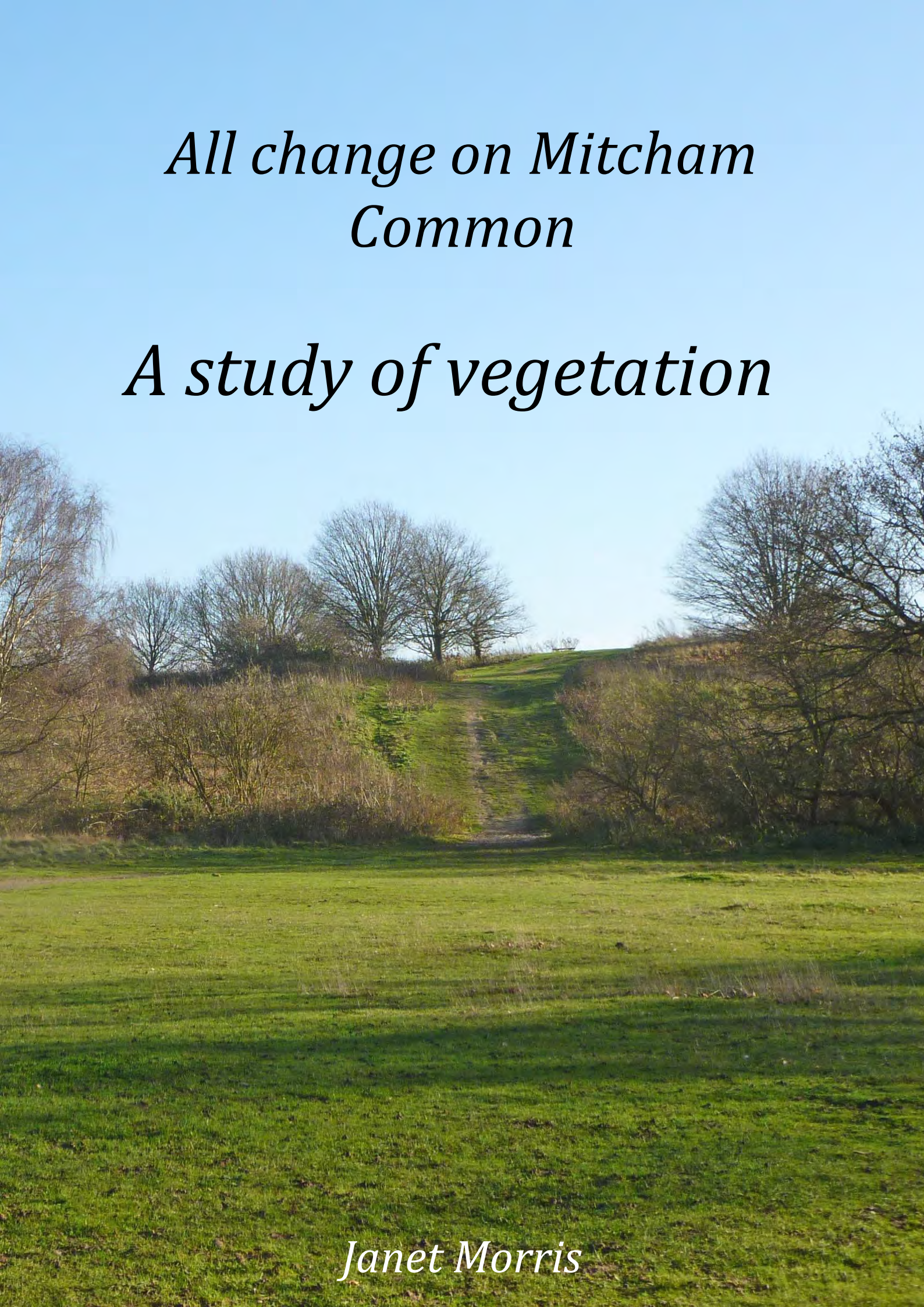
All change on Mitcham Common

A study of vegetation



Janet Morris

Mitcham Common



Mitcham Common is 182 hectares of open land (460 acres) between Mitcham (top left) and Croydon (bottom right). To the north there is Streatham and to the south, Sutton.

The outlying southern green, Mill Green, is not included.

All change on Mitcham Common

Introduction

Mitcham Common is fragmented by railways and roads into more than a dozen units, all of them different. There can be few other commons that have such a variety of scenery and vegetation. There are hills and valleys, ponds and wetlands, grasslands, woods and wastelands. This is very strange because Mitcham Common covers an old, flat, river plain of sand and gravel, useless for agriculture. For centuries it was just a windswept grass heath, left as common land for rough grazing.

This book attempts to explain how the uses of the common in the last century have caused such immense changes. Some were major changes like gravel extraction and tipping but this book is essentially a study of changing vegetation. Plants provide the food for other living things in an area. Just as plant cover varies from place to place, so does the associated wildlife but the wildlife itself is beyond the scope of this book. Likewise, any discussion of the modern management of the common is incidental to the story.

My main objective is to show how the differing needs of individual plants and intense competition for space have allowed the vegetation to respond to changes in the use of the common over the past 200 years; vegetation is essentially unstable. I feel privileged to have seen so many of these changes for myself over more than half a century.

Janet Morris. 2014

Chapter 1
Apparent stability

The common is infertile because the soil is so dry. Sand and gravel drain quickly and retain very little water. The drainage water washes out the nutrients that plants need to grow and by losing calcium the soil also becomes acid (sour; even as sour as vinegar). This strictly limits the numbers and types of plant that can survive.



Painting by Arthur Prince 1898. On the left is Pollards Hill and on the right a stream that used to feed the Seven Islands Pond.

The soil was too poor for growing crops and was left wild as common grazing land. There were usually small herds of cattle and a variable number of horses to be seen. When fairs were in progress there might be more than 200 gypsy horses for weeks on end. Cows and horses have large mouths and do not select individual plants to eat. Cows, however, do select an area and do not move far. They also tackle birch, hawthorn and young gorse. Horses prefer grass.

Sheep were always there and often in large numbers. They have smaller mouths and are selective grazers, often picking out flowers and buds. They will also eat low woody plants like birch, heather and gorse. Goats too are picky eaters. They eat almost anything but are not keen on grass.

Geese and wild rabbits crop very close indeed. Rabbits also eat some woody plants and in bad winters strip bark from trees.

Grazing produces grassland

Grazing creates an ever changing mosaic of vegetation depending on the types and numbers of animals present. It encourages grasses because grass leaves grow from the bottom. If the leaf tip is eaten it is simply replaced from below. The buds for new growth remain safely hidden in or beneath the surface. Grazing also reduces woody plants, resulting in an exposed, dry and windswept environment.



Swathes of red fescue. Young flower heads inset.

Acid grassland

Grassland on acid soil is called acid grassland. It is dominated by tough, drought resistant fescues and bents, fine-leaved grasses often used for quality lawns and greens.

In June, the young flower shoots of red fescue colour the grassland red and the colour intensifies as the flowers open.

In contrast, flower heads of the common bent are widely spaced and the tiny flowers create a mist like effect, later followed by innumerable seeds.

Grasses never cover an area uniformly, as variations in soils and usage allow other plants to compete for space locally. The great variety of beautiful flowers in acid grasslands is a recurrent delight.



Common bent grass.

Wetter acid grassland



Purple moor grass in the autumn.



Spring growth is good fodder.

Purple moor grass is the main grass in wetter areas where it grows in large clumps, producing purple flowers late in the summer. In spring it is a vibrant dark green but as it dies it turns golden brown and then yellow.



Silky young flower heads of tussock grass.



Mature heads of tussock grass.

Tussock grass makes equally large clumps crowned with beautiful and ornamental feathery heads of flowers. The leaves are rough enough to cut if stroked upwards and are quite unpalatable.

Acid grassland flowers

These may be isolated plants in the grass, but are usually scattered patches. Occasionally there may be great swathes of colour.



Harebells.



Tormentil.



Mouse-ear hawkweed.



Lady's bedstraw.



Heath bedstraw.



Betony.



Dove's foot crane's bill.



Bird's foot trefoil.



Cinquefoil.

Grass heath



Gorse flowers.

Grazing is never uniform. Heathland plants, especially heather and gorse, sometimes escape early extinction and grow to maturity, turning the acid grassland into grass-heath.

It is doubtful whether these woody plants ever dominated much of the landscape. Gorse is a very desirable fuel especially for bread ovens. It is highly flammable and so is often burnt down. Sheep would control heather which even today is mainly limited to a small part of the golf course.



Tall stands of the common gorse.

There are two types of gorse on the common. The common gorse is tall and flowers in the winter and spring. Dwarf gorse is quite a rare plant that flowers in late summer.



Low growing dwarf gorse.



Heather on the golf course.

A great deal of turf was also used for fuel. Turbary rights were held by the lords of the manors and much valued. Removal of turf obviously impoverishes an area but in fact this encourages the regrowth of acid grassland.

Ant hills



Ant hills in acid grassland.

Ant hills are a striking feature of acid grassland. They are built over decades by tiny yellow ants that live below ground and feed on root sucking aphids. They actually farm these aphids. The hills provide a warm environment for brood chambers and the ants move the young so they are always on the sunny side of the hill. Ant hills grow very slowly and large ones can be extremely old.

Ant hills are even drier than the surrounding soil and have their own special flora which includes many short lived annuals and cinquefoil. Green woodpeckers feed on the ants which in the winter may make up the bulk of their diet.

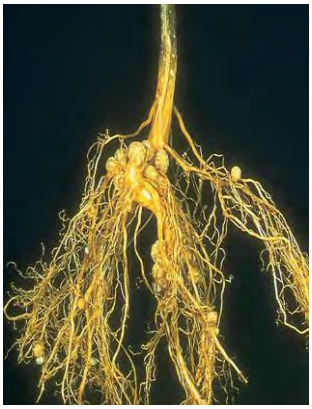


Entrances to the underground tunnels of burrowing bees.

