

Design your biodiversity garden

Biodiversity describes the variety of living things in an area or region or even across the world. Each year in May we're celebrating biodiversity during the Bealtaine Living Earth Festival in Ireland and we celebrate World Bee Day (20 May) and International Day for Biological Diversity (22 May) all across the globe.

Biodiversity is important and we need to protect it: we can start with a small (or large) biodiversity garden right at home. If you don't have a garden, maybe use a flower pot on your window sill to create a mini garden (see www.livingearth.ie on how to make a miniature garden, they are quite a thing now!). If you don't want to convert all your garden, why not just take a smaller corner and start there?

Designing a garden gives you a good knowledge of different plants, what they need, how they grow and also what animals they attract: not just bees, bumblebees and butterflies will come to your new garden but also birds and other animals will visit. Some of them will come for the plants, others will hunt the insects. That's biodiversity.

At the same time, you will improve your mathematical thinking. Geometry, statistics, algebra – you might not notice but you'll need them all and you will also enhance your problem solving skills.

Have a look at the fantastic biodiversity garden designed by Carol Delany and her team at Carrick-on-Suir Library together with the Men's Shed and local primary school pupils:



The Wildflower Garden at Carrick-on-Suir Library: the site for the future wildflower garden, the garden with some happy helpers after 1 year and after two years (below).



Gardening for Pollinators at Carrick-on-Suir Library: the position of each plant was planned carefully so as to provide enough space for them to grow. They have spread a good bit after a year and are attracting many pollinators.



A Fernery at Carrick-on-Suir Library: the unusual shape of the triangular site was measured, planned and prepared for planting.



After calculating how much top soil was needed, the soil was delivered and spread across the site.

No need to get heavy machinery of course but get your family and friends involved if you plan to create a larger garden.



The position of each plant was planned and measured before planting the ferns.

1. Carry out a site analysis: Work out the space intended for the garden.

- Explore your garden and take notice of the shapes and the materials currently occupying the space
- Measure the perimeter of your garden – add the lengths of all the sides of your garden to find the total perimeter.
- Calculate the area of the garden. If your garden is an irregular shape, then break it up into regular shapes such as rectangles and right-angled triangles; find the area of each shape and then add them together to get the total area.
- Draw a map to scale and use the map to plan your new biodiversity garden designs.
- Track the weather conditions over time. Can you make homemade version of weather instruments and record the average rainfall, hours of sunshine, wind direction?

2. Understand the basic geometry:

- Observe the structure and the lay out of the garden, this will serve as a framework to better understand the local ecology.
- Identify geometric shapes already present
- Draw geometric designs for the proposed flower gardens
- Consider the need to plant flower seeds in patterns that will enable the best growth possible. Even the smallest balcony gardens look great and grow better with a little consideration to geometry

3. Design your biodiversity garden – the wilder the better! The greater variety of plants and animals you share your garden with the better you will feel!

- Research garden magazines, newspapers, and online for ideas for your design. Check out the free booklet “Gardening for Diversity” (available on www.livingearth.ie and from your county council) and look up your local library website for free resources.
- Consider how you will provide FOOD, SHELTER and WATER for animals when you are designing your biodiversity garden:
 - Include a woodland area which has an abundance of biodiversity
 - Wildflower strip full of flowers for pollinators
 - Hedgerows to provide shelter and protection of all types of creatures
 - Pond to provide water for drinking and cleaning
 - Design and build bird feeders and bug hotels which will provide food and shelter

4. Apply your problem-solving skills:

- Devise a schedule for the planting of seeds – by looking at the seed packet determine the optimal harvest date for each crop. Next, knowing how many days-to-maturity, work backwards to work out when each crop should be planted.
- Devise a timetable for the family to help out with the watering and clipping of plants.
- Keep track of the cost benefit of growing vegetables at home – calculate the cost per unit and compare that to store bought produce.
- Plant broad beans in small pots and place one plant in a sunny position and the other in a dark corner. Measure growth every day and draw up a table showing the heights of the two plants each day. Compile the data into a chart and determine the average growth rate of plant grown in light versus dark. Write down two formulae – one for each set of plants – to represent the average plant’s height on any given day.