Ove Arup and Partners

Cardiff Parkway Development, St Mellons, Cardiff

Vegetation survey 2019 addendum



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Cover photographs: Left: Hendre Reen; Right: Flowering Rush.

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1. Introduction

In 2018 Ove Arup and Partners commissioned Sturgess Ecology to undertake vegetation surveys within parts of the proposed Cardiff Parkway development site, St Mellons, Cardiff (approximate central grid reference ST250807). The site lies within Gwent Levels and is part of the Rumney and Peterstone Site of Special Scientific Interest (SSSI). It also includes the Marshfield Site of Importance for Nature Conservation (SINC).

The 2018 survey was not commissioned until late September. It followed a prolonged hot, dry summer, and dredging of several of the reens. It was therefore recommended that a follow-up check should be carried out earlier in the 2019 field survey season, to gather information on species that might have been overlooked or undetectable during the 2018 study. In particular, it was to attempt to re-find the locally uncommon plants Pepper Saxifrage (*Silaum silaus*) and Stone Parsley (*Sison amomum*), that had been previously recorded in the Marshfield SINC, and additional wetland plants in the reens. This was a shorter, simpler investigation than 2018. The survey of grasslands was limited to the Marshfield SINC and the adjacent fields. The check of reen flora was limited to the areas surveyed in 2018.

2. Survey method

The follow up survey of the grassland habitats was carried out by a simple walk-through method on 18 July 2019, walking a series of transects through the SINC and adjacent fields to try to find Pepper Saxifrage and Stone Parsley, and any other plants that had not been recorded during the 2018 survey.

The follow up survey of the reen flora was carried out on 2 August 2019 by walking along the banks of the previous survey sections to search for additional plant species. Grapnel sampling was carried out on an occasional spot-check basis through the whole approximately 100-150m section (rather than just focussed within the central 20m sections).

3. Survey findings

A number of additional plant species were confirmed by the 2019 survey, and several of these are locally notable species that are an important feature of the SSSI and SINC designations. These are summarised in Table 1, which also includes the nature conservation status of the species from the list of scarce and rare vascular plants in the Wildlife Sites Guidelines Wales (Wales Biodiversity Partnership, 2008) as Primary species (PS) or Contributory species (CS). In the guidelines a site is considered to be important in a county context if it has 1 or more Primary Species or 5 or more Contributory Species. The locations of species with significance for nature conservation or which are included in the assessment method of Winder et al (1991) are indicated in Figure 1 (for the grassland check) and Figure 2 (for the reen check).

As expected, the vegetation was much greener than in the survey in autumn 2018 and many grassland plants were still in flower. There had been no hay-cutting in the Marshfield SINC and the grassland had mostly been managed by light grazing by cattle. In addition to finding additional plants, several new (but much smaller) patches of Corky-fruited Water-dropwort (*Oenanthe pimpinelloides*) were found.

Vegetation had re-established in the ditches that had been dredged in 2018. Most of the aquatic flora seen in 2018 was still present, but the vegetation was much denser. Many of the field ditches that had been dry in the previous survey contained water during the 2019 visit, although few had significant submerged or marginal aquatic flora in them.

Table 1.	Additional	plant speci	es recorded	during 2	2019 survey.
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Species	Common name	Status	Comment
Alisma lanceolatum	Narrow-leaved	PS	Occasional in Ty Ffynon Reen (section 8) and
	Water-plantain		one field ditch.
Bromus hordeaceus	Soft Brome		Occasional in grassland in Marshfield SINC.
Catapodium rigidum	Fern Grass		Locally frequent on rubble trackside in fields west of SINC.
Circaea lutetiana	Enchanter's Nightshade		Occasional in scrubby field boundaries.
Clematis vitalba	Traveller's Joy		Rare in field boundary at Marshfield SINC.
Lemna gibba	Fat Duckweed	CS	Rare Faendre Reen (section 2)
Lemna trisulca	lvy-leaved Duckweed	CS	Rare in Greenlane Reen (section 7 & 39)
Myosotis laxa	Tufted Forget-me-not		Rare in Ty Ffynon and Railway Reen (sections 10 & 18) and some field ditches.
Oenanthe fistulosa	Tubular Water- dropwort	PS	Occasional in Railway Reen (Section 18).
Polypogon viridis	Water Bent		Rare in trampled grassland west of Marshfield SINC.
Potamogeton crispus	Curled Pondweed		Occasional in Faendre, Greenlane, Ty Ffynon and Railway Reen (sections 2, 7, 10, 18, 26, 30 & 39).
Potamogeton pusillus	Lesser Pondweed	CS	Occasional in Faendre and Greenland reens (sections 2 and 26)
Ranunculus	Celery-leaved		Rare at muddy edges of Ty Ffynon reen
sceleratus	Buttercup		(sections 8 and 30)
Ribes nigrum	Black Currant		Rare by area of tipped refuse in grassland west of Marshfield SINC.
Samolus valerandi	Brookweed	CS	Rare in Railway Reen (Section 18).
Silaum silaus	Pepper Saxifrage	CS	Two plants seen in Marshfield SINC.
Sison amomum	Stone Parsley	CS	Several patches beside hedge margins in Marshfield SINC.
Tragopogon pratensis	Goat's-beard		Rare in roadside grassland by Marshfield SINC.
Zannichellia palustris	Horned pondweed	CS	Rare in Faendre Reen (section 2).