More soil activity

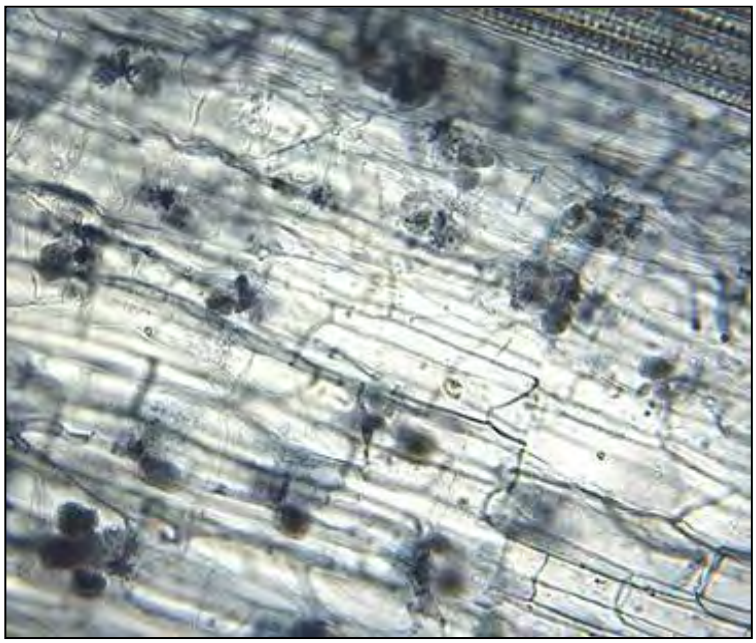
Soil is the seat of intense activity. Some of it is visible, like these tunnels where burrowing bees nest. Most of it is microscopic whereby dead plants and animals are degraded and recycled, firstly by smaller animals and finally by bacteria and fungi.

Most plants rely on the supply of nitrogenous salts in the soil to make proteins. The legumes, members of the pea family like gorse, have nodules on their roots in which nitrogen fixing bacteria make proteins using nitrogen from the air. Legumes are protein rich and can live more easily on infertile soils where most other plants struggle, making valuable fodder for animals.



Root nodules of gorse.

Mycorrhizal associations



A section of a root with mycorrhizal fungi. Fungal swellings inside a cell are clear in the bottom left hand corner.

Plants can only absorb nutrients if their roots can reach them and even the provision of root hairs near the growing tips is often inadequate. Most plants co-opt the help of soil fungi to search for and absorb nutrients, especially salts of phosphorus.

The fungi exist as fine branched threads that are anchored inside the cells of the young roots and run out into the surrounding soil. The plant provides the fungus with sugars and other substances in exchange for mineral nutrients.

This is a case of symbiosis where both partners benefit. The fungus cannot live on its own; it effectively provides the plant with a more efficient and extensive secondary root system. In return the plant provides it with food. Some plants cannot live without the fungus but others survive, albeit less vigorously.



Mycorrhizal association of a birch tree with fly-agaric fungi.

Other types of mycorrhizae

The vast majority of plants live symbiotically with root fungi. Most herbaceous perennials use the relationship outlined above but woody plants are different. Trees are paired with fungi that produce toadstools in the autumn. The toadstools around trees are not accidental but a visible sign of the mycorrhizae underground. Heather is unusual in that it relies on fungi that are quite capable of independent life.

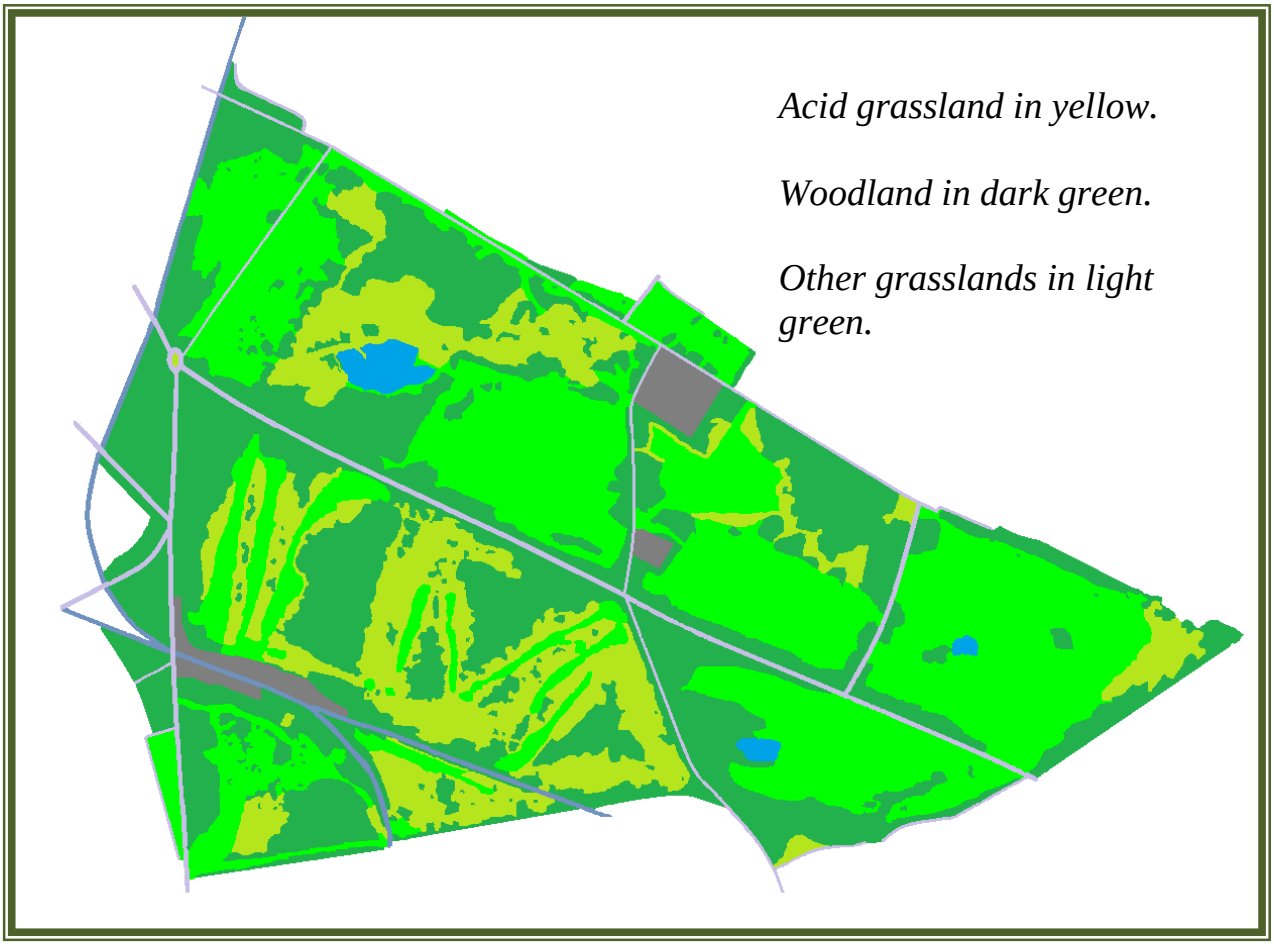
The common today

The grass-heath vegetation on the common existed for centuries and was always thought to be permanent, but this was an illusion. Far from being stable, the original acid grasslands, with their delicate bents and fescues, only survive within strict environmental limits.

- The soil must be dry, short of nutrients and acid with the necessary mycorrhizal fungi present;
- Woody plants must be kept in check either by grazing or cutting to maintain a dry, open and windswept expanse of land.

If any one of these limiting factors fails, equilibrium is lost and change is inevitable. This has happened repeatedly over the last hundred years and the acid grassland has been replaced by different types of vegetation, better suited to the changed conditions.

Surviving areas of acid grassland 2014



The following chapters examine what has caused these changes and explain why acid grassland is found in so few places on the common today.

Chapter 2
One thing leads to another

Mitcham Common lies on an old, flat, river plain of sand and gravel. It was always used for rough grazing but during the industrial revolution road building created a huge demand for the gravel. The five surrounding manors (estates) all owned land on the common and had rights to minerals under the soil, which they exploited to the full. But there were problems.

Sand and gravel drain freely but there is a thick layer of London clay beneath them which is totally impermeable. Water collects in the gravel above the clay and then drains down into the River Wandle. The upper level of this free water is called the water table and in winter it can rise dramatically. Low lying areas of the common become water-logged and temporary swamps develop as the water table rises.



The rising water has flooded this wood.

Metropolitan Commons (Mitcham) Supplemental Act 1891

Initially, gravel extraction was on a very small scale as work had to stop once the water table was reached. Later, when pumps became available, much bigger schemes were possible and as the pumps improved, so deeper and deeper pits were dug. The huge scale of gravel extraction caused public alarm and prompted George Parker Bidder to oversee an Act of Parliament to place the common under the care of a Board of Conservators. Gravel extraction finally ended in 1908.

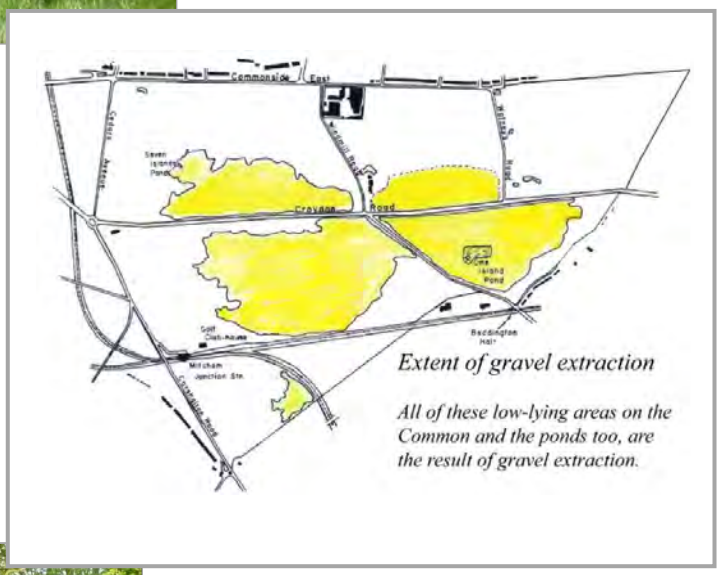
The legacy of gravel extraction



Beddington Lane is several feet above the golf course.

It is easy to underestimate how much soil and gravel was removed from the common by turf stripping and gravel extraction. Look at Beddington Lane for a clearer picture. Gravel has been extracted on both sides and the road now sits on a causeway well above the level of the surrounding land.

The Ordnance Survey map of 1911 shows areas lying below the normal surface of the common where gravel was extracted. Low lying areas are closer to the water table and prone to flooding. Extensive wetlands formed especially along the northern side of Croydon Road.





