

Algal problems at King's Pond

Unbranched green filamentous alga *Spirogyra* spp.

This reproduces asexually by binary fission of the cells and initially lives on the bottom as a dark green filamentous alga. It is recognised by its spiral green chloroplasts, hence its generic name *Spirogyra*. It is grazed when growing by Mute Swans and Coot, the latter diving for it and feeding it to their young. Swans reach it by upending and reaching it with their long necks, mostly at the weir.

Spirogyra also occurs in the large cress bed near the Tanhouse Lane end of Flood Meadows where it is raked out when it floats to the sluice by the Alton Society's work party. It is not such a problem at Flood Meadows as there is abundant cool nutrient-poor water from the springs (except in mid-summer) and the waters are not so eutrophicated (loaded with nitrogenous nutrients) in the virtual absence of fish and lower numbers of water fowl. It is triggered by low spring flow and shallow water heating up in hot sunny weather.

Growth rate of *Spirogyra* is promoted by:

- High levels of dissolved nutrients in the water from faeces of bird and fish that are in high numbers as well as decaying plant matter
- High levels of sunlight that powers photosynthesis (the making of sugars by green organisms from carbon dioxide and water giving off oxygen as a waste product during the daytime)
- High summer temperatures of the water
- In summer the chance of low flows from springs and thus shallower water that heats up more quickly

There comes a point in late summer when *Spirogyra* leaves the bottom and rises to the surface as blanket weed, turns to a yellow-green and starts to die and decay, often giving rise to smells.

The next stage is of conjugation and the manufacture of sexually produced oospores with a protective outer coat that sink to the bottom to overwinter and start up again in the spring. Side tubes grow out from the cells enter the adjacent filament (ideally from another individual plant) and the contents of the two cells are merged. Sexual combination promotes genetic variability – a useful weapon in unstable environmental conditions that might offer the key to survival in challenging conditions.

A serious outbreak of *Spirogyra* broke out in the mid-1990s before the pond was dredged in 1996/7. This was a period of low flow in headwater streams from the chalk that prompted the closure of Weysprings Pumping station in New Odiham Road, bringing Alton's water from deeper chalk aquifers from Lasham in 2003. Due to high rainfall and surface runoff the level of water in the pond has been high throughout summer 2024.

Before dredging barley straw bales anchored to the bottom by a brick attached to a rope were set up as this provides a natural algaecide that leaches into the water, but it is a temporary solution (to the smell) and does not address the main causes of abnormal algal growth that is eutrophication of the water.

Blue-green "alga" or cyanobacteria

Another "algal" problem at King's pond and other amenity lakes, often where there are many bottom-dwelling fish is blue-green "alga" or cyanobacteria.

This also has green chlorophyll and photosynthesises and is promoted by the same factors as *Spirogyra*. On occasion I have asked the Environment Agency to test the waters – on those occasions whilst cyanobacteria were present they were not then at critical levels. Cyanobacteria, like algae come in various forms, some as gelatinous green globules like *Nostoc* on wet mossy paths, filaments attached to stones as in the River Wey near Newman Lane steps or as single cells in the open water as at King's Pond and various other amenity and fishing lakes. In the event of severe outbreak visitors are advised to get in touch with the water (skin problems) while drinking the water with high levels of cyanobacteria can be fatal to dogs or at least cause illness. This needs monitoring at King's Pond.

It is as well to look at other parallel cases and here I cite the London Lakes Project 1994 that I looked into just before the pond was dredged. This was produced by the Borough of Wandsworth with three large lakes not in good ecological order. European money was obtained and a demonstration project set up. For the first two years various parameters of the lakes were measured: physical features, chemical features and biological. In all cases there were high levels of nutrient linked with high populations of Canada Geese and bottom-dwelling fish.

Control of numbers of Canada Geese was the main target. They installed metal fencing at the banks of the ponds to prevent the geese reaching the mown grass. They also brought in egg oiling to prevent increase of the population.

Canada Geese are not native birds, although naturalized. They come from the USA and Canada where there are around 17 subspecies. All except one of these are smaller birds and they migrate about 100 miles from their breeding sites. Only one subspecies *maxima*, a heavier bird, stays most of the year on its breeding ponds. This is the strain that was brought here by fanciers for ornamental lakes where they wanted the geese to be resident all year. I have traced the spread of Canada Geese from the Serpentine in Hyde Park and Battersea Park Lake from *The London Naturalist*, the journal of The London Natural History Society and *Birds of Surrey* by Jeffery Wheatley. The birds spread through lakes in London and out through Surrey, turning up rather later in Hampshire. One goose at King's Pond had a Battersea Park ring!

The high wildfowl population at King's Pond is a direct result of uncontrolled and excessive public feeding for human satisfaction rather than conservation purposes. They are treating the birds like toys. When the pond was in the ownership of the Jackson family (who bought the battery Company and mill) they lived in King's Pond Cottage (now owned by Alton Town Council) and I had a recent conversation with their only surviving son Michael who still lives in Alton. He told me that there were far fewer birds when he lived at King's Pond Cottage but the same range of species, with the exception of Canada Geese. They did not feed the birds. It was probably then a sustainable population. When I came to Alton in 1979 (four years after the pond was opened to the public) the numbers of mallard had increased to about 100 but Canada Geese did not arrive until the late 1980s, initially in small numbers but they had built up in numbers to the late 1990s. After the dredging we obtained a licence from the DETR to oil the eggs following guidance from DETR, The Wildfowl and Wetland Trust and the Wildlife Dept of the RSPCA. About 20 years ago there were 11 nests on the large island each with up to 7-10 eggs with a potential increase to the population of 100 goslings! With a single visit we do not usually get all the eggs, a few unlaied eggs get to be laid and hatched, but oiling is a vital activity to continue as it does address the increase. In the last few years Emily and I have been doing it.

Although fishing is banned at King's Pond at various times fish have been thrown in and I have seen a dead Mirror Carp and other large carp in the water. These fish breed freely, stir up the bottom mud

preventing waterweeds getting established (this was the case in the Isle of Wight Pond on Bookham Common, Surrey – details in *The London Naturalist*). With the establishment of several Grey Heron nests and Little Grebe the fish population is not so high at King's Pond as it was, but it could do with the Environment Agency doing an electro-fish survey to check.

In balance one can continue with raking and removing the *Spirogyra* to a composting centre (do not leave it on the bank to rot and add nutrients to the pond and with it the River Wey) but the high nutrient level at the pond does need addressing and it is not an easy one. The eutrophicated water draining into the River Wey at the weir is not good for the river, hence the Environment Agency would favour the pond going offline. The other drivers of high water temperature is not controllable.

June Chatfield

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