

**Notes on surveys of sites known to have supported  
*Damasonium alisma* in recent years**

September 2019



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## **BACKGROUND AND ACKNOWLEDGEMENTS**

Flagship Ponds are the very best of Britain's Priority Ponds: sites of national importance because of the threatened species or communities they support. Between 2015 and 2017, Freshwater Habitats Trust ran a 3 year project to help support the long-term sustainability of 70 Flagship Pond sites across England and Wales. Headley Heath, Black Park, Inholms Claypits and Stoke Common were among the sites worked on during this project.

Many of our nation's most beautiful and biodiverse waterbodies have degraded irrevocably. It is critically important that the remaining sites are well protected. The Flagship Ponds Project aimed to ensure that Flagship Pond sites were supported to have the following in place:

1. Enough information and knowledge to manage Flagship Ponds successfully and maintain their quality and key species.
2. An effective management plan.
3. Regular monitoring for key species and pond quality.
4. Funding to support management or habitat creation if needed.

The aim was to work on a bespoke basis, to support site managers and volunteer groups to best ensure site quality and key species could be maintained and enhanced. Where needed, the project provided links to experts, training, support and financial assistance, so groups could monitor and manage their own local pond heritage for the long-term.

Flagship Ponds, including the work reported on here, was one of three projects within Freshwater Habitats Trust's People, Ponds and Water Project, funded by the National Lottery Heritage Fund.

## Freshwater Habitats Trust

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## **1 INTRODUCTION**

The document is a short report on the conservation status of starfruit (*Damasonium alisma*) during 2017 - 2019, based on formal surveys of selected sites. The aim of the report is to bring information presented in the Ecological Profile (Lansdown 2015) up to date. Detailed information is only presented for 2019 as summary reports have been provided in previous years.

## 2 BUCKINGHAMSHIRE

### 2.1 Black Park

Management was carried out in 2017 (see Appendix B), as was soil seedbank analysis.

Site surveyed 31<sup>st</sup> July 2019, three plants found, however 5 plants were counted in May of which plant 1 was found but the others present in July were not, so the total count for the year is 7.

- Plant 1 - 51 fruits / 6 inflorescences
- Plant 2 - 139 fruits / 9 inflorescences
- Plant 3 - 58 fruits / 6 inflorescences

Cattle access appears to have been greater in 2019 than previously and has resulted in far better levels of poaching





## 2.2 Stoke Common

### 2.2.1 “Jeremy” Pond

Soil seed bank analysis was carried out in 2017 and no seeds of *D. alisma* were found. Site surveyed on 16<sup>th</sup> May 2019 and no plants of *D. alisma* were found. *D. alisma* has not been recorded at this site since 2008.





### 2.2.2 “Penny” Pond

Soil seed bank analysis was carried out in 2017 and no seeds of *D. alisma* were found. Site surveyed on 16<sup>th</sup> May 2019 and no plants of *D. alisma* were found. *D. alisma* has not been recorded at this site since 2008. Management to extend the pond was done in (see Lansdown 2017a) but this was considered inadequate to create the desired seasonally inundated bay.





Above, image taken on 17<sup>th</sup> August 2019 (A. McVeigh)

### 3 SURREY

#### 3.1 Esher Common

##### 3.1.1 Chequers Pond

The pond is entirely covered with *Crassula helmsii*, however in the occasional small patch of open water, the water was absolutely crystal clear. A reasonable range of species was found growing through the *C. helmsii*, including: *Alisma plantago-aquatica*, *Drepanocladus aduncus*, *Eleogiton fluitans*, *Hypericum elodes*, *Juncus bufonius*, *Lycopus europaeus*, *Lythrum portula*, *Myriophyllum alterniflorum*, *Persicaria hydropiper*, *Ranunculus flammula*, *R. peltatus*, *Rumex palustris* and *Solanum dulcamara*.



### 3.1.2 Halfpenny Pond

The pond is entirely covered with *Crassula helmsii*, however a reasonable range of species was found growing through the *C. helmsii*, including: *Agrostis stolonifera*, *Alisma plantago-aquatica*, *Alopecurus geniculatus*, *Apium inundatum*, *Bidens tripartita*, *Drepanocladus aduncus*, *Eleocharis palustris*, *Glyceria fluitans*, *Iris pseudacorus*, *Juncus acutiflorus*, *J. articulatus*, *Lycopus europaeus*, *Mentha aquatica*, *Myriophyllum alterniflorum*, *Ranunculus flammula*, *R. peltatus*, *Rumex conglomeratus*, *Solanum dulcamara*, *Sparganium angustifolium*, *Typha latifolia* and *Veronica scutellata*.



## **3.2 Headley Heath**

### 3.2.1 Aspen Pond

Aspen Pool was surveyed on the 31<sup>st</sup> July 2019, it is very shaded and has not supported *D. alisma* since 1982.



Above, image of Aspen Pond from 2015 it has become more overgrown, hurdles have been installed and part is now accessed by dogs.