An old regenerating willow in the swamp.

An area behind the Ecology Centre that flooded every winter prompted reclamation work after WWII. This set in motion a programme of tipping that all but eliminated the northern wetlands. All that remains are the Seven Islands Pond and a small swamp behind it, dominated by grey willows. A frog pond, dug in the swamp area in 1989, provided a safe haven for tadpoles for years until populations crashed.

The ponds were once gravel pits



Seven Islands Pond.

These ponds have always provided attractive focal points for visitors, with interesting animals, fishing and even bathing.

Seven Islands Pond is the largest and best known. It was formed from several smaller pits, isolated from the swamp area about 1900.

One Island Pond, near Beddington Lane, was dug in 1908 before the rights of the manorial lords were finally extinguished. It was at first deep and rectangular but was extended during the 1914-18 war effort, leaving an island at one end. It never dries out.



One Island Pond.

Shallower pits became seasonal ponds that dry up in the summer. There are records of 12 but there were probably many more. They make good frog ponds since fish cannot survive through the summer. Some old pits were filled in with domestic rubbish. There is one on the gunsite and another behind houses on Commonside East.

Bidder's Pond**,** near Watneys Road, was not a gravel pit. It was dug in the 1980s.



Seasonal pond on the golf course.

Princes Golf Club

The condition of the common in 1891 was not good - it had been ravaged by gravel extraction and was much wetter than before. The Conservators decided to lease a part for an 18-hole golf course and within months, the Princes Golf Club set to work. They drained swamps, filled in old gravel pits, grubbed up large areas of gorse and generally restored the surface to something resembling its earlier condition. This was work the conservators could never have funded.



Mowing the fairways confines acid grassland to the roughs.

In time, golf extended over the whole common, except for the One Island Pond site. Princes Golf Club became very wealthy and golf really maintained the common for 20 years. After WW1 golf lost popularity and Princes Golf Club did not renew its licence in 1924. The next club struggled on until 1931 when it was reduced to its present position south of Croydon Road.

Mowing fairways, tees and greens is, in some ways, similar to grazing, but it is much more intense, limiting surviving plants almost entirely to grasses and eliminating most flowers and all the ant hills. The greens, moreover, are watered, weeded and fertilised to produce a dense even sward. The grasses are no longer those of the acid grasslands that need impoverished conditions. The only acid grassland to survive is in the rough which is rarely cut.

Many ditches were dug to keep greens and fairways dry in winter. These ditches support water plants that give variety to the area. The ditches persist long after golf has gone and many neglected old ditches can still be seen in unexpected places in the Seven Islands site.



Rushes, water plantains and lesser spearwort in a ditch.

Prickly scrub

Golfers cannot play around grazing animals. The Conservators banned grazing in 1901, little knowing what trouble they were laying up for the future. Grass heaths are maintained by grazing and are soon overtaken by prickly scrub when grazing stops. These plants were already there in the grasslands and armed with fearsome spines or prickles to resist grazing but they rarely lived long enough to flower and set seed.



Dense growth of gorse.

People had fond memories of the wonderful displays of gorse in flower before WWII but these plants were already out of control and spreading with the vigour that makes them invasive pests in many parts of the world.

There was, however, no shortage of complaints about the ever increasing numbers of blackberries.

Blackberries are particularly aggressive colonisers. Most plants will stay put but blackberries are forever on the move. Blackberries are the pioneers that provide early shelter for many young trees and shrubs.



Young blackberry canes arching over the old ones.



Rooting tip of a blackberry runner.

Every year strong shoots grow up into surrounding shrubs and over the old canes. They arch down to the ground and continue to grow through the grass. Finally the tips bury themselves and root to form new plants.



Prickly scrub plants

These scrub plants all have juicy fruits and grow from the seeds in bird droppings. Dog roses and blackberries are weak climbers with prickles like barbs that help the canes to grow up into shrubs and trees. On their own, blackberries make low sprawling patches. Dog roses make erect shrubs.



Blackberry prickles and (above) fruit.



Dog rose hips and (below) prickles.







Hawthorn haws and both large and small spines.

Hawthorns are many stemmed shrubs which often grow as tall as trees. They are a major feature of prickly scrub and in time take over. In the spring they are covered in fragrant white flowers.

Blackthorn is found mainly in wetter areas. It suckers profusely to make impenetrable thickets with no ground cover at all, but the very early spring blossom is a joy.



Blackthorn spines and sloes.

Grass heath vegetation wiped out

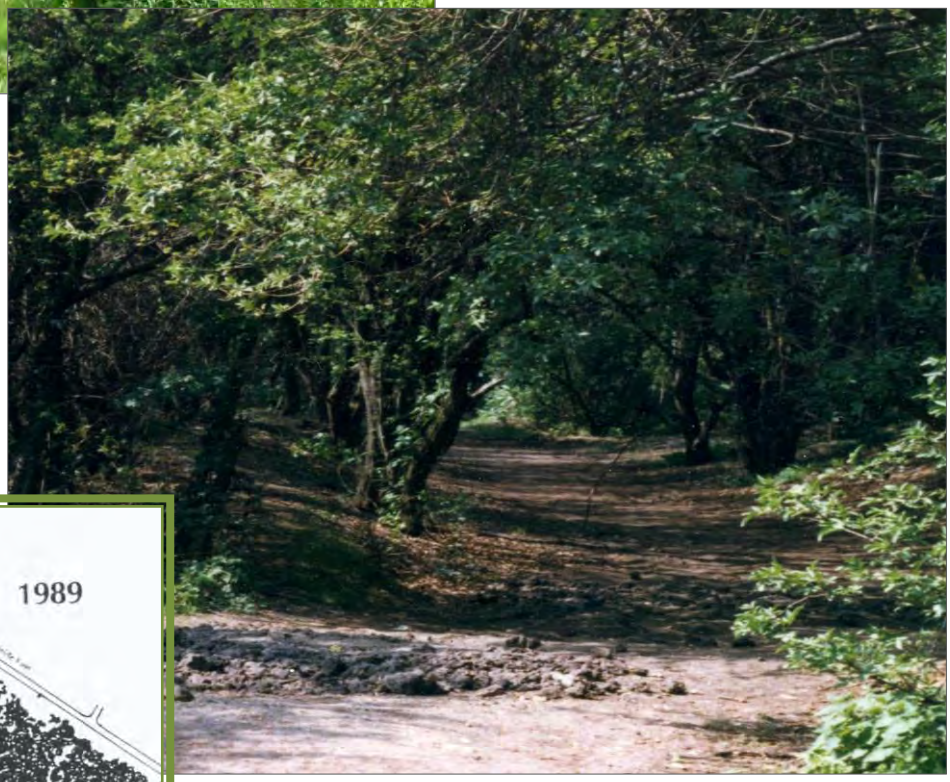


Dense hawthorn scrub.

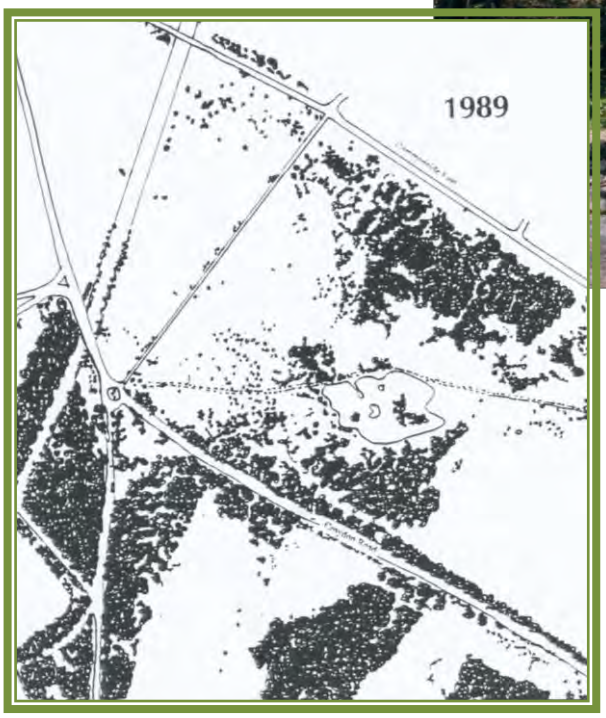
Scrub plants compete for light and as they grow, thicket scrub develops. In time the hawthorns overshadow the others to form dense hawthorn copses.

Gorse bushes may at times keep up with the hawthorns but they don't live as long. Pure stands of gorse then die and collapse letting in the light.

Hawthorn copses are so dense and dark that nothing can grow on the ground beneath them and the grass heath vegetation dies out.



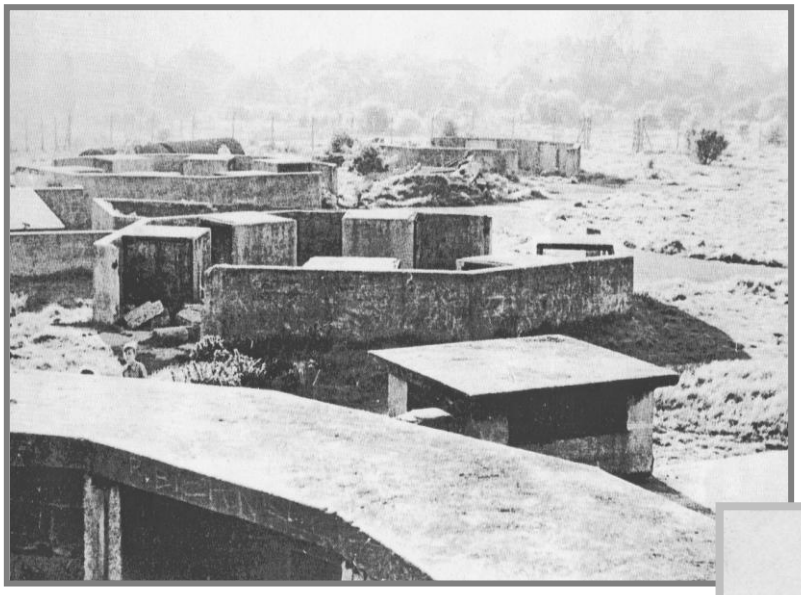
A dark empty hawthorn copse.



Grassland lost to scrub and trees in the Seven Islands area by 1989.

