Furzefield Emergence at 150 days 7/8/23

A repeat survey of the ponds with the aim of a regular interval of around fifty days.

The pond had been colonised by a great variety of invertebrate life, and it was being visited by birdlife. There was evidence of a large rabbit population which appeared to target the emerging Soft-rush in particular. The water level had remained fairly stable in pond 1, and pond 2 was beginning to have some more permanent water. Pond 2 had a large developing population of Creeping Thistle (*Cirsium arvense*) on the bank top, and it would be wise to tackle these before it becomes more widespread. There were both male and female Creeping Thistle plants present.

Pond 1: Water has persisted roughly at the same level through the summer.

Pond 2: This had to be pumped dry after the digger fire and was just starting to show signs of patches of permanent water.

It was reassuring to find that the estimated date and prediction of in-fill material for the in-filling of the pond matched the descriptions of the aural history. This placed the date of in-fill at around 1900 to 1920.

Glass melts to liquid at 1675 °C (Ullmann's Encyclopedia of Industrial Chemistry) and appears to be the temperature at which most glass recycling kilns operate to process soda–lime glass which is used for making bottles. It is malleable at 700 °C. There were reports from the farm that a building burnt down, and the rubble was used to fill the ponds. Pieces of charred wood were also seen.	
"Not Genuine Unless Bearing WP Hartley's" marks the base of a preserve pot which is catalogued by the East Riding Museum as a Stoneware preserve jar 1890. There were multiple fragments of the flute-decorated pots. 	
This was a fragment from a James Keiller & Sons Dundee marmalade preserve pot. It dates from around 1890 to 1920. 	

With continued moisture in the first pond there was much vegetation development. The Branched Bur-reed (*Sparganium erectum*) and the Sedge sp. (*Carex* sp.) had continued to grow. However, it was no longer Toad Rush (*Juncus bufonius*) but Soft-rush (*Juncus effusus*) which was emerging in profusion. The west, shaded side of the pond had suddenly gained vegetation, both of vascular plant and a significant bryophyte biofilm.

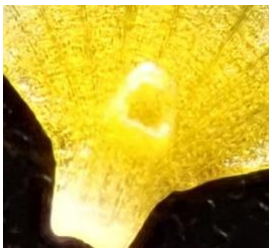
West, shaded side of pond 1 with much Soft-rush and continued Sedge emerging.	
Toad Rush was fruiting, and later emerging plants were proliferating. Not large numbers of new plants were appearing. 	
Cockspur (*Echinochloa crus-galli*) which is likely to be bird-sown.	

Water-crowfoot (*Ranunculus* sp.)
Terrestrialised material so only a tentative determination.

Immature carpels hairy

- Mixture of capillary and laminar leaves
- Petals > 5 mm, measures ca 10 mm.
- 25 stamen

The choice is between *R. peltatus* and *aquatilis.*



The nectar pit shape, although now recognised as a more variable (unreliable) feature, is circular. This is consistent with *R. aquatilis*.

The pointed ends to leaflets and the more circular leaf shape points to *R. aquatilis*.

However, this was the only laminar leaf present and was undergoing a degree of morphological reduction from terrestrialisation.

The Water-crowfoot has been sent away for flow cytometry and DNA sequencing as part of a study of Water-crowfoots in Hertfordshire. As this has come up from a seed bank with a fairly well-defined age, we may well find out something interesting (if it survives in the post). My instinct still says *R. peltatus*.

A thicket of Branched Bur-reed (*Sparganium erectum*) stretched across the pond.

Interestingly, it was the terrestrialised Branched Bur-reed which was flowering and fruiting prolifically. Here were dwarfed plants, barely 50 cm high.

I'm thinking that this is subsp *neglectum* but need to wait for ripe fruit.

Vascular plant species found on 7/8/23

Each pond was surveyed, and plant cover was recorded as a percentage of the whole pond excavation. The possible source of each plant is recorded as determined by the onsite presence or absence, and a high early local or general abundance indicating a diaspore bank source.

Key: R= local ruderal, S= site presence, P= pond diaspore, A= animal or bird vector.

