King’s Pond

The Condition of the Pond

Introduction

A casual look at the pond shows a good assemblage of birds, particularly waterfowl. Some of these birds are fish-eaters, including visiting cormorants. So, we know there are fish.

But, what do we know about the condition of the water that the fish are swimming in and the birds floating or flying over?

The pond is not isolated. Effectively it is a wide part of the River Wey so its behavior is partly as a pond and partly as a river.

Drawdown Zones and Marginal Wetland Plants

A healthy pond should have a drawdown zone and edges that get progressively deeper to support a variety of wetland and aquatic plants. Studies show that the richest part of a pond for animals is shallow water less than 10cm deep. Aquatic plants reach maximum diversity in water 20 -60cm deep. However, areas of bare mud can be good for some invertebrates and other animals that synchronise their lifecycles with seasonal changes in water levels.

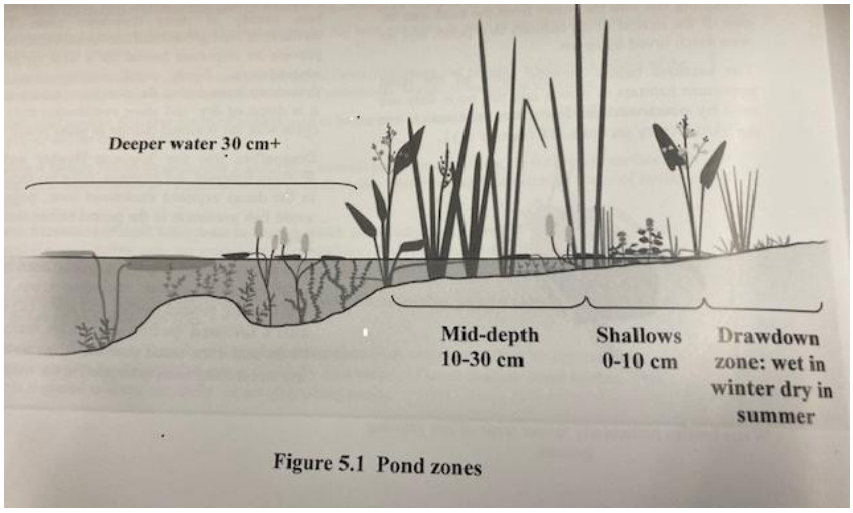


Figure 5.1 Pond zones

From The Pond Book published by Freshwater Habitats Trust

Around King’s Pond at low water levels there is plenty of bare mud but the characteristics of a healthy pond perimeter are otherwise largely absent. The reasons:

- Steep sided banks in most places
- Erosion of banks
- Large and frequent fluctuations in water level
- Grazing and trampling by large populations of geese and ducks
- Shading of shallow areas
- Eutrophication
- Pollution

Eutrophication

This is the process in which a body of water becomes overly enriched with minerals and nutrients—primarily nitrogen and phosphorus—leading to excessive growth of algae including blanket weed and an imbalance in the growth of aquatic plants. (In this context nutrients are not a good thing!)

The high levels of nutrients have an impact on which plants thrive. Unfortunately it helps invasive generalist plants rather that chalk stream specialists. Chalk stream water is naturally low in nutrients so this shift is disruptive to the natural ecology. High levels of nutrients can lead to algal bloom which in turn can block light and cause oxygen depletion and create low-oxygen 'dead zones' that deplete fish and other aquatic life.

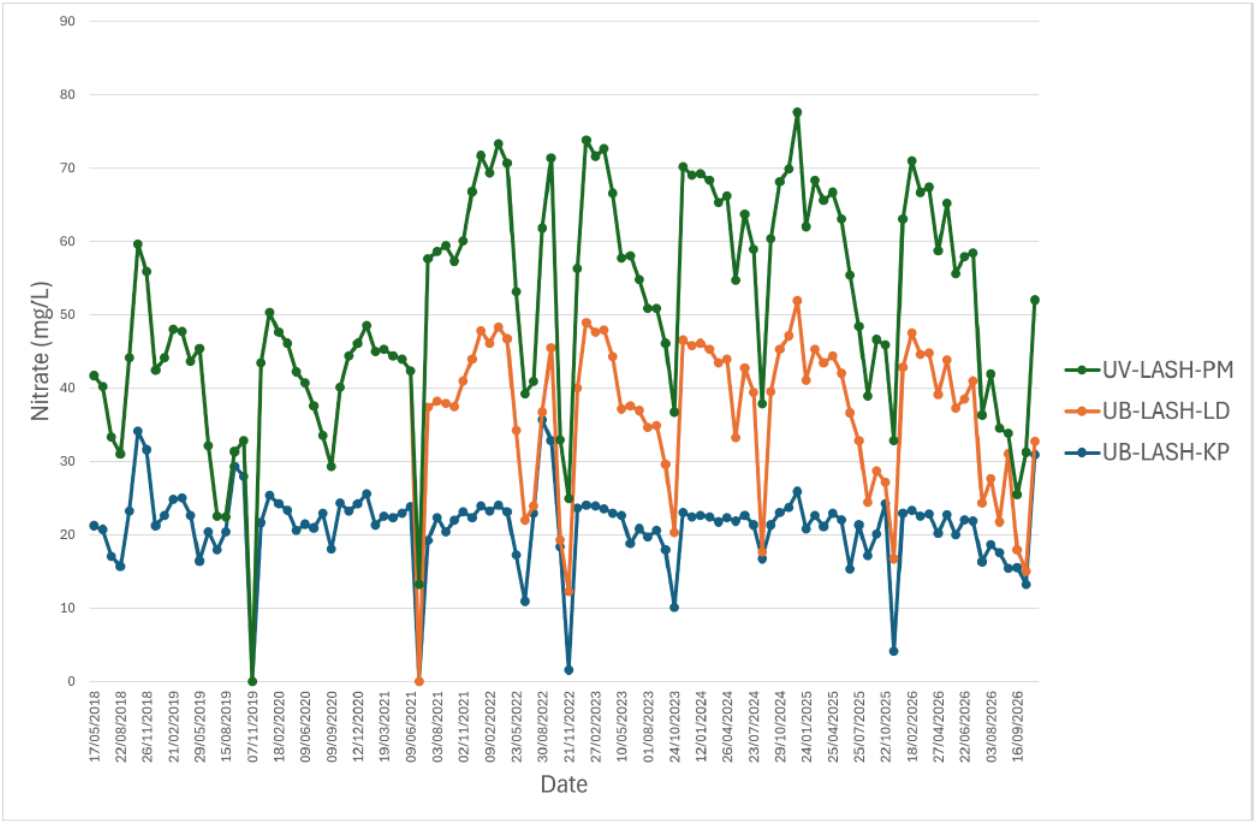
The sources of the nutrients are the faeces of waterfowl or other foul sewage, run-off from agricultural land upstream including excess fertilisers, urban run-off, industrial/domestic wastewater and rainfall.

