

What are Valley Fens and why do they matter?

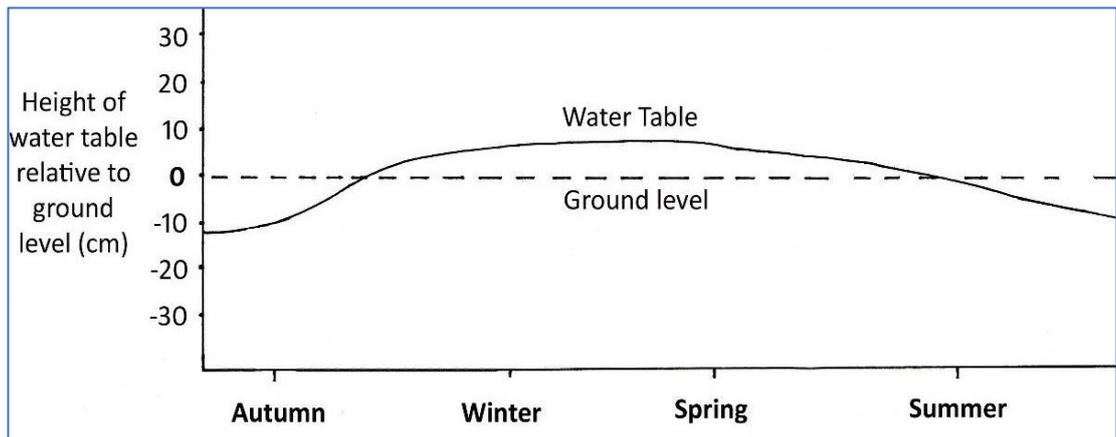
Mike Harding introduces valley fens ...

A valley fen is a very specific kind of wetland - different from all others. Norfolk and Suffolk is a European centre for valley fens, with the Little Ouse valley being particularly rich.

Valley fens are found only at the heads and margins of small valleys, often at the sources of rivers and their tributaries.

The environment of the valley fen

In a valley fen, the water table is very close to the surface all through the year. In winter, it may be above the surface because of rainfall, but the water is never very deep – a few centimetres perhaps. Through spring and summer the water table drops below the surface but not by much. Each type of fen habitat (see the table opposite) has a different water table profile through the year.

