

About the trail

The trail begins and ends at Westerham Road Car Park, only 2 miles (3.5kms) from Down House where Charles Darwin lived and worked from 1842 till his death in 1882. It leads you through the acid grassland and heath of Keston, past the valley mire of one of London's few sphagnum bogs, wet meadows, sweet chestnut coppice and along a public footpath through the Holwood Estate. All these places were familiar and important to Darwin's work and life, providing him with different plants and animals to study from those of the chalk and clay-with flints closer to his home. Some are indicated as you follow the trail, others are more difficult to spot or may be anywhere along the route and are shown in the pictures opposite. Tick the circles and see how many you can find. 🗒️

Places you'll pass

Holwood House. An earlier house than the one you will see was the home of Prime Minister William Pitt between 1785 and 1802 but when Darwin and his family first moved to Downe, Holwood House belonged to Lord Cranworth. A Whig politician and twice Lord Chancellor, he contributed to the Downe Friendly Society of which Darwin was the Treasurer and which helped support local villagers. The house was later the home of Lord Derby who wrote of Darwin that he was "the greatest scientific discoverer of our age, [yet] free from envy, jealousy or vanity in any form" and was one of the pall-bearers at his funeral. Charles and Emma regularly dined at Holwood and visited the park. After Charles' death Emma wrote to their son, William, 'Yesterday I drove to Keston to see Mrs Wright & walked back through Holwood Park – it was looking lovely – but seemed too full of memories, & I thought how you all used to race down the pretty green slope at the end – I was glad to think that I walked thro' it w. your father not so very long ago – we used generally to finish a drive with that charming bit of walking.' Holwood is also the site of an iron age settlement thought to date back to about 200BC. Built on high ground, it consists of 3 rings of ditches and banks enclosing an area of about 100 acres.

Keston Bog was an important source of the insectivorous plant, round-leaved sundew, which Darwin studied; he sampled mud from Keston Ponds as part of his experiments on the geographical distribution of seeds and he investigated the distribution of earthworms in the different heathland habitats.

How to get around

The complete trail is 3¼ miles (5 km) long, but the walk can easily be shortened in several ways (see map). There are 2 pubs at Keston which serve refreshments. The trail involves a small amount of road walking, please take great care and face oncoming traffic. Paths may be muddy and slippery at times with steps as shown on the map and some gradients of >20%. Please follow the Country Code, keep to the footpaths and remove your dog waste.

Species Darwin Saw or Studied



Leaf

A Round-leaved Sundew

Darwin began his studies of this plant when he noticed how many insects were caught on its leaves. This led him to investigate how it trapped and digested insects, pioneering work which led to the publication of 'Insectivorous Plants' in 1875. His major source for sundew was Keston Bog where it was then common. He explained how insects supplied the plants with nitrogen making it possible for them to survive in poor soil, but the plants also needed plenty of water because to digest the insects it was necessary to secrete an acid fluid from, 'glands, sometimes as many as 260, exposed during the whole day to a glaring sun.' The falling water table in Keston Bog together with increased shading and nutrient levels has caused its local extinction here, but work is underway to restore the habitat.

Spring

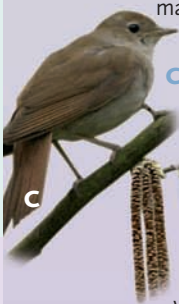


B

B Meadow Saxifrage (Saxifraga granulata)

Now rare in Kent, Darwin described its glandular hairs, some of which appeared similar to those of sundew, 'Saxifraga granulata (Holwood Park) short pink Hairs mixed with longer ones some with small

viscid Head & some without'. He went on to see if it was also able to absorb nitrogen (in the form of ammonium carbonate) but his results showed that it absorbed little if any. He also looked at its flower structure, reporting that the male and female part of a flower matured at different times which increased the chance of cross pollination.



C

C Nightingale Listen for these well-camouflaged birds (easier to hear than see) which live in scrub feeding mainly on insects. Emma Darwin wrote about going out in the evening to listen for nightingales, returning home to Down House for bread and cheese. Please let us know if you hear one in the area.

D Sticklebacks In the Descent of Man, Darwin wrote how during the breeding season, male sticklebacks become brightly coloured which makes them more successful in attracting females.



Male three-spined Stickleback

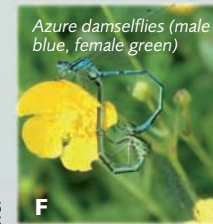


Diagram of leaf

Summer

E Duckweed You can find this in ponds everywhere in summer.

In 1881 Darwin experimented with the effect of immersing duckweed in various solutions, at different strengths, to see the effect these had on cell contents.



Azure damselflies (male blue, female green)

F

F Dragonflies and Damselflies. Look for these around the ponds. Darwin wrote how in males 'the appendages at the tip of the tail are modified in an almost infinite variety of curious patterns to enable them to embrace the neck of the female.'



Four spotted Chaser dragonfly (male)

Autumn

G Earthworms Like Darwin, look for worm casts (usually made by black-headed worms here) and little heaps of stones (middens) which show where the common earthworm has been making deep burrows. In Darwin's book, 'The Formation of Vegetable Mould Through the Action of Earthworms' published in 1881 he described the results of years of research including the examination of slopes and bogs at Holwood, heath, acid grassland, pathsides and gulleys on Keston Common, all of which he investigated as he tried to find out which habitats were best for earthworms.



Common Earthworm



Black-headed Earthworm

H Pigmy Shrew. Darwin observed, 'both sexes possess abdominal scent glands and there can be little doubt, from the rejection of their bodies by birds and beasts of prey, that the odour is protective.'



H

Winter

I Ducks

On his voyage around the World in 'HMS Beagle' Darwin noticed the similarity between species of freshwater plants and animals found in widely separated ponds. Observing how ducks may emerge from a pond covered in duckweed and how newly hatched freshwater snails could survive 12-20 hours in damp air and would cling to duck's feet so tightly that they were difficult to remove, he wrote 'in this length of time a duck or heron might fly at least six or seven hundred miles, and would be sure to alight on a pool or rivulet, if blown across sea to an oceanic island or to any other distant point.'



Mallard Duck (male)



Great Pond Snail

Ramshorn Snail

J Freshwater snails