The speed with which the grass heath has been replaced by woodland in the last century has been phenomenal. There were no natural trees at all in 1891. This map shows the extent of tree cover in the Seven Islands region 100 years later and it continues to increase relentlessly. The bare areas top left and to the right are tip sites and today these are also turning into scrub fast.

Chapter 3
Tipping of domestic waste



Remains of the gun emplacement.

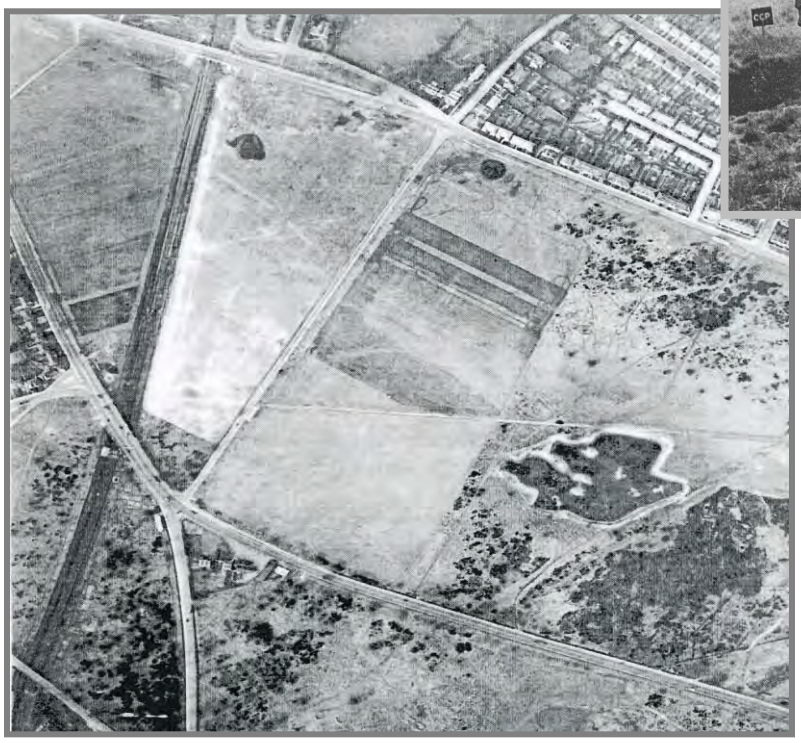
World War II 1939-1945

An anti-aircraft station was installed on the common near the Goat pub and a searchlight battery near the windmill. The gun emplacement was not removed until 1964 and the area is still recovering.



Home guard trained on the common.

Dig for Victory



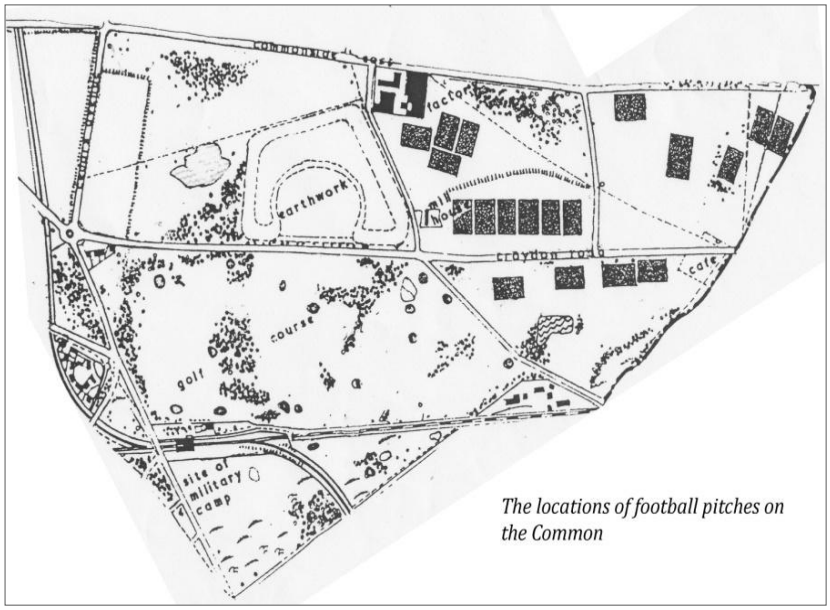
Fields beside Cedars Avenue near the Seven Islands Pond.

Large areas were ploughed to grow food. Cereals and other crops were grown on fields on either side of Cedars Avenue. Land east of Watneys Road was used to grow potatoes and there were allotments on land opposite the trading estate. With the use of fertilisers surprisingly good crops were grown despite the infertile soil.

Production stopped in 1948 and the main areas were harrowed and seeded before being de-requisitioned in 1949. It was expected that when farming stopped the land would revert to its original state but further disturbance has since taken place in most of these areas preventing regeneration, possibly forever.

Controlled tipping

Croydon had laid out football pitches near their boundary before the war. These were reinstated after the war and many others were added. In 1948, Croydon suggested 'controlled tipping' of domestic waste on a wet site behind Mill House to raise the level and make room for even more pitches. By 1968 there were 19 pitches on the common, six of them on this reclaimed land behind what is now the Ecology Centre.



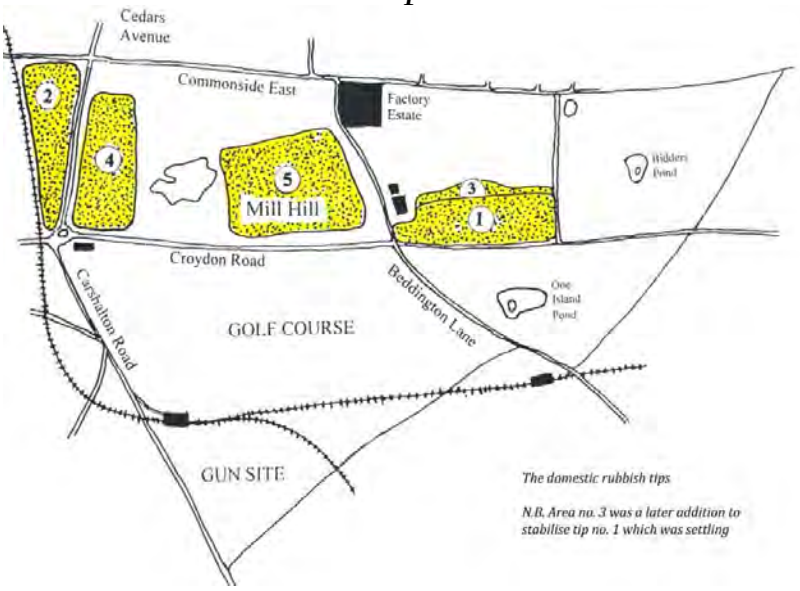
The locations of football pitches on the Common

Football severely limited the variety of species that could grow. Rye grass did well as it withstood heavy wear and produced low grade amenity grassland. When football petered out the compacted soil still delayed regeneration for years. On one pitch next to the Meadows estate the topsoil was removed and heather was sown on the poor subsoil; it is doing well.

Tipping continued from 1949 to1963

Once started, tipping continued for 15 years. All the local councils joined in and enjoyed free waste disposal on area after area. The next sites were the fields by Cedars Avenue that had been ploughed during the war and were still unsightly, and lastly a huge area near the Seven Islands Pond. Only public protest prevented this tip from being twice as large.

Domestic waste tips on the common.



Note: In the following account Tip 2 is called the railway tip and Tip 4 the Cedars Avenue tip.

Wastelands

In all these sites the topsoil was removed first and then replaced after tipping. The acid grassland was expected to return but instead the tips remained wastelands for decades.

Fertility

Acid grassland grows on dry, impoverished and acid soil, open windswept areas subject to grazing. On the Cedars Avenue tips the topsoil had been enriched by fertilisers when cultivated and it now lay over a deep layer of decomposing domestic waste. The drainage may have been good but fertility was far too high.



Shaggy ink-cap toadstools.

Every autumn each tip was a field of shaggy ink cap toadstools that lived on the rubbish below. Nutrient rich liquids also drained away causing dreadful smells in Pinnock's Pond near Commonside East. The pond was drained and tipping in the vicinity stopped, but low level pollution continued for many years. Plagues of mosquitoes appeared which made summer evenings a misery for people over a wide area until the mid 1960s when the pond was filled in.

Deep rooted plants can draw nutrients from the rich layer below to support growth above ground. The root system of hoary cress for example extends 3-5m. deep and 4m. wide. Later, as plants die, the rotting top growth fertilises the surface soil. It has taken more than 50 years for the surface fertility to drop low enough to support acid grassland species.



Deep rooted hoary cress.

Longevity

Seeds don't last forever. The seed bank was much reduced during the agricultural years and without growing plants, the necessary mycorrhizal fungi died out leaving only short-lived spores. Widespread acid grassland colonisation was not possible until these fungi and a strong seed bank were re-established.

Grazing

Grazing was banned in 1901 but there were still rabbits until 1953 when myxomatosis killed almost the entire rabbit population. The blackberries and hawthorns then had a free run for forty years, pioneering woods not grassland. Then the rabbits returned. There was a population explosion in the 1990s and rabbits overran almost all of the common. Their effect on the vegetation of the tips has been profound and in places there are now wide expanses of plants that rabbits will not eat.



Hawthorn undercut by rabbits.

Rabbits, however, will eat hawthorn. Young bushes are now uncommon and the older ones severely undercut. This helps reduce scrub development but sadly they do not eat blackberry canes.



Rabbit grazing.*



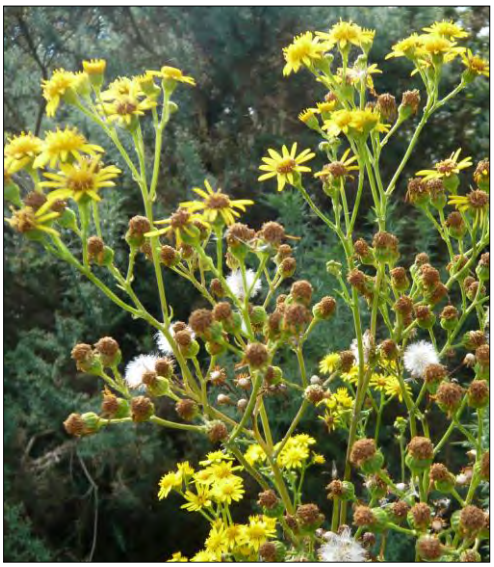
Rosebay willow herb, sometimes called fireweed.

