

A landscape photograph showing rolling hills, a rocky limestone outcrop in the foreground, and a bare tree on the right. The sky is overcast.

**Explore...**

# Winskill Stones Reserve

## Near Settle, Yorkshire Dales Important Plant Area

Winskill Stones is a 74-acre reserve of limestone pavement and limestone pasture.

Limestone is a sedimentary rock that is formed from the shells and skeletons of sea creatures in a process that takes millions of years. Limestone pavement is formed in upland limestone areas, such as here in the Yorkshire Dales Important Plant Area (IPA). Alkaline limestone is scored by vertical joints and horizontal planes. Acidic rainwater gets into these cracks and dissolves the rock, weathering it to form distinctive and visible slabs called clints and large cracks called grykes. Underground, there are sinkholes, caves, stalactites and stalagmites, which are also formed by this chemical weathering process.

Four thousand years ago, the landscape you are standing in would have looked very different.

At that time, people started to remove the woodland that covered this area in order to farm the land. We believe that sheep have grazed these fields for over 2,000 years just as they do today. The plants that grow here tell us about this history.

Limestone pavement is one of Britain's most threatened habitats; vast areas have been destroyed since the 1950s to meet the demand for garden rockery stone. You can see areas of rubble at the reserve where sections of pavement have been removed. However, in order to support the local community to protect the pavement that remains, Plantlife bought the land.

## Discover... Limestone pavement

- Recognise the features of upland limestone scenery
- Understand how the underlying geology affects plants
- Identify some key limestone pavement plant species



**Please take care on your visit.** Be aware of the terrain and of any roads that pass through the reserve. Note that livestock periodically graze many of our reserves as part of their management. For more information on Winskill Stones and directions to the reserve, visit <http://www.plantlife.org.uk/uk/nature-reserves-important-plant-areas/nature-reserves/winskill-stones> **To discover more Plantlife reserves and find out more about IPAs, visit [plantlife.org.uk](http://www.plantlife.org.uk)**

### 1 Notice...

Take a moment to look around the reserve and notice the different landscape features. Together these form a picture that helps us to define the habitat as limestone pavement.



Ferns and mosses inhabit deep grykes



Limestone cliffs also support plant life

#### Which of these features can you identify around you?

- **High altitude** This is an upland area
- The area is very **exposed** with little natural shelter and few trees and shrubs
- **Clints** Rectangular slabs of exposed limestone forming larger areas of pavement
- **Grykes** Deep vertical fissures between clints usually filled with grass and other plants
- Patches of **limestone rubble** and remains of destroyed limestone pavement
- **Low cliffs or humpbacks** of limestone with ledges out of reach of grazing livestock

### 2 Investigate... Rock pooling

Find an area of limestone pavement and take a closer look at the plants growing in, on and around the rocks.

**On a dry day, place your hand on the top surface of a clint.**

How does it feel? Cool? Dry?

How much sunlight and water will the plants here get?

**Carefully put your hand into a gryke.**

How does it feel in there and how much sunlight and water will the plants growing there get?

#### Think about...

- 1 Would you expect the plants growing on top of and adjacent to these slabs to be the same species as those growing in between them? **If not, why not?**
- 2 Compare other factors that will affect growth in the two places...
  - **Water drainage** • **Humidity** • **Depth of soil**
    - **Exposure to wind, frost, snow**
    - **Impacts from people and animals**
- 3 Now have a look at the plants growing in the two places...
 

**Do they look different or similar?**  
**How many different plants can you see in each place?**  
**Which place has the greatest diversity?**  
(number of different species growing there – try counting the different leaf shapes)

### 3 Identify...

Due to the underlying limestone geology, species growing here have to be tolerant of alkaline soil conditions.

Can you find any of these plants in the pavement areas?  
Some of these are woodland plants. Why might they grow here?



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**Herb-Robert**  
*Geranium robertianum*

Traditional herbal uses for this common plant include stopping nosebleeds, easing toothache and healing wounds.



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**Wood-sorrel**  
*Oxalis acetosella*

Both the flowers and the leaves of wood-sorrel close up during the night, then open again in the day.



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**Common dog-violet**  
*Viola riviniana*

If you see a violet in the wild, it is almost certainly this violet. 'Dog' in a plant's name means its flower has no scent. Try it for yourself.



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**Dog's mercury**  
*Mercurialis perennis*

Don't be fooled by this 'dog'. If you crush its leaves, it gives off a foul stench. It also tells you that where it is growing was once woodland.

### Plants that can be found in the grassy areas around the edge of the pavement



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**Wild thyme**  
*Thymus polytrichus*

Also known as 'mother thyme', this plant's leaves are said to smell similar to oregano.



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**Small scabious**  
*Scabiosa columbaria*

This plant's deep tap root enables it to access water deep in the ground, so it flowers through the drier months of June to October.



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**Lady's bedstraw**  
*Galium verum*

Stuffing for mattresses, a birthing aid and a colourant for Double Gloucester cheese are just a few historic uses for this versatile plant.



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**Carlina thistle**  
*Carlina vulgaris*

Look closely at the daisy-like flowers. They are made up of tiny brown flowers surrounded by golden leaf-like bracts.

### 4 Find three of a kind... Ferns

Ferns can be identified by the number of times the large leaves or fronds are divided. They can be undivided, divided once, divided twice or divided three times (often referred to as undivided, pinnate, bipinnate, tripinnate).

See if you can find examples of each of these ferns at the reserve



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**Hart's-tongue**  
*Asplenium scolopendrium*

This fern is **undivided**. The fronds are whole and have a leathery look. They are not easily mistaken for other ferns with their tongue-like appearance.



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**Maidenhair spleenwort**  
*Asplenium trichomanes*

This small fern is **divided** once. The fronds are divided into little pairs of leaflets or 'pinnae' along a black central stem. Often found growing on walls.



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**Wall-rue**  
*Asplenium ruta-muraria*

This small fern is **divided** twice. Look at the pinnae coming from the main stem. See how these are divided a second time into even smaller leaflets called pinnules. Often found growing on walls, this fern is distinctive with its rounded rather than oval pinnules.

If you find any other ferns on the reserve, count how many times the fronds are divided. Can you find any that are divided three times? Next time you see bracken, try to count three divisions.