

Further studies of a scrub-cleared slack at Cabin Hill NNR

Philip H. Smith, September 2007

Introduction

Smith (2006a) reported on a vascular plant survey of a 1ha dune slack cleared of dense willow scrub in November/December 2005 at Cabin Hill National Nature Reserve, Formby (SD 283 051). Visits during September 2006 discovered 108 vascular taxa, about half being typical slack plants and half ruderal species, colonising a surface of deep, peaty organic matter which had built up over a 30-year period of scrub growth. The ruderal vegetation was considered to have a close similarity to the National Vegetation Classification's OV33 (*Polygonum lapathifolium* – *Poa annua* community). Of particular interest was a number of uncommon alien plants, four of which were new to the Sefton Coast, one being a new vice-county record. However, the overall proportion of non-native species was relatively low (9.3%) compared with the dune system average of 33%.

As ruderal plant communities tend to undergo rapid change, it was decided to repeat the survey in late summer 2007. The site was searched for two hours on 28th August and one hour on 1st September. The relative frequency of all vascular taxa was assessed using the DAFOR scale and notes were made on habitat condition.

Results

Following the wet summer, there was some shallow standing water present in a few deeper hollows. The habitat had changed dramatically from a condition where at least 20% of the site was bare ground to an almost complete ground cover of vegetation. The only bare patches found were in the wettest parts of the slack and on the dryer fringes where Rabbit scraping and burrowing has disturbed the surface. As previously noted (Smith 2006a), the effects of Rabbits on the vegetation are apparent throughout the site, but especially around the margins of the slack.

Last year, the vegetation was characterised by Creeping Bent *Agrostis stolonifera*, American Willowherb *Epilobium ciliatum*, Yorkshire-fog *Holcus lanatus*, Marsh Pennywort *Hydrocotyle vulgaris*, Purple Loosestrife *Lythrum salicaria*, Water Mint *Mentha aquatica*, Tufted Forget-me-not *Myosotis laxa*, Dewberry *Rubus caesius*,

Bittersweet *Solanum dulcamara* and Common Nettle *Urtica dioica*. These species remain well represented but *A. stolonifera*, *H. lanatus* and *L. salicaria* have greatly increased, while *E. ciliatum*, *M. laxa*, *S. dulcamara*, *R. caesius* and *U. dioica* are now much reduced in quantity. In the wetter areas of the slack, other species which have improved their fortunes are Hairy Sedge *Carex hirta*, Shore Horsetail *Equisetum x litorale*, Marsh Bedstraw *Galium palustre*, Creeping Buttercup *Ranunculus repens*, Lesser Spearwort *R. flammula*, Pink Water-speedwell *Veronica catenata* and Marsh Speedwell *V. scutellata*. Both Common Reed *Phragmites australis* and Reed Canary-grass *Phalaris arundinacea* are spreading from slack fringes. The dryer parts of the site show an increased frequency of Common Centaury *Centaureum erythraea*, Rosebay Willowherb *Chamerion angustifolium*, Field Horsetail *Equisetum arvense*, Common Restharrow *Ononis repens*, Yellow Bartsia *Parentucellia viscosa*, Selfheal *Prunella vulgaris*, Broad-leaved Dock *Rumex obtusifolius* and White Clover *Trifolium repens*.

A total of 111 vascular plants was identified in 2007, only three more than the previous year but the species composition has changed markedly (Table 1). Thus 28 taxa recorded in 2006 (26% of the total flora) were not found in the following year, while 31 new plants (29%) were added to the list. None of the rare aliens was rediscovered; indeed, only four non-native taxa were listed, this being 3.8% of the 2007 total. Only about 28 (25%) of the 2007 species are considered to be typical ruderals, compared with about 50% in the earlier study.

Of the 31 additions, 14 are considered to be slack plants, 12 are usually associated with fixed-dunes and five are characteristic of disturbed ground (ruderals). The 28 taxa lost between 2006 and 2007 include 23 ruderals, two fixed-dune plants and only three slack species.

A further eight new taxa for the reserve list (Gateley 1987) were added in 2007, making a grand total of 32 over the two years of the study. One of the new additions (Sticky Stork's-bill *Erodium lebelii*) is nationally scarce. Five of the lost species are notable (Garden Orache *Atriplex hortensis*, Yellow-sedge *Carex viridula* ssp. *viridula*, Red Goosefoot *Chenopodium rubrum*, Thorn-apple *Datura ferox* and Cape-gooseberry *Physalis peruviana*)

During the two years of the study a total of 139 vascular taxa has been identified, 12 of these (8.6%) being non-native (Table 1). Overall, 11 nationally or regionally notable taxa were recorded (one Nationally Rare, four Nationally Scarce, one Near Threatened and five Species of Conservation Importance in North West England).