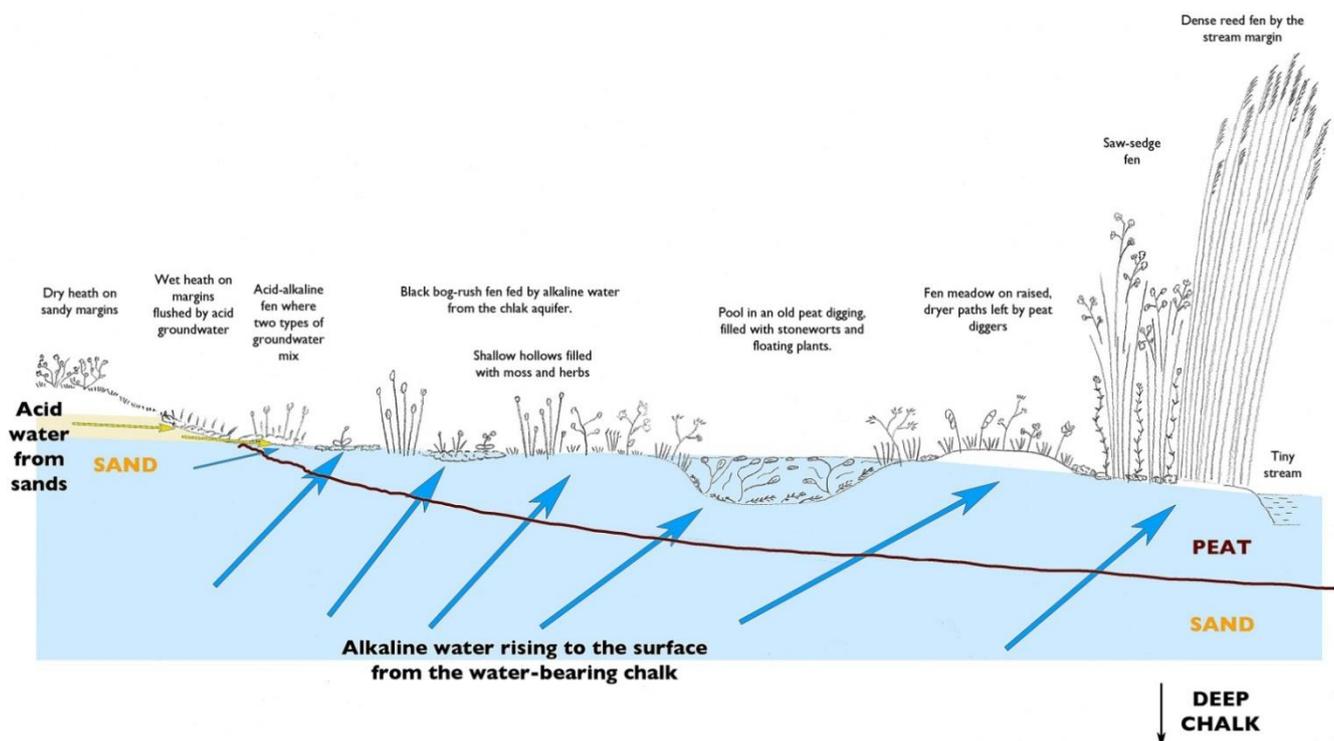


Water levels are kept high

because of the constant throughput of groundwater, coming up from deep chalk aquifers or oozing out from the sandy valley margins. Sometimes the groundwater reaches the surface as springs. Valley fens depend on this groundwater to stay wet. For them, winter rainfall which refills the aquifers for slow summer release, can be at least as important as summer rain.

Highly contrasting pH levels

The chemistry of the water is as important as the amount. Water from the chalk rocks is alkaline, and low in nutrients. This creates a rare, chalky wetland, rich in plants and animals. Water from the sands is also low in nutrients, but is usually acid, like the sand itself. This produces a different kind of wetland, equally rare and just as valuable. Because the water flushes through the soil from the margins, rather than sitting immobile in flooded fens, the root zone is high in oxygen, helping to maintain diverse plant communities.

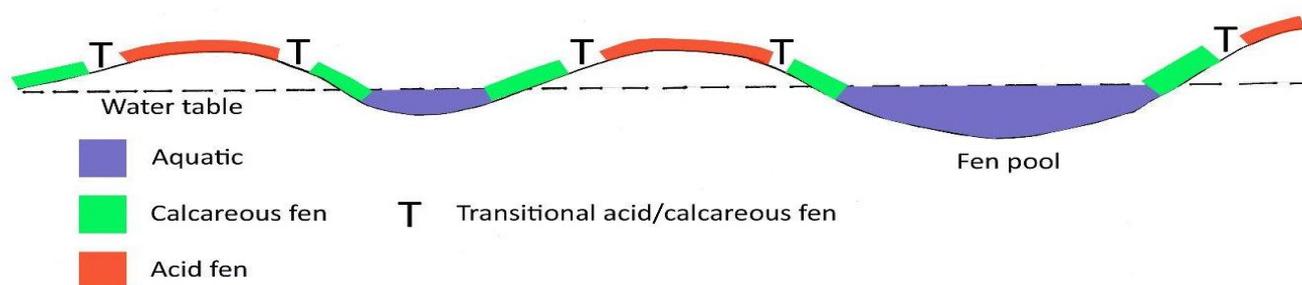


Humps and hollows

Variation in the land surface – *topography* – is equally important. If the ground is flat it floods for long periods - creating floodplain fens, which are very different. If the ground is steep, the water table drains away. Valley fens occupy only *very* gentle slopes that neither drain rapidly, nor very slowly. The soil surface is also extremely uneven: usually because of old peat diggings and barrow-ways, but also because of the way tussocky plants make their own ground. This micro-topography creates a huge diversity in wetness and soil conditions, which in turn produces an enormous range of variation in wildlife.