Grass fires

Fires are frequent and sometimes severe, as in 1983 when practically the whole Cedars Avenue tip was razed. These fires regularly set back any developing succession. The nutrient rich fire sites are colonised by rosebay willow herb which remains for years afterwards and is glorious in flower.

* Photo courtesy of kawwauser2010

Plants of disturbed ground (weeds)



Biennial ragwort.

Disturbance creates bare ground soon favoured by so-called weeds. They are specialists that do not need mycorrhizae so they quickly make the most of every opportunity. They have an insecure lifestyle and compensate with a huge seed output and longevity. They direct all their effort into seed production.

Rapid work!

Chickweed can produce 2000 seeds in seven weeks with many life-cycles a year.



The huge crop of great mullein seeds may last 100 years.

Annuals

Plants like hedge mustard and charlock complete their life cycle within one year.

Biennials

These take longer to seed. They spend the first year amassing food reserves to feed the growth of large flowering shoots the following year. They are very characteristic of disturbed ground and many are poisonous. Populations of biennials vary enormously depending on the weather in the first year.



Perennial yarrow and mugwort (with the yellow annual hedge mustard).

Perennials

The more permanent plants of waste places are perennial. They flower every year and steadily increase their seed output by spreading vigorously. They make large patches and claim as much ground as they can from competitors.

The Cedars Avenue tip



Sheep's sorrel.

There is a large rabbit warren in the SW corner of this tip and rabbit grazing is very obvious, with undercut hawthorn trees. Acid grassland plants are now appearing. Bent and fescue grasses are there and in spring, carpets of the perennial rabbit resistant sheep's sorrel can colour the common red. Later the yellow St John's Wort flowers can also be spectacular.

The vegetation in the north east is dominated by stinging nettles, blackberries and hawthorns. If there were trees among the hawthorns the area would become woodland but there are no oaks here. There is, however, an increasing number of elderberries which can make short-lived copses.



St John's Wort near Cedars Avenue.



Blackberries, stinging nettles and hawthorns in the north east corner.

Blackberries are not confined to this part of the tip. They are invasive plants, spread by birds that eat the fruits, and by their own runners. By 2010 they were quite out of control, covering ever increasing parts of the tip, even in the rabbit infested south. The area seemed set to become one enormous blackberry patch.

The blackberry takeover bid



Low growing common blackberries.

There are over 400 types of blackberry. Most just sprawl into open places and only slowly gain height but a particularly strong and vigorous type has appeared. These canes can be 3-5cm wide and arch 3 metres up into trees and bushes. The runners can go just as far and extend rapidly to make huge mounds.

Enormous tracts of the tip were covered in dense stands of this blackberry, up to 2.5 metres tall. They are now invading the railway tip and many other sites and are a real threat to the open spaces on the common.



A young stand of giant canes crawling into the grass.



Flailed canes in the foreground and a tall stand, like a hedge, awaiting treatment.

The situation was so serious that in 2013 heavy machinery was brought in to flail the largest patches. Regrowth was treated with herbicides and further drastic action is ongoing. Ironically, the berries themselves are large and abundant with a superb flavour!

The railway tip



Open grassland in the centre.

There are tips on both sides of Cedars Avenue. The railway tip was completed first and far less waste was tipped here than on the second tip, which stands well above the level of the road. Being isolated it was not subject to devastating fires and matured more rapidly. In the 1970s it was mown. The centre is now open grassland with characteristic grasses and well established ant hills.

The northern end has scrubbed up, firstly with hawthorns but recently with rabbit resistant elderberries, blackberries and roses. The southern end is covered in stinging nettles because it was covered with sewage sludge in the 1970s. There is a very obvious cut-off line where the sewage sludge ends and the vegetation changes.



The end of the sewage sludge marked by cow parsley among the nettles.

Sewage sludge

Sewage sludge is the final waste from sewage works. It ought to be excellent manure but the high phosphate level inactivates the mycorrhizae that most plants rely on to absorb phosphates. Sludge also contains poisonous heavy metals. Very few plants tolerate such conditions. In the first few years the tip was covered in tall stands of hemlock but then the nettles took over and they have been here ever since. They do not need mycorrhizae. In recent years cow parsley, which is related to hemlock, has flourished among the nettles in the spring.



Stinging nettles.

In 1984, a huge mound of sewage sludge appeared in the south of the Cedars Avenue tip.

Elderberries or Elders



Spectacular elder flowers.

Elders grow from seeds brought in by birds that have fed on the sweet black berries. They are tough weed shrubs that thrive in difficult exposed places like building sites and wasteland. They are very obvious on the Cedars Avenue tips and may even form short-lived copses.

Elders do well on rich soils including sewage sludge that most plants find difficult. They are abundant in a wood on the golf course where millions of starlings roosted in the 1970s and left their droppings.



Elders growing at the top of a bank of sewage sludge near the Cedars Avenue roundabout in 2008. Cow parsley below.



Rabbits undercut the hawthorn but not the elder.

Elders are extremely poisonous plants. Every part contains toxins except the flowers and ripe berries. Rabbits will not touch them and they live with impunity on the rabbit infested tips by Cedars Avenue. Most animals avoid elders but they are good food for sheep and they did not survive long when the common was grazed.

Chapter 4
Mill Hill, the last rubbish tip1949-63

The last rubbish tip (Mill Hill) was higher than the Cedars Avenue tip but contoured to provide a sports arena. Learning from experience, land drains were also installed to prevent liquids draining into the Seven Islands Pond but the arena was not a success. It proved too wet to use and, like the earlier tips, the vegetation was unattractive.



Cracked clay path.

In 1968, it was capped by 10ft of clay from the building of Pollards Hill estate and it became a hill. Subsoil clay is intractable stuff. When wet, it is heavy and sticky and when dry it bakes rock hard, shrinks and cracks. Both drainage and aeration are poor, making root growth very difficult. Growth is impossible for most plants but the weeds of disturbed land flourished. Amazingly, shaggy ink cap fungi, far below, sent up toadstools through the clay.



Grassland on the top of Mill Hill.

For several years the abundance of weed seeds like thistles, docks and plantains attracted large flocks of gold finches and linnets but it could not last. As the topsoil matured the hill would inevitably have scrubbed up. It is only regular mowing that keeps this area open, limiting the vegetation to grassland.



Sow thistle seeds.

The natural vegetation of Mill Hill



Goat's Rue on Mill Hill increases steadily.

The banks of the hill were faced with sewage sludge, which is an impossible soil for most plants. Stinging nettles were soon established, persisting unchallenged for 40 years. Creeping thistles now invade the nettle beds and there are teasels that can tolerate mineral imbalance at the top of the southern banks. Hemlock and cow parsley are increasingly common too. Many trees have been planted on the slopes, with varying degrees of success, but the elderberries in the north are the only self-seeded trees.



The south bank is still a sea of stinging nettles. The oaks were planted in 1990.

The grassland of the clay capping is dominated by couch grass, but Goat's Rue is established locally and mallow at times is present in quantity. Mowing and hay removal steadily improve the quality of the grassland with vetches and other small flowering plants now present in increasing numbers.



Common mallow.



Teasels.

Pollution of the Seven Islands Pond

Originally, the pond was fed by a stream, now lost under the tip. The water was acid like the surrounding soil and crystal clear. It was a lovely place for children to play and swim and provided a favourite playground for generations of children.



1936

Despite land drains, the ground water polluted and fertilised the pond. Plant and animal life thrived. The pond had a huge breeding population of toads and wonderful free fishing that attracted fisherman from miles around. The numbers finally became too big causing problems with fires, camping, damage to the banks and excessive litter. Reluctantly, the fish were removed and the process is repeated when necessary.



Unsightly overgrowth of floating blanket weed.

Blanket weed (algae) also became a major problem. Fertilised by nutrients from Mill Hill it flourished every summer, floating like a hideous green carpet that faded to a dirty yellow as it died. Fishermen would drag it off the pond to allow them to fish and it lay in huge mounds on the banks. It was an eyesore for more than 15 years but eventually petered out. Surprisingly the algae re-appeared in 2014 after an abnormally wet winter.

Silting up

Dead plants and animals sink to the bottom of ponds. In a healthy pond they rot and are recycled but the quantities here were excessive - not only blanket weed but also leaves from the many surrounding trees and serious quantities of fishermen's ground bait. Rotting material robs water of oxygen so decay is incomplete and black stinking mud develops. Oxygen is even less soluble in hot weather when fish and other animals tend to suffocate. In one summer desperate fish even had to be rescued.

The half decomposed silt built up on the bottom and the pond became shallow, drying out in hot summers. The shallow water suited the bottom rooting bog beans and they increased dramatically, killing off everything below. The water table was also falling. In suburban areas much of the rainwater goes to the sewage works instead of soaking into the soil and all the local ponds were in trouble by the 1970s. The Three Kings Pond and the Carshalton ponds were given concrete linings to retain water but that was not an option here.



Bog bean.



Willows on the islands and bog bean in between. Pre 2008.

Major de-silting took place in 2008 to deepen the pond. Trees on the banks and islands were also removed. Some of the silt was taken away but much of it was piled onto the islands. For a while the view was bleak but trees soon returned to the islands. Willows sprouted from buried stumps. Birch, willow and poplar seeds washed in.

During de-silting most of the bog bean was removed but the water table continues to fall. In dry summers water can still be shallow, favouring the aggressive spread of the bog bean once again.



Young willows from seeds washed onto the shore.

Chapter 5
Trees and woodlands

Without grazing, acid grasslands are soon invaded by trees like birch, willow and poplar whose immense output of seeds are blown in by the wind. Birch seeds can germinate almost anywhere and can afford to wait until water is available, but the seeds of willows and poplars are very short-lived and can only start to grow where the soil is already damp. This confines them to the wetter parts of the common.



Silver birch.



Young birch saplings among gorse and brambles.

Silver birch

Silver birch trees are graceful, with white trunks and a rather drooping habit of growth. They grow well on dry sandy soils and can easily become invasive. They are often a major coloniser after fires.



Female catkins break up to release the seeds.

