

Exploring Darwin's Worms: Worm Jars



• EXPLORE
SOILS •

Summary:

Darwin's work is most commonly associated with the theories surrounding evolution and natural selection but his work was also dedicated to furthering understanding of subjects such as geology, within which soil and worms within became a small obsession. Visitors would remark on the glass jars he had on the mantle shelf in his study, which were filled with soil and decaying leaves. These were experiments in which he began to understand the role that worms played. Further information regarding his studies can be found here: [find link!](#)

Recreating these yourself can allow you to study the movement of worms, their feeding habits and eventually how they change the soil environment in which they live.

Learning Objectives:

- Examining the environmental needs and activities of worms
- Understanding the role that earthworms play in soil development

Equipment:

- Glass jars preferable, alternatively 2litre plastic bottle with top cut off
- Veg waste
- Aquarium gravel
- Soil from a garden or other suitable habitat (ideally more than a pH of 6)
- Live worms
- Compost
- Leaf litter

Preparation:

Estimated time up to 1 hour.

- Worms, a selection of types of worms [[see separating worms by type](#)]
- Gathering soil material
- Gathering vegetable waste - optional

Time Required:

Introduction, 5 minutes.

Preparing jars, 5 minutes.

Adding worms, 2 minutes.

Labeling, 2 minutes.

Total timing 10-15 minutes.

Background Learning Needs:

None.

Risk Assessment:

Hazard	Likelihood	Severity	Mitigation
Injury illness from soil ingestion	Low	Medium	Use gloves when handling the soil
Injury for broken glass	Low	Medium	Wear goggles and heat proof gloves
Site/local specific risks	Unknown	Unknown	Anyone running this activity is advised to conduct a risk assessment for the specific site and conditions

Description of Activities:

1. Introduction, potentially explain the history of these jars and what they led Darwin to understand.
2. Arrange soil, veg waste, compost gravel etc in jars as preferred for the type of worm activity that would be demonstrated- see notes.
3. Water material in jar.
4. Place in the worms.
5. Label jar with date and type of worm/activity, place lid on.
6. Make holes in lid.
7. Place in a cool dark place and check weekly.

Notes:

These jars can be changed to show different types of worm behaviour depending on the level of learner.

Using the [types of worm] guidance you can create different jars for different worms and thus demonstrate the type of changes these various types of worms create and their varying activities within the jar eg. different types of burrows.

Group 1: composters. These can be placed in jars with raw veg waste, manure and other decaying produce plus compost. Over a period time these can be seen to change the materials into a fine black soil composed of little pellets (worm casts).

Group 2: Surfacey ones. This can be done similar to above but with much more compost. Adding gravel in a layer can also demonstrate how the waste material is transferred into rich soil and will move the gravel about in the jar, so it no longer a clearly defined layer.

Group 3: These will require mainly soil extracted from a pH6 or above soil. Add a layer of gravel either horizontally or vertically (by packing the jar on it's side) and

observe how the worms will move the gravel out of the way slowly and into a non-definable layer.

Group 4: These require mainly soil with just a surface layer of organic material, with layers of gravel horizontally within the jar. Leaf litter and veg waste can be placed on the surface and over a period of time these worms will move these down into the soil, disrupting the horizontal gravel layers. Adding gravel to the top of the jars will allow learners to see that this is burried over a period of time and the worms deposit casts on the surface.

There is scope to simply demonstrate the movement of all kinds of worms within the jars but not separating them by type. And simply providing various environments to see what alterations to the contents they create.