Furzefield Ponds		Possible source	7/8/23 Pond 1	&/8/23 Pond 2
Scientific Name	**Common Name**		DOMIN	DOMIN
Agrimonia procera	Fragrant Agrimony	S	2	
Agrostis capillaris	Common Bent	S	1	2
Barbarea vulgaris	Winter-cress	R	2	
Buddleja davidii	Butterfly Bush*	R	1	
Cardamine hirsuta	Hairy Bitter-cress	R	1	
Carex sp.	Sedge sp.	P	3	
Cerastium glomeratum	Sticky Mouse-ear	R	1	
Chenopodium rubrum	Red Goosefoot	R, A	1	
Cirsium arvense	Creeping Thistle	R, S	2	3
Cirsium vulgare	Spear Thistle	R		1
Crepis capillaris	Smooth Hawk's-beard	R, S	1	2
Echinochloa crus-galli	Cockspur*	A	1	
Epilobium hirsutum	Great Willowherb	R, S	2	1
Epilobium montanum	Broad-leaved Willowherb	R	1	
Epilobium tetragonum	Square-stalked Willowherb	R	2	
Fallopia convolvulus	Black Bindweed*	R	1	
Galium aparine	Cleavers	S	1	1
Heracleum sphondylium	Hogweed	R, S	2	
Holcus lanatus	Yorkshire-fog	S	2	1
Holcus mollis	Creeping Soft-grass	S	2	2
Hypericum maculatum	Imperforate St John's-wort	S	2	2
Juncus bufonius	Toad Rush	P	3	
Juncus effusus	Soft-rush	P	3	1
Lamium album	White Dead-nettle*	R	2	
Lamium purpureum	Red Dead-nettle*	R	1	1
Lotus corniculatus	Common Bird's-foot-trefoil	S	2	

Myosotis spp	Forget-me-not sp.	R	1	1
Persicaria maculosa	Redshank	R	1	
Plantago lanceolata	Ribwort Plantain	S	2	2
Plantago major	Greater Plantain	S	1	
Poa annua	Annual Meadow-grass	S	2	
Polygonum aviculare	Knotgrass	R	2	
Potamogeton natans	Broad-leaved Pondweed	P	2	
Potentilla reptans	Creeping Cinquefoil	S	2	2
Prunella vulgaris	Selfheal	S	1	2
Ranunculus section Batrachium	Water Crowfoot species	P	3	
Ranunculus repens	Creeping Buttercup	S	2	2
Rumex crispus	Curled Dock	R	2	1
Rumex obtusifolius	Broad-leaved Dock	R	2	
Salix caprea	Goat Willow	R, S	2	
Scrophularia nodosa	Figwort	S	2	2
Senecio jacobaea	Common Ragwort	R, S	2	2
Solanum dulcamara	Bittersweet	S, A	1	
Solanum nigrum	Black Nightshade	R, A	1	
Sonchus asper	Prickly Sow-thistle	R, S	2	2
Sparganium erectum	Branched Bur-reed	P	4	
Stachys sylvatica	Hedge Woundwort	S	1	
Stellaria graminea	Lesser Stitchwort	S	2	1
Taraxacum officinale agg.	Dandelion family	S	1	
Trifolium pratense var. pratense	Red (native) Clover	S		2
Trifolium repens	White Clover	S	2	
Tussilago farfara	Colt's-foot	R	2	
Ulex sp.	Gorse	S	2	
Urtica dioica	Stinging Nettle	S	2	2
Veronica officinalis	Heath Speedwell	S	2	2
Vicia tetrasperma	Smooth Tare	S	2	1
Bryophytes			3	1
Bare ground			9	10
Open Water			3	2
**=planted/introduced/escape/non-natives*	**per compartment totals:**		**56**	**27**

The bryophyte layer of pond 1 was found to be very well developed on shadier slopes, and had benefitted from the damp, cool summer. The species present will be determined later in the year when identifying features are more clearly developed.

Bryophyte biofilm on the west, shaded side of pond 1

Bryum dichotomum was producing lots of axillary bulbils ready to populate the soil in the autumn. It is described as a colonist of basic to slightly acid, fertile soils (sandy, gravelly, silty, clay, or loam).	

Marchantia polymorpha subsp. *ruderalis*. Interestingly it is characteristic of the weedy *Bryum dichotomum–Marchantia polymorpha* assemblage in arable fields (Preston *et al*., 2010). The geological report of Furzefield described that the soil core material unusually contained some good quality arable soil. Other species which are nutrient-tolerant associates might include *Bryum dichotomum*, *Funaria hygrometrica* and *Oxyrrhynchium hians*.	
There were large patches of *Barbula unguiculata*. It is a defining member of the *Barbula unguiculata–Bryum klinggraeffii* assemblage described by Preston *et al.* (2010) from fields with basic soils.	
Pseudephemerum nitidum was still present in good quantity. The profile so far appears to be very similar to the arable bryophyte assemblage typical for Hertfordshire. However, the *Pseudephemerum nitidum* is a distinctive heathland pond species.