### 3.2.2 Bellamoss Pond

Bellamoss Pond is accessed in some parts by dogs, but due to discouragement of this by the National Trust, the margins are beginning to develop extensive and reasonably diverse vegetation.



### 3.2.3 Brimmer Pond

The installation of hurdles across the pond and excluding access to half of the pond has created a striking contrast in the vegetation of the pond with the protected half now almost entirely covered by plants, either species such as *Glyceria fluitans*, *Lythrum portula* and *Ranunculus peltatus* growing out over the surface or *Nitella flexilis* agg. and submerged plants of *Ranunculus peltatus* growing in the open water.



The open half is then almost entirely bare except for scattered plants of *Glyceria fluitans* and *Ranunculus flammula* on the heavily poached mud.

It is clear that protection of half of the pond has been effective in enabling re-establishment of extensive and reasonably species-rich vegetation. However, if the hurdles are left in place, the protected half of the pond will succeed to marsh and eventually dry out. It has not been effective in enabling recovery of *Damasonium alisma* from the seed bank, if this exists. It would seem appropriate to move the protection to the opposite side of the pond and open up the currently protected side. In this way, it might be possible to restore different elements of the seed bank and enable recovery of aquatic and marginal vegetation throughout the pond, with the ultimate aim of being able to remove the hurdles entirely.

The recently introduced *Ludwigia palustris* persists and has spread to the protected area of the pond. This species has never naturally occurred in the area and there is a reasonable justification for treating it as an alien and removing it.

#### 3.2.4 Browns Pond

Browns Pond was surveyed on 31st July 2019. It has been enclosed by hurdles to exclude dogs. No *D. alisma* was found.



#### 3.2.5 Heath House Pond

Following extensive works to remove marginal trees, as well as two willows (*Salix cinerea*) from within the boundary of the pond, in January 2019, sixteen *D. alisma* plants were found in the pond on 31<sup>st</sup> July 2019. With an estimate of 6 "rays" per star and two seeds per ray, the data recorded (see table below) gives us 1968 seeds already forming or 2820 seeds including all potential seeds. Interestingly, the two main areas where plants occurred are where willows were taken out from within the area of the pond - thus, where there was relatively deep substrate disturbance! It has not yet been possible to confirm that no plants have been introduced to the pond by local botanists (who have introduced Hampshire purslane (*Ludwigia palustris*) to Brimmer Pond in recent years and pillwort (*Pilularia globulifera*) to Inholms Claypits.

If plants have been introduced then this undermines the entire starfruit conservation project by making it impossible to know whether the growing population in Heath House Pond is the result of sound and considered conservation management or simply planting by unregulated and uncontrolled enthusiasts.

	<b>No. plants</b>	<b>No. inflorescences</b>	<b>No. buds</b>	<b>No. open flowers</b>	<b>No. seed heads</b>
	1	2	0	0	8
	1	7	2	2	53
	1	1	1	1	2
	1	2	1	2	5
	1	3	5	2	11
	1	2	4	1	1
	1	2	1	0	15
	1	1	5	3	0
	1	5	23	9	54
	1	2	0	0	3
	1	1	0	0	1
	1	1	4	0	0
	1	1	0	0	0
	1	3	4	1	8
	1	1	0	0	3
	1	0	0	0	0
<b>Total</b>	<b>16</b>	<b>34</b>	<b>50</b>	<b>21</b>	<b>164</b>



Heath House Pond in January 2019 before works



Heath House Pond in July 2019



*Damasonium alisma*, Heath House Pond, July 2019

### 3.2.6 Hopeful Pond

Hopeful Pond was surveyed on 31<sup>st</sup> July 2019. It is heavily disturbed by dogs and no *D. alisma* was found.



### 3.3 **Inholms Claypits**



Above, dense growth of *Pilularia globulifera* in the pool at Inholms Claypits which formerly supported the largest population of *D. alisma*.

Inholms Claypits was also very interesting. *Pilularia globulifera* is now very well established in two of the ponds and in what was initially the one supporting the largest population of *D. alisma*, has achieved almost 100% cover and there are now only five weak *D. alisma* plants. In the other of the first two ponds to be dug, *P. globulifera* has also spread dramatically and *D. alisma* is apparently declining. In one of the others *P. globulifera* is just becoming established with a reasonable population of *D. alisma* and in the last, there is a massive population of *D. alisma* with no sign of *P. globulifera*.





### 3.4 Pintmere Pond

Pintmere Pond is now totally overgrown mainly by reedmace (*Typha latifolia*) and New Zealand pigmyweed (*Crassula helmsii*) except for a channel apparently used at times for access and also very disturbed by the activities of dogs. It is of note that *Pilularia globulifera* is able to survive and reproduce below and through the carpet of *C. helmsii*.