Narrow-leaved Waterplantain (Alisma lanceolatum) in Ty Ffynon Reen.

Inset: close-up of seeds, showing position of styleremnant necessary for confirming identification.



Figure 1. Approximate locations of key species in 2019 grassland check.



Tubular Water-dropwort (Oenanthe fistulosa) *in Railway Reen.*



Figure 2. Locations of additional key species in 2019 check of reens.

4. Discussion

The 2019 visits confirmed that the previous autumn's surveys had recorded the vegetation sufficiently to describe and classify it, and to broadly assess its nature conservation value. However, as expected, a number of key species had not been detected. In some cases this was due to the dredging of several of the reens, and the grazing of some of the margins. Other species were probably overlooked because they had finished flowering and shrivelled beyond recognition during the dry summer.

The failure of the 2018 survey to find Pepper Saxifrage was almost certainly because the field it was found in had been cut for hay that year, but it may also have been because it is only present at a very low density now. The two plants found this year were relatively easy to find because this is a tall species that stands out above most of the other meadow grassland plants, and if others had been present they would probably not have been missed. It would

appear that there has been a significant decline in abundance of Pepper Saxifrage since the fields were surveyed for the Cardiff SINC survey. There is insufficient information to confirm a cause, and there does not appear to have been any use of fertilisers or herbicides on the grassland (other potential factors for a decline might include a series of early hay/ silage cuts, drying out of the ground, or possibly a period of sheep grazing, but there is no evidence to support any of these).



Pepper Saxifrage (Silaum silaus) in Marshfield SINC

Confirmation that Stone Parsley is still present in the SINC is encouraging. It was probably overlooked in 2018 because the survey had focussed on the grasslands and not included the scrub margins where the plant grows. It had probably also finished flowering well before the survey was carried out.



Stone Parsley (*Sison amomum*) in the lane north of Marshfield SINC.

The reen flora checks added several notable species to the 2018 list. This has generally reinforced the high nature conservation of the main reens. The dredging had severely limited the flora that could be sampled last autumn but appears to have maintained good conditions for a wide range of submerged, emergent and floating aquatic plants. The two additional duckweed species that were found were only present at very low density, but populations of floating plants can be very changeable depending on factors such as wind speed and direction. Interestingly there was no sign of the Water Fern that had been seen in Faendre Reen, although it may still be present in small numbers.



Fat Duckweed (Lemna gibba) on Faendre Reen.

As discussed in the 2018 report, reen flora diversity can vary considerably from year to year depending on management. Railway Reen (Section 18) is a good example of this. It supported good populations of Tubular Water-dropwort (*Oenanthe fistulosa*) and Brookweed (*Samolus valerandi*), and the amount of Flowering rush and submerged aquatic plants has increased substantially since the 2018 dredging. This had relatively little vegetation in 2018 and was scored as having low diversity. However, now that the flora has re-established it would probably be scored as having moderate or even high diversity if making a detailed search of the previous 20m survey section.



Brookweed (Samolus valerandi) in Railway Reen.

Faendre Reen and Greenlane Reen supported considerably more vegetation than they had in 2018, and in some places the whole width of the channel had already been filled with Common Reed, Branched Bur-reed or Bulrush, showing that ongoing maintenance is very necessary. The submerged aquatics continued to be dominated by the same species seen last year, but there were several new additions.



Horned Pondweed (Zannichellia palustris) in Faendre Reen; recognisable by its distinctive fruits.

No significant species were added to the flora of the two surveyed field ditches (sections 3 and 10). This could be because they have insufficient water for so much of the year and are too dominated by dense reeds and scrub for other plants to occur. However, a small number of key species were observed in other ditches that had been dry in 2018. Great Water Dock (*Rumex hydrolapathum*) was only seen in Hendre Lake in the 2018 survey (not in any of the reen sections), but this year it was also observed in the field ditch that runs perpendicular from Railway Reen parallel with the railway (this had been dry in 2018).

5. Recommendations

The broad recommendations for minimising impacts on the key habitats for flora diversity that were set out in the 2018 report generally remain unaltered by the recent observations and all continue to apply. The locations of the key species in grassland habitat set out in Figure 1 should help to ensure that key locations for locally rare plants can be protected, or individual plants possibly transplanted.

The decline in Pepper Saxifrage in the Marshfield SINC is of concern and efforts to maintain and re-establish this species within its former range could be investigated. In particular, a management regime that allows the remaining plants to set seed before cutting or grazing may help new plants to establish. Growing plants from the seeds for re-introducing as plug plants could also be considered.

6. References

Wales Biodiversity Partnership (2008). Guidelines for the Selection of Wildlife Sites in Wales.

Winder, J. Spencer, J. & Wood, A. (1991). A botanical survey of reens of the Gwent Levels. Countryside Council for Wales, Cardiff.