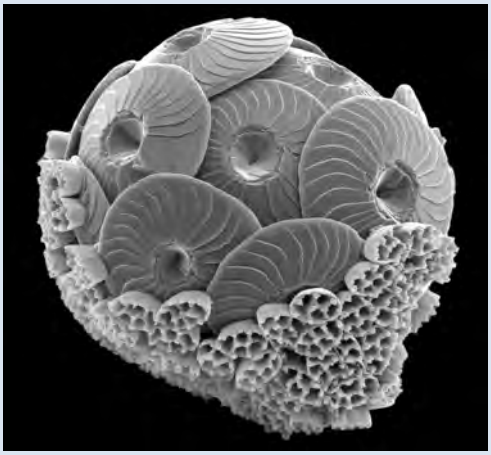
Chalk Links in the North Wessex Downs

"Chalk Links" Fact Sheets:

Geology groups across the region have produced a series of fact sheets explaining how the underlying chalk affects other characteristic features of this unique area including landscape, soils, land use, industry, hydrology & archaeology. Other fact sheets in this series can be downloaded from: www.northwessexdowns.org.uk

FACT SHEET: CHALK AND CHALK STREAMS



When walking along a chalk stream think about the tiny animals, coccolithophores, that the chalk bed is made up of. About half a million of these would fit on a pin head!

Letcombe Bassett watercress beds

What is chalk?

Much of the North Wessex Downs is underlain by Chalk. Chalk is a soft white limestone which contains layers of flint. It consists of minute calcareous shells, the remains of plankton which floated in clear, sub-tropical seas covering most of Britain during the Upper Cretaceous, between 95 and 65 million years ago.

Chalk streams and biodiversity

Chalk rivers have characteristic plant communities, dominated in midchannel by river water crowfoot and starworts and along the margins by watercress and lesser water-parsnip. The channels have low banks and a range of associated water-loving plants. All chalk rivers are fed from groundwater aquifers, producing base-rich water of a good chemical quality, high clarity, and a generally stable flow and temperature regime. These water conditions and the gravel substrate support an abundant and diverse invertebrate community. This community contains many specialised and rare species such as the fine-lined pea mussel, and the mayfly, which is typically found in winterbournes, due to its egg's ability to survive periodic droughts. The are a key habitat in the UK Biodiversity Action Plan

Why are chalk streams good for watercress production?

Cultivation of watercress is practical on both a large scale and a garden scale. Being semi-aquatic, watercress is well-suited to hydroponic cultivation, thriving best in water that is slightly alkaline. The geology of the area with flat, chalky downlands provides the ideal conditions for the plants to thrive. Rainwater permeates through the chalk and bubbles up as freshwater springs, which are rich in minerals and pure in composition. The springs create a constant flow over the gravel beds in which the plants grow. This is why it is frequently found around the headwaters of chalk streams. Watercress is also good at picking up pollutants which would make those eating it ill so the stream must be 'clean'.
Watercress is an indigenous plant known for its food value at least since Roman times, and as a crop was introduced to commercial cultivation in England in 1808.

Letcombe Bassett was famous for the growing of watercress, and *"Bassett Cress"* was a familiar cry in Old Covent Garden Market. Thomas Hardy refers to the village as *Cresscombe* in his work, *Jude the Obscure*. The pretty thatched cottage where Arabella lived, and where she first met Jude, can still be seen down by the Letcombe Brook.

NORTH WESSEX DOWNS AREA OF OUTSTANDING NATURAL BEAUTY

Big CHALK

HAMPSHIRE IMPORTANT GEOLOGICAL SITES

BERKSHIRE GEOCONSERVATION

Chalk Links in the North Wessex Downs

Commercial watercress beds in Hampshire

Watercress, *Nasturtium officinale*

Hampshire watercress is green and noted for its distinctive peppery or mustard like flavour. It is recognised as a food with high nutritional value, and is packed full of nutrients and vitamins, including vitamin C, folic acid, iron, vitamin A and calcium. It is probably best known as a classic ingredient for soup but goes well with beef.

In the 1800s watercress sandwiches were a staple part of the working class diet in Hampshire and Dorset, partly because it could be picked free, from rivers and streams where it grew wild. The peppery leaf soon got a reputation as a cure-all for everything from lethargy to baldness, scurvy and even freckles which made it highly sought after. This led to commercial watercress farms establishing themselves throughout Hampshire.

The acreage devoted to watercress in England declined during the 20th century as demand and price became stagnant and costs increased. In 1950 there were 750 acres under cultivation but by 1970 that had fallen to 350-400 acres. By the 1980s 90% of growers had left the industry.

More recently mechanisation has been introduced and this is the common method except for a handful of traditional growers. There have also been attempts to grow watercress in soil rather than waterbeds.

The watercress beds at the **Blue Pool, near Stanford Dingly** are no longer operational but from the diverted footpath it is possible to see the chalk springs emerging from the ground.

Chalk stream in North Hampshire

Why are chalk streams good for salmon and trout?

These fish thrive in chalk streams because of a combination of the purity of the water and the physical properties of the river. A key factor is the relative lack of sediment as a result of the steady base-flows produced by the chalk aquifers. A base flow is the water which reaches the stream by flowing through the ground rather than run-off which is termed 'flashy'. These groundwater-fed streams have a low water temperature which is an important factor in southern Britain. Cold waters have a higher oxygen content. Salmon and trout need well-oxygenated water and clean gravels to spawn in. The flint gravels found in chalk streams are a good spawning habitat. It is therefore not the high pH which is important to the fish but that the water is usually very good quality and flows are pretty stable. *Ranunculus* (eg Water crowfoot), which does rely on water chemistry and the flow regime created by the chalk, provides excellent productive invertebrate communities for fish food. In comparison hard geology upland rivers are very flashy, with generally less plant production, and this results in lower fish populations. So although salmon and trout may be present in these other river types, chalk streams are very productive in comparison.

For more information on:
Berkshire Geoconservation Group http://www.berksgeoconservation.org.uk
Hampshire Important Geological Sites via Berkshire Geoconservation Group