## REFERENCES

- Lansdown, R.V. 2015 An ecological profile of starfruit (*Damasonium alisma*). Unpublished report to Natural England, Bristol.
- Lansdown, R.V. 2017 Report on the results of sampling soil from ponds on Stoke Common. Unpublished report to Freshwater Habitats Trust, Oxford.
- Lansdown, R.V. 2017a Proposed management of ponds at Stoke Common toward conservation of starfruit (*Damasonium alisma*). File note to Freshwater Habitats Trust, Oxford.

**APPENDIX A SUMMARY TABLE OF ACTIONS AND RECORDS**

VC	Site /Pond	A	1980		1990									2000										2010												
			88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19		
<b>Naturally occurring</b>																																				
17	Heath House Pond	1986	√	16	c30		3	9	0	0	14	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15			
24	New Pond	1966		0			0	0	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
24	Latchmoor Pond	1971		0	1		0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
24	Daisy Pond	1904		0			300	66	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
24	Mannings Pond	1904		3	21		30	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
24	Littleworth Common	1971		0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
24	Coleshill Common	1976		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
<b>Reintroductions</b>																																				
17	Halfpenny Pond	1966	*	13	0		0	0	0	20	0	0	12	0	0	0	0	130	8												11	0	0	0	0	
17	Chequers Pond	1966	2*	2	9		0	0	0	0	0	0	0	0	0	0	0	9	0												0	0	0	0	0	
17	Pintmere Pond	1940						*	0	0	0	0	0	0																	1	0	0	0		
17	Mitcham Common	1940						*	0	0	0	0	0	0																						
17	Brimmer Pond	1863	0*	0	17		1	3	0	8	3	5	0	0	0																0*	0	0	0	0	
<b>Introductions</b>																																				
17	Bellamoss Pond	1982																														0	0	0	0	0
17	Inholms Claypits	-																													*	24	>100 each year			
22	Greenham Common	-																	*												0					
24	Black Park	-						*	40	149	19	2	3	1	35	90	0		48	13						3				0	5	0	38	5		
24	Penny Pond	-														*	1	?	1										0	0	0	0	0	0		
24	Jeremy Pond	-														*	9	?	4					8					0	0	0	0	0	0		
<b>No. of plants confirmed</b>			<b>2</b>	<b>34</b>	<b>78</b>	<b>0</b>	<b>335</b>	<b>89</b>	<b>55</b>	<b>149</b>	<b>67</b>	<b>5</b>	<b>13</b>	<b>14</b>	<b>35</b>	<b>90</b>	<b>10</b>	<b>0</b>	<b>194</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>36</b>	<b>0**</b>	<b>5**</b>	<b>0**</b>	<b>38**</b>	<b>20**</b>		
<b>No. of sites with live plants</b>			<b>1</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>3</b>		

A = last record pre-1988

\* - indicates date of introduction

\*\* - figures exclude Inholms Claypits

Shaded cells indicate management intervention

For sources see Lansdown (2015), all subsequent records are from the authors' notes.

## **APPENDIX B FILE NOTE ON MANAGEMENT AT BLACK PARK**

Following a meeting on October 10<sup>th</sup> 2017, some management changes to the Starfruit Pond were agreed in principle with those present, pending Natural England (SSSI) approval.

Attendees: Matt May and Ben Davidson (Black Park site staff)

Peter Case, FreshWater Habitats, Flagship Ponds programme

Richard Lansdown, national expert on Starfruit

Andy McVeigh, consultant ecologist who initially broadcast starfruit seed onto Black Park's "Starfruit Pond" when it was first introduced

- 1) Andy to core sample soil profile seeking information on starfruit seed abundance, germination potential, depth etc .
- 2) Pond has previously been sprayed with Glyphosate to attempt to control Crassula problem (for approx. five consecutive years). Despite obvious detrimental effects to the Crassula in short term, Crassula returns each year abundantly. This year two yellow wood stakes were inserted in the ground dividing the pond from north to south points, roughly creating eastern and western "halves". The eastern half was sprayed with glyphosate and the western half was not. As at this site visit (October) much of the sprayed half had indeed browned off, though patches of green were still evident within the Crassula that had been sprayed. The western half, unsprayed, was still vibrantly green and active.
- 3) The pond will now be divided again, longways, from approximately East to West, thus creating roughly even sized quarters. These will now be referred to by their quarter names: e.g. NE is north east quarter.
- 4) Following NE permission and core samples taken, the NE corner and SW corner will be subject to a rotary cultivator, attempting to break up but also mix the soil in these areas.
- 5) The NW and SE quarters will be artificially "poached" by volunteers, using fencing tampers and other hand tools.

Whilst not scientific, it is hoped that the different techniques may contribute to future understanding of starfruit spread and successful germination from seed.

This is very much within the context of Richard Lansdown's assertion that a much more scientific approach be needed in the long-term (not at this site but favouring one where starfruit is native and not introduced) and that the business of maintaining a viable seedbank is better done at a specialist centre such as Kew Gardens.

In 2016 Black Park was one of only two sites nationally where starfruit were seen, hence the initial decision that this site is still useful for testing and informal research.