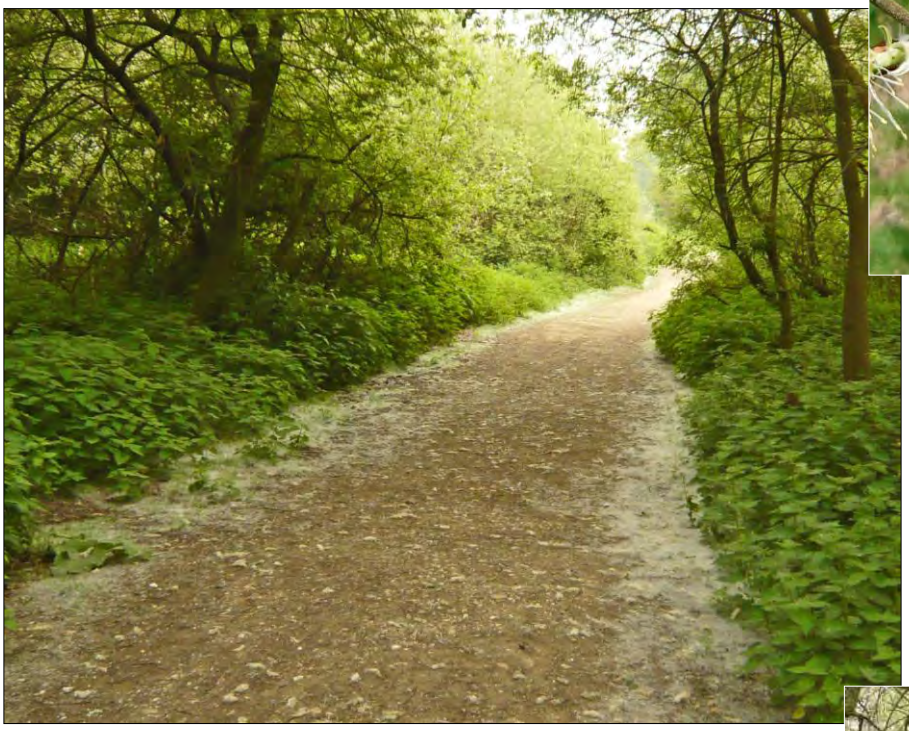
The seed production of birches is quite phenomenal. Their tiny winged seeds land everywhere and they can germinate freely. A wood may develop in a very few years creating shade and shelter for other plants and changing the vegetation. Birch trees are however short-lived and are often killed by parasitic bracket fungi.

Grey willows



Male catkins.

These resemble ‘pussy willows’ but the true pussy willow is the goat willow, which has stronger catkins and larger leaves and is more tree-like.



Willow seeds lining the path like snow.

Willows produce millions of tiny hairy seeds that blow away and drift like a ground mist, or float on water to be washed up on the banks. They only live for a few days and only grow in wet places.



Branches fall to the ground and root.



Grey willows form huge domed shrubs that invade surrounding land. Branches start to grow erect but then fall outwards until they lie along the surface of the soil. They then root and as the old wood rots away, new plants form.

Grey willows are well established in the swamp, on the islands in the Seven Islands Pond and on the wet land at the foot of the tip in the north west corner of the common.

Aspen poplars

Aspens are catkin bearing trees and like willows they produce huge numbers of tiny hairy seeds that blow away in the wind. These have a very short life and need wet ground for germination. Aspen leaves tremble in the slightest breeze because each leaf stalk is flat like a ribbon. Aspens are mainly found on the fringes of the railway tip and against the balsam poplars near the Croydon cemetery.



Small round aspens leaves.



A developing aspen wood.

Once established, aspens throw up large numbers of new shoots (suckers) from their roots and a wood soon develops. At first the new trees are closely packed with few branches. They make a dense wood but it thins out later as the weaker plants are crowded out.

A strong root may throw up a long line of suckers as seen above and on a larger scale on the right.



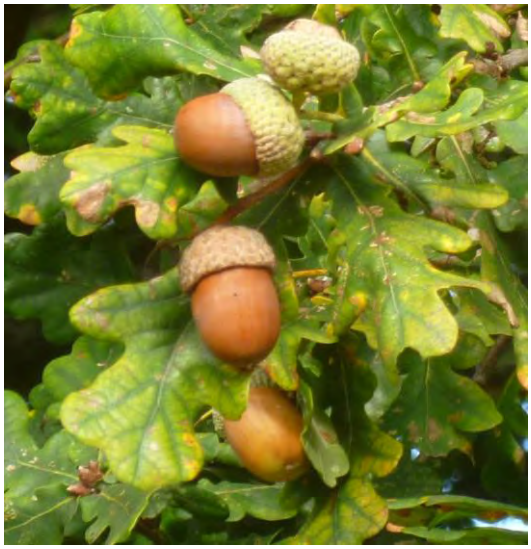
Two suckers arising from a surface root.



Aspen suckers running straight out into the railway tip.

Development of oak woods

There are extensive oak woods on the common today. They are the natural vegetation on dry sandy soils and probably covered the entire common before people arrived. The new oak wood development, however, was slow starting because the common was then almost treeless. The nearest seed parents were oaks planted on the southern boundary long ago.



Jays hoard acorns.

Oaks produce large nutritious acorns and both squirrels and jays hoard them as a winter food supply. The growth of oak woods on the common was almost entirely the work of jays. (There were no squirrels then). A jay can plant 5,000 acorns in a season and may travel more than two miles to bury them, carrying up to nine acorns at a time. The acorns are buried in natural holes or under litter. The birds remember where they are by visual clues but some will be missed and grow.

Young oaks grown in open land soon outstrip any shelter and grow into large spreading trees. In dense scrub they urgently need to gain height. They grow tall and straight until they have outgrown the scrub.



Tall straight trees in new woodland.



A standard oak tree grown in the open.

Oaks are slow-growing and long-lived. They may not even start to produce acorns for 40 years. Most of the oaks are English oaks, which have stalked acorns. There is another British oak, the Durmast oak that has acorns without stalks and a straighter more vertical growth. Some oaks here have this growth form: possibly some were planted.

Oaks and hawthorns



Hawthorn sheltering three young oaks.

Jays often plant acorns up against young hawthorns which they can locate later. Young oaks then grow in the shelter of a hawthorn which protects them from grazing animals and severe weather conditions. The two develop together, the hawthorn acting as a nurse.

Eventually the oaks grow taller than the hawthorn and spread their branches above their nurse. In the end, the shade they cast will weaken and kill the hawthorn but they may live together for a long time before that happens.



Four years later the oaks outgrew the hawthorn.



Here the hawthorn has died and only the oaks remain.

The trees on the left were planted by jays on the outer fringe of a hawthorn copse, seen in the background. An arc of trees surrounds the original hawthorn which is now dead and disintegrating and in time only the oaks will be left, their history recorded in their shape. One-sided trees like the tree on the right are common reminders of their origin.

The legacy of nurse trees

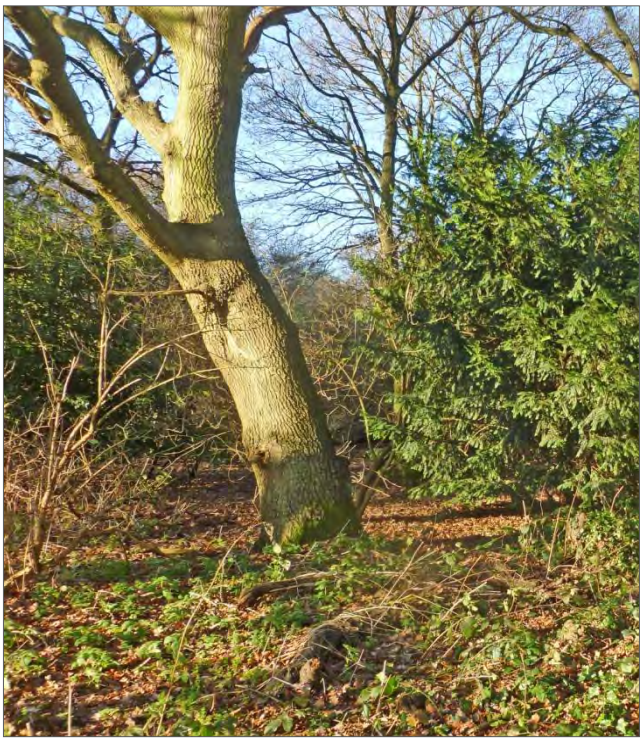


The decrepit remains of a large hawthorn are on the left.

Oaks that are planted close to hawthorns often find it difficult to get enough light. Quite severe curvature from the base can occur if planted very close to a really vigorous tree.



Trees that lean outwards are common, but once the oak has outgrown the hawthorn normal vertical growth takes over. Once the hawthorns have disappeared it is often difficult to see why many trees are not upright. Oaks that did not compete closely with hawthorns have tall straight trunks.





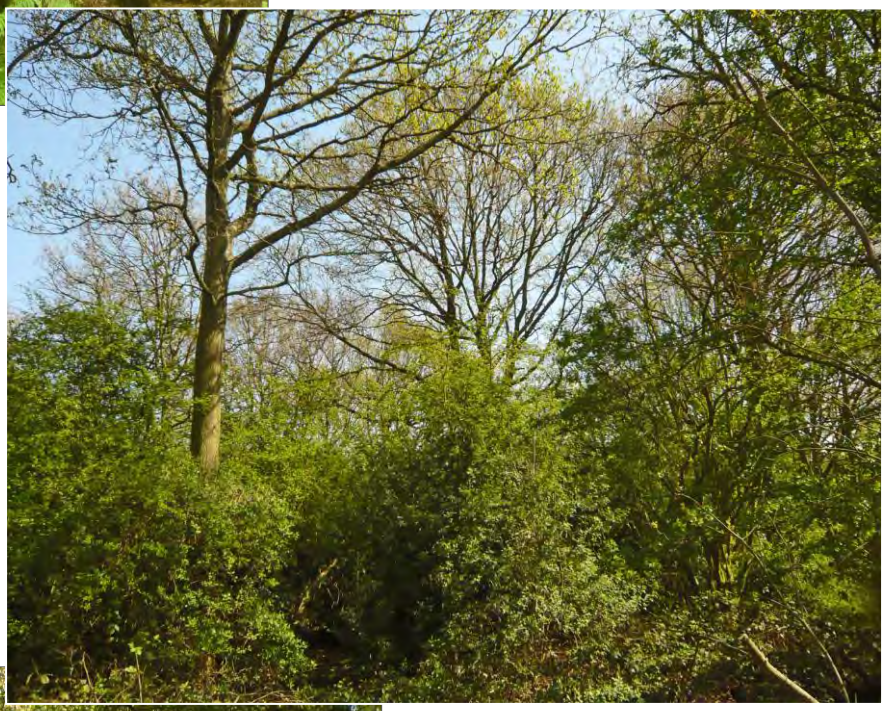
The hawthorn clearance



Dark, close-packed hawthorn copse.