King's Pond is eutrophicated. The evidence is from the routine monthly sampling and analysis by SE Water. Samples are taken at the inflow into the pond and at the outflow. This shows a significant increase in the levels of key nutrients such as phosphorous in the water as it passes through the pond. The pollutants pass out of the pond into the River Wey.

The primary source of the nutrients is the bird faeces. There are high populations of geese and ducks, largely attracted and supported by abundant public feeding. An adult goose produces over 1kg of faeces every day. If there is an average population of 50 geese the annual total of the faeces is over 18t from that species alone. (Numbers can exceed 100 in the late summer)

An indicative nutrient is:

2. Nitrate



SE Water Data Sampling Locations: UB-LASH-KP is the inflow to the pond.

UB-LASH-LD is the weir outflow. UB-LASH-PM is the river downstream of Paper Mill Lane

In a truly natural freshwater pond Nitrate levels are very low - below 5mg/l. In an ornamental lake the ideal level would be under 25mg/l. Levels up to 50mg/l can be tolerated by hardy species.

Water Temperature

Chalk stream water emerges from springs at around 9°C and warms up slowly as it flows along. When water is held in the pond in hot and sunny conditions it warms up considerably more. Occasional readings show that the water can be 20°C when it leaves the pond.

Warmer water lowers the oxygen levels and this affects fish and other aquatic life especially chalk stream species. Eutrophication is accelerated. The stress levels for some species of fish start at 19°C. Amphibians prefer water that is less than 20°C.

Pollution

Analysis indicates that the main source of inorganic pollution is road run-off. There are also high levels of metals that are also present upstream and may be associated with previous exploitation of the river.

Pondlife

Great Crested Newts

Kings Pond tested negative for Great Crested Newt presence. (DNA testing of the water)

Reptiles

Surveys have shown that there are very few, if any, reptiles

Amphibians

Generally, no amphibians are observed on site. Amphibians are not entirely absent, but any population is very low.

Invertebrates

A survey of the pond and surrounding site was carried out in the 2026 season. Most of the habitat elements on the site were considered minor, some considered moderate, for invertebrates (insects). 209 species were identified on site, seven of which have conservation designations. Three of these are associated with riparian (waterside) habitats.

Five specific habitat assemblages for invertebrates were identified. All were considered to be in unfavourable condition.

The water quality on site was assessed as poor with a very low score on the BWMP assessment method.

Dragonflies and Damselflies

A survey was carried out across the period May to September 26.

The population of dragonflies and damselflies at King's Pond found by this survey was very restricted both in number of species and the number of individuals. The total of only two (possibly 3) species observed is very low for a lowland pond of this size. This was to be expected from the invertebrate survey as dragonflies need other invertebrates to feed on.

Pond Sampling

In addition to the invertebrate survey, which was carried out by Ecology Partnership, Dr June Chatfield has done some limited sampling and made some observations:

- Samples taken along the edge of the pond show black silt and black plant debris – a sign of an oxygen deficient situation.

- Small numbers of animal life were found in the samples. These were mostly associated with the dead organic material.
- Aquatic plants and the animal life that feeds on them were almost completely absent.
- This points to a limited ecosystem. The almost complete absence of aquatic plants gives little basis for food chains.

Conclusion

The pond is in poor or very poor ecological condition.

Dr June Chatfield's Observations

Dr June Chatfield has been observing and studying King's Pond since 1979. This was 5 years after the site came into the ownership of ATC. She was involved with the last dredging project 30 years ago.

Dr Chatfield's observations:

- Lack of aquatic plants has been a feature of the pond since the 1970s. They were present in the early years but have been eaten out by the increasing numbers of waterfowl.
- The lower life of the pond did not fully recover following the last dredging and it has since declined.
- The deficiency of the ecosystem at King's Pond is largely due to unsustainable populations of mallards and geese with over abundant public feeding as the major cause of the pond imbalance. This is in common with other large lakes where there is public access.
- The eutrophicated and polluted water from King's Pond feeds into the River Wey where, over the last 30 years, the number of aquatic species and the number of individuals have both been in decline.

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