King's Pond: What Happens If We Do Nothing?

Introduction

The water in King's Pond is from the River Wey, a winterbourne chalk stream and from some springs within the pond.

A winterbourne or spring-fed pond that is left to silt up naturally will gradually evolve from open water into wetland and, eventually, dry land with a stream running through it. This natural transformation, known as pond succession or terrestrialisation, at King's Pond would typically occur through four stages over decades.

Stage 1: Loss of Water Depth - As silt, organic debris, leaves, and sediment accumulate.

Stage 2: Expansion of Marginal Plants - As water becomes shallower, plants spread into previously deeper areas. These plants trap more sediment, which speeds up the filling-in process.

Stage 3: Formation of Fen or Marsh - A spring-fed pond typically evolves into a wet fen rather than drying out completely, while a winterbourne-fed pond tends to have more seasonal water levels, remaining wet in winter/spring but becoming much drier during summer.

Stage 4: Scrub and Woodland Establishment - As the surface rises above the typical water level the remaining open water shrinks to isolated pools or disappears altogether with a stream running through it.

What Happens to the Springs?

The springs are unlikely to stop flowing unless there is a significant change to the groundwater system. However, the water may become less visible as it emerges through marsh vegetation, spreads diffusely, or seeps through accumulated sediments instead of forming open pools.

Ecological Effects

Expected benefits include increased habitat diversity, more amphibian breeding areas in shallow zones, habitat for wetland birds/invertebrates and development of valuable fen communities.

Negatives include reduction in open-water habitat, with the water to the west of the main island disappearing first endangering the existing habitat. Also, a decline of fish populations, fewer species that require deeper water and reduced flood-storage capacity.

Timescales

A "do nothing" approach for King's Pond is highly variable and depends on several factors, including the amount of sediment deposited by winterbourne flows, the pond's size and depth, the accumulation of leaf litter and aquatic vegetation, and the strength of the winter and spring flows. These factors determine how quickly silt builds up and the pond evolves over time.

Even small amounts of sediment can significantly reduce King's Pond's depth over time. King's Pond's average depth is approx. 0.8m deep and would lose 1m of depth in about 80 years if sediment builds up at 1cm per year, but in just 16 years if accumulation reaches 5cm per year. Presently it's believed that half the

current sediment in King's Pond that's accumulated over the last 30 years, approximately 5,000 m^3 is from deposition. In this case it could take 100 years to silt up leaving a stream and marsh or fen either side.

Summary

King's Pond, as a winterbourne and spring-fed pond, would continually fill with silt, naturally evolving from deep open water to a pond that becomes smaller and more shallow over time, and then a marsh or fen with a stream running through it.

Sources

field-studies-council.org	Freshwater Succession - Field Studies Council
content.freshwaterhabitats.org.uk	Silted up ponds - Freshwater Habitats Trust
freshwaterhabitats.b-cdn.net	Guide to the Restoration, Creation and Management of Ponds
publications.naturalengland.org.uk	Illustrated guide to ponds and scrapes (TIN079)
freshwaterhabitats.org.uk	Ponds and headwaters evidence review – biodiversity and role in nature recovery
solitudelakemanagement.com	The Stages of Lake and Pond Succession
solitudelakemanagement.com	What Is Pond Succession? Stages, Lifespan, and Prevention