Hawthorn woods vary. Where the hawthorns are closely packed with few oaks, dense copses of very tall thin trees develop. In an old wood of this type by Croydon Road the weakest trees have died, letting in some light. Stinging nettles and elderberries are now present and seedling sycamores quite common.

With more oaks, the woods evolve differently. As the oaks grow and spread their branches the hawthorns are robbed of light. Eventually they die and collapse to leave bare, empty oak woodland with scattered patches of dead branches and trunks.



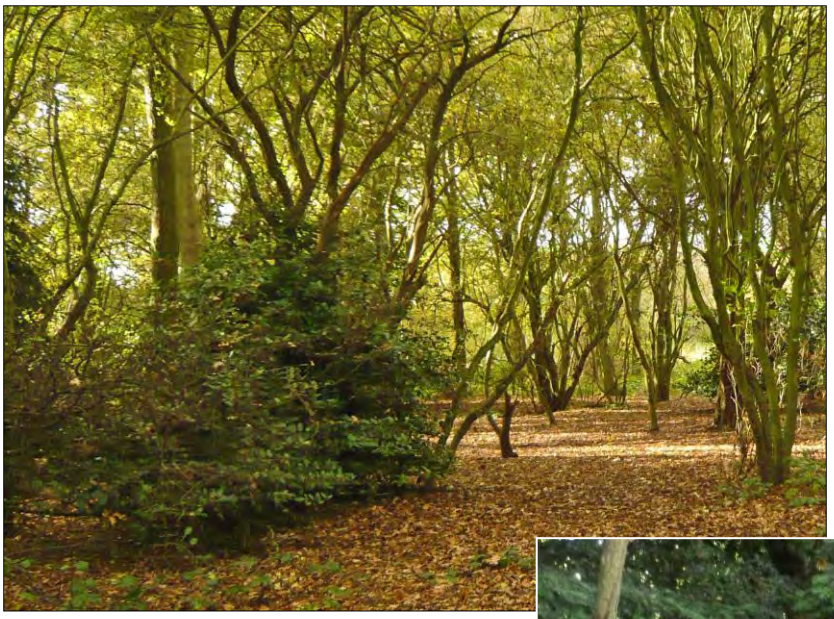
Oaks overtop the hawthorns.



A tall and empty wood, apparently swept bare.

Young hawthorns and oaks cannot grow in the shade. The woods stayed empty for years until the ground had matured enough for other members of the woodland flora to arrive. Evergreen trees and ferns started to appear in the 1980s but it was 30 years before there was a full ground cover, even in the oldest parts of the wood.

Winter sunshine



Holly in open woodland.

Evergreen trees make use of winter sunshine when other trees have dropped their leaves. They also tolerate shade in the summer. Their leaves are tough and can withstand cold windy weather and the inevitable water shortages that occur when the ground is frozen.

Holly and yew trees started to appear in the 1980s. They grew slowly at first but are now becoming big trees forming an under storey below the oaks. They cast deep shade, winter and summer alike. Absolutely nothing grows below yew.



Dense shade under yew.



Ivy climbing trees and covering the ground.

Ivy is also present. It has roots in the soil but uses shrubs and trees for support and climbs to reach the summer sunshine. It may exist as ground cover for a long time before starting to climb. In some woods it smothers everything.

These evergreens all have juicy berries late in the year and the seeds arrive in bird droppings, often growing close to the trunks of trees where birds roost.

Ground cover

Male ferns soon colonised damper parts of the sheltered woodland floor, growing from spores blown in by the wind. They were once rarely seen on the common.



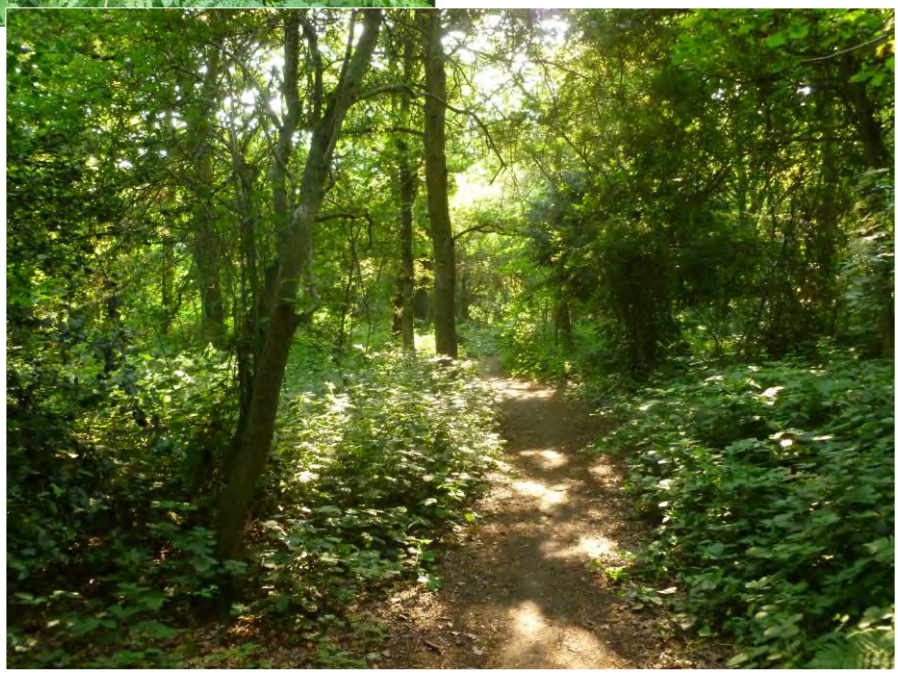
Male fern.



Bracken.

Bracken also flourished. A very small patch had been present for a long time but at the end of the 1990s this patch began to increase rapidly and in places now covers much of the woodland floor.

The natural ground cover of oak woods on dry acid soils is a mix of bracken, blackberries and stinging nettles. Isolated plants have been here for many years but the wet summer of 2012 triggered an explosive growth of blackberries and stinging nettles in the oldest part of the wood, changing its aspect for ever.



Ground cover of blackberries.

Other plants appeared locally but many were garden escapes, like lily of the valley, coming from garden rubbish or deliberately planted. The most successful are Spanish bluebells which may be white, pink or blue. Whether they will co-habit with bracken like native bluebells remains to be seen.

The wind blows in tree seeds



Sapling sycamores in a hawthorn copse.

Sycamores

These were the first trees to arrive and they were not welcome. They are not native trees but are extremely fertile and spread rapidly. Well over 50 very large trees were cut down in 1984 to reduce seed input, many from the woods on the railway side of Carshalton Road, but the problem remains.



Winged seeds of sycamore.

Control of sycamores is ongoing. They will never be eliminated but with constant effort they are being contained.



Winged seeds (keys) of Ash.

Ash trees

Today it is ash tree seeds that are blowing in. These too are abundant and germinate freely. Ash is a natural component of oak woods. The saplings are vigorous and soon grow tall and straight, rapidly reaching the canopy above.



Long ash leaves with many leaflets.



Pale smooth trunks of young ash trees.

Birds also bring in seeds

Bird droppings contain the seeds of berries eaten but conditions must be right for them to grow. In the young, dense woods only evergreens like holly, ivy and yew survive. Today, as the hawthorns die and let in summer light, honeysuckle, wild cherries, and elderberries are able to gain a foothold in clearings.



Cherry trees with suckers.

Wild cherry

Cherry trees in flower are spectacular and in the woodland fringe they sucker freely and may form small copses. There are also many young cherry trees in the woods today that grow rapidly to reach the canopy above.

Honeysuckle

Honeysuckle is an untidy woody climber that winds around the twigs and branches of other plants, rapidly climbing high into the canopy. The woody twining stems and the branches both thicken with age and the supporting branches are often strangled. Winding round its own stems, it forms strong ropes.



Twining around a small branch.



Juicy berries.



Fragrant flowers.

Honeysuckle is normally confined to woodland but a very aggressive form has appeared that is invading some of the acid grassland.



Twining stems thicken and form ropes.

Newcomers

Turkey oaks

These are poor timber trees but have long been planted in gardens. In recent years, possibly due to global warming, they have become highly invasive in the countryside. In many ways they resemble the native oaks but they grow faster and compete with them for space. Unlike native oaks they can even grow in the shade within existing woods. They interbreed with native oaks and so hybrids are common.

The leaves of Turkey oaks are deeply cut and the winter buds appear spaced out and wispy instead of smooth and clustered. Acorns with mossy cups are unmistakable.



Deeply cut leaves that last long into the winter.



Turkey oak buds.



Native oak buds.



Characteristic mossy acorn cups.



Wrinkled and sticky knopper galls.

Knopper galls

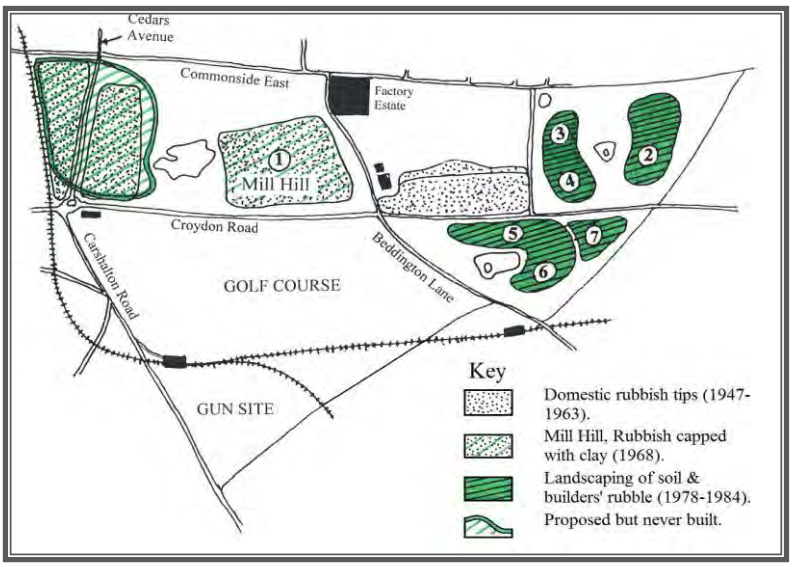
In 1960, knopper galls began to appear on the developing acorns of native oaks and in 1987 they were so numerous that the very survival of oaks seemed at risk. Fortunately occasional bumper crops of acorns produce sufficient viable seeds. The wasp that causes these ugly galls is now known to complete its life cycle in the male catkins of the Turkey oak, which is another good reason for removing the Turkey oaks.