Discussion

The species-richness of the cleared slack has remained much the same but there has been a considerable turn-over of species, most of the losses, predictably, being ruderals, while the gains are largely plants of dune-slacks and fixed-dune habitat. These differences have been recorded over an interval of only twelve months and illustrate how quickly vegetation change can take place following disturbance in sand-dune slacks. In this case, the deep layer of nutrient-enriched organic matter was predicted to slow down the decline in the ruderal component of the vegetation (Smith 2006a). However, in practice, this does not seem to have been an important factor, though the nutrients present in the substrate may be encouraging the spread of *Phragmites australis* and *Phalaris arundinacea*.

Before clearance, this site was covered in dense 4m-high willow scrub which had developed over a 30-year period (Smith 2006a). Although detailed records of the original slack vegetation are not available, I recollect that in the early-1970s it was diverse, including much *Lythrum salicaria* and also Blunt-flowered Rush *Juncus subnodulosus* and Sharp-flowered Rush *J. acutiflorus*. All three species have re-colonised the site, the first in some abundance. The willow canopy gradually suppressed most other plant life until the understory consisted mostly of occasional *Solanum dulcamara* over bare organic matter (personal observations). Clearly, the slack's current condition represents a major biodiversity gain, including 32 new species for the reserve, although half of these were seemingly lost by 2007 (two are hybrid willowherbs which require expert determination not available for the second survey).

As reported last year, the number and proportion of non-native taxa recorded on the site (12; 8.6%) is very low compared with the dune system average of 33% (Smith 2006b). This is because Cabin Hill is remote from gardens which are the primary source of introduced species. Although 11 notable taxa were found, the proportion

(7.9%) is low compared to the 15% notables found in the dune system as a whole (Smith 2006b). This may increase as other, rarer, slack species colonise the site.

Further vegetation change seems likely to occur; thus, it is apparent that *Phragmites australis* is colonising the site from the east, while *Phalaris arundinacea* also appears to be spreading. It will be interesting to monitor trends in the future. Photographs have been taken to act as a visual record.

Acknowledgements

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References

Gateley, P.S. (1987). Cabin Hill National Nature Reserve Draft Vascular Plant List 1987. Unpub. report, Nature Conservancy Council, Ainsdale.

Smith, P.H. (2006a). Vascular plants of a scrub-cleared area at Cabin Hill NNR. Unpub. report.

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Table 1. Frequency and status of vascular taxa recorded at the study site.

* = non-native taxon; NR = nationally rare; NS = nationally scarce; NT = Near Threatened; SCI = Species of Conservation Importance in North West England; New = new to the Sefton Coast; \$ = new to Cabin Hill NNR.
d = dominant; a = abundant; f = frequent; o = occasional; r = rare.

Taxon	English name	2006	2007	Status
<i>Agrostis capillaris</i>	Common Bent		lo	
<i>Agrostis stolonifera</i>	Creeping Bent	la	a	
<i>Amaranthus retroflexus</i> *	Common Amaranth	r		\$
<i>Anchusa arvensis</i>	Bugloss	r		
<i>Arctium minus</i>	Lesser Burdock	o	o	
<i>Arrhenatherum elatius</i>	False Oat-grass		vlo	
<i>Asparagus officinalis</i> *	Garden Asparagus	r	lo	
<i>Atriplex hortensis</i> *	Garden Orache	r		New NS \$
<i>Atriplex patula</i>	Common Orache	r	r	\$
<i>Blackstonia perfoliata</i>	Yellow-wort		o	
<i>Cardamine hirsuta</i>	Hairy Bitter-cress	r		