Where micro-topography combines with a water table that is at the surface all year, and where acid and chalk water are both present, the vegetation can be 'layered', with acid, rain-fed plants growing above chalky, groundwater-fed plants. This layering can sometimes be seen on individual fen hummocks (see diagram opposite).

This complicated arrangement is so precarious, and so vulnerable to change, that it is now very rare indeed. Small areas can be seen at Market Weston Fen and there are returning areas at Redgrave and Lopham Fen.



The complicated 'layering' of plant communities in humps and hollows

Diverse soils too

The soils, too, vary widely. The margins are often sandy, free draining and acid. The main fen lies on top of peat. Patches of marl and shell make the peat very chalky in some places; in others sulphides and iron compounds make it acid and orangey-brown. Silt and clay within the peat, make it more fertile in some areas. The soil type can change in a matter of a few metres, which changes the vegetation radically. The patchy plant communities give keen-eyed visitors a good clue to what lies beneath.

Rare and precious

Very few landscapes can provide in one place the great range of very particular conditions needed to build a valley fen. That is why they - and their wildlife - are so rare. Norfolk and Suffolk do provide these conditions they need, so we're lucky to have several beautiful examples on our doorstep.

No ordinary habitats

The different habitats found on valley fens are summarised in the table below. The last column (V) refers to value. Red means protected under *European* law, blue means *nationally* important.

Habitat type	Whereabouts is it and what is it like?	V
<i>Dry heath</i>	Valley margins on sand and gravel. Heather heath and acid grassland. Often lost to agriculture.	Blue
<i>Wet heath</i>	Transition between valley margin dry heath and peat fen. Usually in a very narrow band.	Red
<i>Chalky spring-fed fen</i>	Usually toward the margin, otherwise seemingly random and dependent on suitable pathways for rising aquifer water. Very small in extent.	Red
<i>Acid fen</i>	At the fen margin, or on sandy areas in the peat. Also on rain-fed tops of fen tussocks, where water table is high. Often in mosaics with chalky wet fen.	Red
<i>Peat pools</i>	Randomly sprinkled throughout the peat areas of the fen. Variable in size and depth. Vary from permanent and aquatic to summer-dry and fenny.	Red

<i>Purple moor grass fen meadow</i>	On the wetter fen margins, raised paths in the peat fen. In slightly dryer areas than rush meadow or wet fen types. Cut annually or every two years.	
<i>Rush fen meadow</i>	Throughout the wet peaty fen. Cut annually or every two years.	
<i>Saw-sedge fen</i>	Very wet, chalky, low nutrient peat areas in the main fen. Cut on long rotation in summer.	
<i>Tall herb fen</i>	Main peat fen, variable water table and fertility. Cut on long rotations, can be converted to fen meadow by annual mowing.	
<i>Reedbed</i>	Lowest parts of fen. Often near the fen drainage channel. Water stands for long periods and is deeper. Shows that conditions are changing from valley fen to floodplain fen.	
<i>Alder and willow carr</i>	Wet woodland with understorey of fen plants that can tolerate shade. Last stage of the fen succession, often a sign of long term dereliction.	

The amount of 'red' habitat - protected by European law - is remarkable. Most of our valley fens in reasonable condition have been listed for this protection. Norfolk and Suffolk have perhaps the greatest concentration of valley fen habitats in western Europe. All the other habitats are nationally important – nothing is ordinary in a valley fen.

Valley fens and us

We have a special responsibility to care for this glorious wetland resource. That the upper reaches of the Little Ouse and Waveney rivers are so dense with these extraordinary wetlands is truly astonishing. How lucky we are to live among them!

Mike Harding