Chapter 6
The new hills 1978-1984

Between 1978 and 1984 almost a fifth of the common was covered with landscaped hills about nine metres high, to raise money to maintain the common. There were plans for even more, stretching from the Seven Islands Pond to the railway, but these were abandoned in face of intense public protest.



View towards St Helier.



All the tipping from 1947 to 1984. The new hills in dark green.

Gravel was extracted first and then the hills were built of subsoil and rubble. The first hill was covered in the original soil but elsewhere several types were used including chalk. The hills extinguished the acid grassland but added a varied landscape with high ground for walks and panoramic views.

Development of wildflower meadows

It was planned to maintain the hills as wildflower meadows. Most were sown with a wildflower mix but today the plant cover is very varied. The materials used to build and to surface the hills depended on what was available at the time; it is very mixed. Some of this material was also chalk which is a very difficult soil. In moderation chalk improves fertility but in excess it makes mineral absorption difficult, especially for the iron salts needed to make chlorophyll. Chalk soils are colonised by a specialist group of plants, many with beautiful flowers. Where there are flower-rich areas on the hills one suspects some chalk input.



A fine show of catsears.

The new soils were rapidly colonised by wasteland weeds which can bind loose soil and prevent it from washing away. The soil in time settled and matured and other plants gained a foothold. Plants compete fiercely for space and light and those not suited soon die out.

The original wildflower mixes did well on some soils. On others, different plants gained the upper hand. This produced a mosaic of vegetation reflecting the soils below. Vegetation often seems to change quite abruptly from place to place.



One Island hills.

Left alone the hills would have scrubbed up long ago and turned into woodland, but they are mown every year to maintain them as grasslands. Removing the hay also reduces fertility favouring both acid and chalk grassland flowers and the quality of these grasslands improves year by year.

Some of the many grassland flowers



Hairy tare.



Bird's foot trefoil.



Common vetch.



Sanfoin (very local).



Grass vetchling.



Lucern.



Meadow vetchling.



Dog daisies.



Common catsear.

Planted trees: Willows and poplars



Female crack willow glowing in the sun.

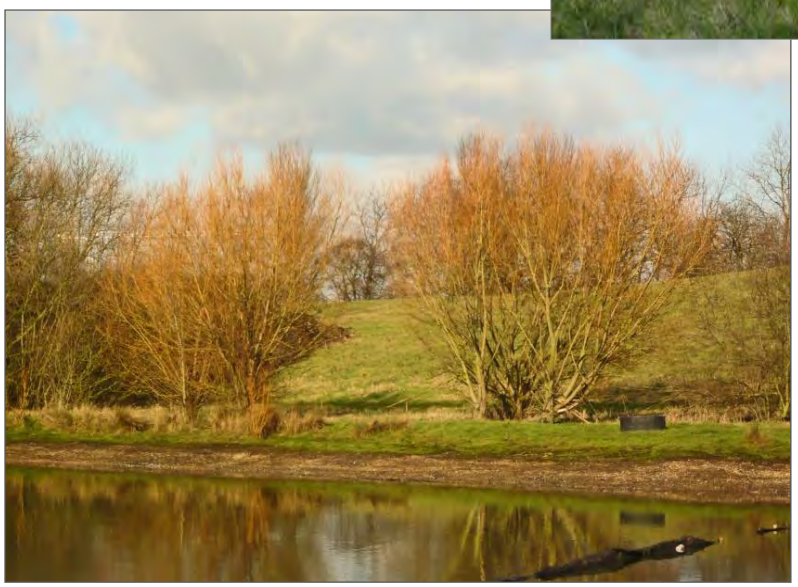
Tipping and hill building degraded many areas and the need for trees became pressing. For quick growth, nothing beats willows and poplars that grow easily from cuttings, even from branches a metre long. They soon make an impact on the landscape. There are separate male and female trees and their short lived, hairy seeds can only grow in damp places.

Crack Willows

Crack willows are big spreading trees, easily recognised by twigs that snap off when knocked. Many have been planted, either as isolated boundary trees or as ornamentals (on the golf course). Their main centre is the One Island Pond site.



Gorgeous male catkins. Manor Road.



Young female willows on the bank of One Island Pond in 2011.

There were once large female crack willows here which have now gone, but cuttings were planted on the eastern bank. Many male trees (and a few bay willows) were planted behind the pond where now there is a fine woodland walk. Both crack and goat willows have seeded round the edges of the pond.

White poplars



A group of white poplars on the railway tip.

White poplars are attractive trees. When young, the leaves are covered with a white down. As they age the upper surface becomes a dark glossy green but the lower remains white and in a breeze flashes like silver. The bark is white with diamond patterns. Most of the planted trees are female.

Female trees can produce countless hairy seeds, which need wet ground to begin growth, but this is not a major problem here. A few new plants have appeared on the islands in the Seven Islands Pond and elsewhere but the trees spread vigorously by suckers. They are increasing rapidly on the sewage sludge area of the railway tip.



Young downy leaves on suckers.



Several white poplars were planted long ago along Croydon Rd. These are now either decrepit or dead but they have suckered freely and many trees now replace them. They can be spectacular when seen from Mill Hill in windy weather.

Black Italian poplars



Black Italian poplar on the north bank. 1986.

A very large number of hybrid poplars exist today, many of them timber trees. The first was the black Italian poplar that was created in 1750 by crossing the black poplar with the American cottonwood poplar. It is a large vigorous male tree propagated only by cuttings. There are no female trees. The many later hybrids are known as railway poplars.

Four of these trees, planted round the Seven Islands Pond, dominated the scene for well over 50 years. In time they died and fell down, but this one on the north bank had an amazing history. Fishermen built fires against the trunk and it burnt right through. The tree was cut down and a huge number of suckers sprang up.



Suckers growing from the roots.



All these suckers arose from just one black Italian poplar.

In 2010, all these suckers were felled and the stumps killed to prevent regeneration. Suckers on the south bank were also removed. Only two of the original four trees produced multiple suckers but it shows what is possible. Damage seems to have triggered the excessive sucker growth here. Three black Italian poplars are still present elsewhere on the Cedars Avenue tip.

Hybrid balsam poplars

These are a cross between two American cottonwoods. They are grown commercially for timber production and therefore cheap when large numbers are needed. They were planted generously on the new hills to screen unwanted views and to improve others.



The sticky buds smell of balsam as the leaves unfold.



Balsam poplar and suckers screening the Meadows.



Young suckers beside this footpath toward Galpins Road.



Young trunks are smooth, older ones rough and corky.

They are exceptionally vigorous and disease resistant trees. They have one dominant straight central trunk and rapidly gain height, rarely producing any major branches until they are tall. After less than thirty years some now tower above native trees. All the trees are clones of an original female hybrid and without male trees they can only reproduce by suckers – and they do, vigorously! Balsam poplars prefer damp and fertile soils. They are thriving near the Croydon cemetery but not doing well on the sewage sludge on Mill Hill.

Planted trees can be a problem

People think of planted trees as isolated units that simply grow bigger and improve the view. Sadly this is rarely the case. Trees do not last forever; they need to produce and scatter seeds so that new plants will take their place. There are indeed some sterile trees like limes that never produce seedlings and are only propagated in nurseries. Others may fail to produce seedlings because they are in the wrong environment and these do neatly stay put until they die. But trees that can seed successfully like maples, sycamores and Turkey oaks can be a major problem and eradication is essential.

Most of the planted trees on the common are willows and poplars that normally only grow in damp places. What they lack by way of seedlings, they make up for by suckering; so that one tree soon becomes a small copse that increases year by year, encroaching on open land. Where many trees have been planted, even in a single row, the end result is ever expanding woodland. The trees themselves are short-lived but suckers will replace them.



Long shade from low winter sunshine.

The very presence of trees discourages grassland over a much wider area than is at first apparent. When the sun is low, especially during the winter, shade extends over a large area and depresses plant growth by reducing the light. The shaded area is colder, so frost and snow last longer, and it warms up more slowly. Trees also break the force of the wind and often produce enclosed areas where the air is damper and quieter. The vegetation changes, favouring coarser grasses and scrub, followed inevitably, by yet more trees. Without tree removal, the entire common would very quickly become woodland.

Summary

The grass heath that once clothed Mitcham Common made it a very special place but it could not last. Much has changed. Some changes have enriched the common by providing a wider range of landscape and wildlife although they reduced the area of land still suitable for the grass heath. Others have led to major problems. The critical change is that there is no longer any grazing on the common to maintain open grasslands. Without grazing, thorny plants soon take over followed inevitably by trees.

The only alternatives to grazing are grass cutting, scrub clearance and tree felling. These are now absolutely essential because so much of the original grassland has already turned into woodland. People do not like to see trees felled and are often bemused by this and other maintenance work - and yet the vast majority of visitors come to enjoy the open spaces that this work safeguards.



Maintaining and improving these open spaces is one of the greatest challenges facing the Conservators. The acid grasslands are threatened habitats and Natural England has recently provided funding specifically to manage and enhance these areas. Scrub cutting started in the 1980s when these grasslands seemed likely to be completely lost within the decade. Visitors today are reaping the benefit of scrub and tree clearance over 30 years, which has reclaimed large areas and has sometimes requiring drastic action to be effective. The quality of the grasslands has also improved now that nutrients are carried away in hay. But there is no end point. The work has to be continued and possibly extended every year, for without grazing or cutting the vegetation moves inexorably towards woodland. What we see today is a very beautiful and interesting compromise and it gives pleasure to many people.

Nothing is fixed

Everything is liable to change

Photographs in this book capture only moments in time and there is no certainty that the views will look the same in any one following year. Weather and seasons affect everything. An extreme event can prevent the growth of one plant whilst leading to an abundance of another. The balance of plants in an area can change, sometimes quite dramatically, from year to year.



Red campions, young and old bullrushes in the One Island Pond and spindle fruits.



With grateful thanks to the Conservators of Mitcham Common and the Mitcham Common Education Trust who have funded the printing of this booklet.