<i>Cardamine pratensis</i>	Cuckooflower	r	r	
<i>Carex arenaria</i>	Sand Sedge	r	lo	
<i>Carex flacca</i>	Glaucous Sedge		o	
<i>Carex hirta</i>	Hairy Sedge	vlf	f	
<i>Carex otrubae</i>	False Fox-sedge	r	o	
<i>Carex pendula</i> *	Pendulous Sedge		r	\$
<i>Carex viridula viridula</i>	Small-fruited Yellow-sedge	r		SCI
<i>Centaureum erythraea</i>	Common Centaury	r	o	
<i>Cerastium fontanum</i>	Common Mouse-ear	o	o	
<i>Chamerion angustifolium</i>	Rosebay Willowherb	r	o	
<i>Chenopodium album</i>	Fat-hen	o	r	
<i>Chenopodium rubrum</i>	Red Goosefoot	o		SCI \$
<i>Cirsium arvense</i>	Creeping Thistle	o	o	
<i>Cirsium vulgare</i>	Spear Thistle	r	o	
<i>Conyza canadensis</i> *	Canadian Fleabane	r		\$
<i>Crepis capillaris</i>	Smooth Hawk's-beard	o	o	
<i>Cynoglossum officinale</i>	Hound's-tongue	r	r	NT
<i>Dactylorhiza sp.</i>	Marsh-orchid		vlo	
<i>Datura ferox</i> *	Angel's-trumpets	r		NS New \$
<i>Datura stramonium</i> *	Thorn-apple	o		\$
<i>Eleocharis palustris</i>	Common Spike-rush		r	
<i>Epilobium ciliatum</i> x <i>E. obscurum</i>	Hybrid Willowherb	r		\$
<i>Epilobium ciliatum</i> *	American Willowherb	f	o	\$
<i>Epilobium hirsutum</i>	Great Willowherb	r	o	
<i>Epilobium montanum</i>	Broad-leaved Willowherb	r	r	
<i>Epilobium obscurum</i>	Short-fruited Willowherb	o	o	
<i>Epilobium palustre</i>	Marsh Willowherb		o	
<i>Epilobium parviflorum</i>	Hoary Willowherb	o	o	
<i>Epilobium x rivulare</i>	Hybrid Willowherb	r		\$
<i>Equisetum arvense</i>	Field Horsetail	r	lo	
<i>Equisetum fluviatile</i>	Water Horsetail	r	r	
<i>Equisetum palustre</i>	Marsh Horsetail	vlf	o	
<i>Equisetum x litorale</i>	Shore Horsetail	r	lf	\$
<i>Erodium cicutarium</i>	Common Stork's-bill	r		
<i>Erodium lebelii</i>	Sticky Stork's-bill		r	NS \$
<i>Euphrasia nemorosa</i>	Eyebright		lo	
<i>Fallopia convolvulus</i>	Black Bindweed	r		\$
<i>Festuca rubra</i>	Red Fescue	vla	la	
<i>Fumaria muralis</i>	Common Ramping-fumitory	r		\$
<i>Galium aparine</i>	Cleavers		r	
<i>Galium palustre</i>	Marsh Bedstraw	o	f	
<i>Galium verum</i>	Lady's Bedstraw		vlf	
<i>Geranium molle</i>	Dove's-foot Crane's-bill	r		
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	r		
<i>Hieracium umbellatum</i>	Umbellate Hawkweed		r	
<i>Holcus lanatus</i>	Yorkshire-fog	f	la	
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort	la	a	

