

Dredging and excavation of ponds to enhance habitat for starfruit *Damasonium alisma* on Downley and Naphill Commons, Buckinghamshire, England

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SUMMARY

Dredging the silt from two old ponds in southern England (one in which the nationally endangered starfruit *Damasonium alisma* had recently been rediscovered) resulted in dramatic initial results, with many starfruit plants appearing. A subsequent rapid fall off in numbers suggests that seeds appear to germinate best on exposed sediment on drying margins and continuous low-level disturbance management is probably desirable.

BACKGROUND

Starfruit *Damasonium alisma*, is an endangered plant in the United Kingdom where it is now known from only 7-8 ponds in Buckinghamshire and Surrey, southern England. On 31 August 1989, a single, large starfruit plant was discovered by the author at Mannings Pond on Downley Common in Buckinghamshire. The species had last been recorded at this locality in the 1920's.

Enquires revealed that the pond had been recently cleared of invading vegetation and overhanging branches by the Downley Common Preservation Society, taking advantage of a spell of dry weather in the spring and summer which had reduced water levels to a minimum thus allowing greater ease of access. After the initial re-discovery during a subsequent visit, a second smaller starfruit plant was found.

ACTION

The starfruit discovery was reported to the Nature Conservancy Council (now English Nature) and a recovery plan was instigated by the County Officer. This required negotiations with the landowners, the Dashwood Estate, to obtain permission to dredge Mannings Pond and also additionally undertake management at Daisy Pond, located nearby on the adjoining Naphill Common.

In late autumn 1991, when water levels were still low, contractors were called in and using a tracked excavator with a bucket on the dipper arm, carefully removed a large area of lesser pond sedge *Carex acutiformis* and dredged accumulated silt/plant debris from the semi-dry half of Mannings Pond (where *Damasonium* had *not* been found).

Prior to management work, Daisy Pond was almost unrecognisable as a pond being grassed over and dried out by several large emergent and marginal sallows *Salix* sp. The trees were felled and stumps and topsoil removed by the excavator. Care was taken not to pierce the natural clay liner. Both ponds filled with water during the winter. The following spring was the warmest since records began in 1659, while the autumn was the wettest for 50 years.

CONSEQUENCES

In the summer of 1992 surveys of the two ponds revealed spectacular results with 300 starfruit plants at Daisy Pond and 32 at Mannings Pond. However, numbers reduced rapidly over the next few years, counts being:

1993: Daisy Pond - 66; Mannings Pond - 9

1994: Daisy Pond - 12; Mannings Pond - 3

1995-2004: no plants

During 1993-1994 two other local species, lesser marshwort *Apium inundatum* and water purslane *Lythrum portula* also appeared and flourished. However both ponds, now exposed to more light, were then invaded by floating sweet-grass *Glyceria fluitans* which soon, despite attempts at control (hand-pulling), left no open areas. As well as the *Damasonium* disappearing, *Apium* and *Lythrum* became greatly reduced. Articulated rush *Juncus articulatus* and common spike-rush *Eleocharis palustris* then added to the already dense *Glyceria*-dominated vegetation.

Conclusions: The results indicate that starfruit has a large and long-lived seedbank and habitat restoration and associated disturbance through the excavation or dredging of ponds may produce impressive initial results. However, further work by Plantlife showed that response to management may not always

be immediate e.g. New Pond (Gerrards Cross, Buckinghamshire) was cleared (by hand) in 1992 but it was not until 1996 that starfruit plants appeared.

The rapid fall off in numbers at Daisy and Mannings Ponds suggests that its habitat requirements are fairly exacting. Seeds appear to germinate best on exposed sediment on drying margins and continuous low-level disturbance is suggested as desirable.

REFERENCES

Showler A.J. (1994) *An account of the re-appearance of Starfruit (Damasonium alisma) at Downley Common and Naphill Common and a report for 1989-1993*. Plantlife (UK).