any living thing that cannot live in water will not have been attracted to it.

F - Give a reason why the biodiversity increased at all sites.

They had all introduced new plants which will have provided shelter/food for other animals/insects and site 3 had introduced water.

Question 8 – Produce a 100-word blurb for Dallan at Ace Engineering. (A blurb is a short description that promotes a creative work, person or business.) The blurb will be used in the newsletter's environmental impact page as good news. Examples of how to start your blurb are 'Plant for the planet' or 'Creating a future for all'. You then need to summarise why biodiversity is important and how Ace Engineering have been successful at increasing it.

An example of a blurb might be:

Biodiversity boost. Ace Engineering has been 'ace' at looking after the environment at our 3 sites. We have created nature areas that have attracted new life by planting wildflowers, building a pond and a living wall. This is great news for our planet, as Ace Engineering are keen to play a part in conserving all life – making the future brighter and full off biodiversity for everyone to enjoy now and forever. Thank you to our sustainability champions at each site for their hard work in keeping our planet healthy.