<i>Hypochaeris radicata</i>	Cat's-ear	r	lo	
<i>Iris pseudacorus</i>	Yellow Iris		r	\$
<i>Juncus acutiflorus</i>	Sharp-flowered Rush		lo	
<i>Juncus articulatus</i>	Jointed Rush	r	o	
<i>Juncus bufonius</i>	Toad Rush	r	vlf	
<i>Juncus inflexus</i>	Hard Rush	vlf	o	
<i>Juncus subnodulosus</i>	Blunt-flowered Rush	vla	la	SCI \$
<i>Lathyrus pratensis</i>	Meadow Vetchling	r	o	
<i>Leontodon autumnalis</i>	Autumn Hawkbit	vlf	o	
<i>Leontodon saxatilis</i>	Common Hawkbit		r	
<i>Linaria vulgaris</i>	Common Toadflax		r	\$
<i>Linum catharticum</i>	Fairy Flax	lo	lo	
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil		lo	
<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil		lo	
<i>Luzula campestris</i>	Field Woodrush	r		
<i>Lycopersicon esculentum</i> *	Tomato	r		\$
<i>Lycopus europaeus</i>	Gypsywort	vlf	lf	
<i>Lythrum salicaria</i>	Purple Loosestrife	a	a	
<i>Mentha aquatica</i>	Water Mint	f	f	
<i>Myosotis laxa</i>	Tufted Forget-me-not	la	f	
<i>Odontites vernus</i>	Red Bartsia	r	r	
<i>Ononis repens</i>	Common Restharrow	r	lo	
<i>Parentucellia viscosa</i>	Yellow Bartsia	r	lf	SCI
<i>Persicaria hydropiper</i>	Water-pepper	r	lf	\$
<i>Persicaria lapathifolia</i>	Pale Persicaria		r	\$
<i>Persicaria maculosa</i>	Redshank	o	o	
<i>Phalaris arundinacea</i>	Reed Canary-grass	vla	la	
<i>Phragmites australis</i>	Common Reed	vla	la	
<i>Physalis peruviana</i> *	Cape-gooseberry	o		NS New \$
<i>Plantago lanceolata</i>	Ribwort Plantain	lo	o	
<i>Plantago major</i>	Greater Plantain	r	r	
<i>Poa annua</i>	Annual Meadow-grass	o	o	
<i>Polygonum aviculare</i>	Knotgrass	o		
<i>Potentilla anserina</i>	Silverweed	o	o	
<i>Potentilla reptans</i>	Creeping Cinquefoil	o	lo	
<i>Prunella vulgaris</i>	Selfheal	r	lf	
<i>Pulicaria dysenterica</i>	Common Fleabane		r	
<i>Ranunculus acris</i>	Field Buttercup	r	r	
<i>Ranunculus aquatilis</i>	Common Water-crowfoot		o	
<i>Ranunculus flammula</i>	Lesser Spearwort	o	f	
<i>Ranunculus repens</i>	Creeping Buttercup	o	f	
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	r		
<i>Rorippa palustris</i>	Marsh Yellow-cress	r		\$
<i>Rubus caesius</i>	Dewberry	f	o	
<i>Rubus tuberculatus</i>	Bramble	r	r	\$
<i>Rumex conglomeratus</i>	Clustered Dock	r	o	
<i>Rumex crispus</i>	Curled Dock	o	o	
<i>Rumex obtusifolius</i>	Broad-leaved Dock	o	lf	
<i>Rumex x pratensis</i>	Hybrid Dock		r	\$

<i>Sagina nodosa</i>	Knotted Pearlwort		r	
<i>Sagina procumbens</i>	Procumbent Pearlwort	o	o	
<i>Salix cinerea</i>	Grey Willow	o	o	
<i>Salix repens</i> var. <i>argentea</i>	Creeping Willow	vla	vla	
<i>Salix x friesiana</i>	Hybrid Willow	o	o	NR
<i>Salix x rubens</i> *	Hybrid Crack-willow		r	\$
<i>Sambucus niger</i>	Elder	r		
<i>Samolus valerandi</i>	Brookweed	r	r	SCI
<i>Senecio jacobaea</i>	Common Ragwort	o	o	
<i>Senecio vulgaris</i>	Groundsel	r		
<i>Silene latifolia</i>	White Campion	r		
<i>Silene x hampeana</i>	Hybrid Campion		r	
<i>Solanum dulcamara</i>	Bittersweet	f	o	
<i>Solanum nigrum</i>	Black Nightshade	o	r	\$
<i>Solanum physalifolium</i> *	Green Nightshade	r		New \$
<i>Sonchus arvensis</i>	Perennial Sow-thistle	r	lo	
<i>Sonchus asper</i>	Prickly Sow-thistle	f	o	
<i>Sparganium erectum</i>	Branched Bur-reed		o	\$
<i>Stellaria media</i>	Common Chickweed	r		
<i>Taraxacum</i> sp.	Dandelion	r	r	
<i>Trifolium arvense</i>	Hare's-foot Clover		r	
<i>Trifolium campestre</i>	Hop Trefoil		r	
<i>Trifolium dubium</i>	Lesser Trefoil		r	
<i>Trifolium repens</i>	White Clover	r	o	
<i>Urtica dioica</i>	Common Nettle	f	o	
<i>Urtica urens</i>	Small Nettle	r		\$
<i>Veronica arvensis</i>	Wall Speedwell		r	
<i>Veronica catenata</i>	Pink Water-speedwell	r	lf	\$
<i>Veronica scutellata</i>	Marsh Speedwell	r	lo	
<i>Vicia cracca</i>	Tufted Vetch	r	o	
<i>Vicia sepium</i>	Bush Vetch	r	r	
<i>Viola arvensis</i>	Field Pansy	o	r	\$
139 taxa; 12 non-native (8.6%)		108	111	