

## Appendix 1. Aquatic plants recorded in the Lakes at North Cave Wetlands 2001-2013

Only taxa on the Palmer and Newbold (1983) checklist of aquatic plants found in England and Wales plus Stonewort *Chara vulgaris* agg. are included; d/a=dominant or abundant, f=frequent, o/r=occasional or rare, 0=not recorded.

### June-July 2001

	Far Lake	Carp Lake	Main Lake	Village Lake (West)	Island Lake & Village lake (East)	Reed Bed Lake
<b>Submerged and floating-leaved plants</b>						
<i>Callitriche</i> sp. water-starwort	0	0	0	0	0	o/r
<i>Chara vulgaris</i> agg. Stonewort	d/a	0	d/a	d/a	d/a	0
<i>Myriophyllum spicatum</i> Spiked Water-milfoil	d/a	d/a	d/a	0	o/r	0
<i>Potamogeton crispus</i> Curled Pondweed	0	0	d/a	0	0	0
<i>Potamogeton pectinatus</i> Fennel Pondweed	0	f	f	0	o/r	0
<i>Potamogeton pusillus</i> Lesser Pondweed	d/a	d/a	f	d/a	d/a	d/a
<i>Ranunculus aquatilis</i> Common water-crowfoot	0	o/r	o/r	0	0	o/r
<i>Ranunculus peltatus</i> Pond water-crowfoot	0	0	0	0	-	o/r
<i>Zannichellia palustris</i> Horned Pondweed	o/r	f	o/r	d/a	d/a	o/r
<i>n</i> of submerged and floating-leaved species	4	5	7	3	5	5
<b>Emergent plants</b>						
<i>Agrostis stolonifera</i> Creeping Bent	f	f	o/r	o/r	o/r	f
<i>Apium nodiflorum</i> Fool's Water-cress	0	0	0	0	o/r	0
<i>Eleocharis palustris</i> Common Spike-rush	0	0	o/r	0	0	f
<i>Equisetum fluviatile</i> Water Horsetail	0	0	0	0	0	f
<i>Juncus effusus</i> Soft-rush	o/r	0	0	o/r	o/r	o/r
<i>Mentha aquatica</i> Water Mint	0	0	o/r	0	0	0
<i>Nasturtium officinale</i> agg. Water-cress	0	0	0	f	o/r	f
<i>Phragmites australis</i> Common Reed	0	0	o/r	0	f	o/r
<i>Ranunculus sceleratus</i> Celery-leaved Buttercup	f	o/r	o/r	f	f	d/a
<i>Samolus valerandi</i> Brookweed	0	0	0	0	0	o/r
<i>Typha latifolia</i> Bulrush	0	f	0	o/r	f	o/r
<i>Veronica beccabunga</i> Brooklime	f	o/r	0	f	o/r	f
<i>Veronica anagallis-aquatica</i> Blue Water-speedwell	0	0	0	f	f	f
<i>n</i> of emergent species	4	4	5	7	9	11
Total <i>n</i> of species	8	9	12	10	14	16

Goulder, R. (2014) Colonization of sand and gravel pit ponds by aquatic plants: the example of North Cave Wetlands 2001-2013. *The Naturalist* 139: 185-197.

**June-July 2004**

	Far Lake	Carp Lake	Main Lake	Village Lake (West)	Village Lake (East)	Island Lake	Reed Bed Lake
<b>Submerged and floating-leaved plants</b>							
<i>Ceratophyllum demersum</i> Rigid Hornwort	f	0	0	0	0	0	0
<i>Chara vulgaris</i> agg. Stonewort	0	0	d/a	d/a	d/a	d/a	o/r
<i>Myriophyllum spicatum</i> Spiked Water-milfoil	d/a	d/a	d/a	d/a	d/a	d/a	0
<i>Persicaria amphibia</i> Amphibious Bistort	f	0	0	f	f	f	o/r
<i>Potamogeton crispus</i> Curled Pondweed	o/r	o/r	o/r	0	o/r	o/r	0
<i>Potamogeton pectinatus</i> Fennel Pondweed	f	d/a	f	0	f	0	0
<i>Potamogeton pusillus</i> Lesser Pondweed	d/a	d/a	d/a	d/a	d/a	d/a	d/a
<i>Ranunculus trichophyllus</i> Thread-leaved Water-crowfoot	f	o/r	0	0	0	0	0
<i>Zannichellia palustris</i> Horned Pondweed	o/r	o/r	d/a	o/r	o/r	o/r	0
<i>n</i> of submerged and floating-leaved species	8	6	6	5	7	6	3
<b>Emergent plants</b>							
<i>Agrostis stolonifera</i> Creeping Bent	f	d/a	d/a	d/a	d/a	f	d/a
<i>Apium nodiflorum</i> Fool's Water-cress	o/r	0	0	0	f	0	0
<i>Carex acutiformis</i> Lesser Pond-sedge	0	0	0	o/r	0	0	0
<i>Eleocharis palustris</i> Common Spike-rush	0	0	0	o/r	o/r	0	0
<i>Iris pseudacorus</i> Yellow Iris	0	0	0	o/r	0	0	0
<i>Juncus effusus</i> Soft-rush	f	0	0	d/a	o/r	0	o/r
<i>Mentha aquatica</i> Water Mint	o/r	0	o/r	0	0	0	o/r
<i>Myosotis scorpioides</i> Water Forget-me-not	0	0	0	o/r	0	0	0
<i>Nasturtium officinale</i> agg. Water-cress	o/r	0	0	0	o/r	0	0
<i>Phalaris arundinacea</i> Reed Canary-grass	0	0	0	o/r	0	o/r	0
<i>Phragmites australis</i> Common Reed	f	0	f	f	f	0	d/a
<i>Ranunculus sceleratus</i> Celery-leaved Buttercup	o/r	o/r	d/a	o/r	f	d/a	d/a
<i>Samolus valerandi</i> Brookweed	0	0	0	0	0	0	o/r
<i>Schoenoplectus lacustris</i> Common Club-rush	0	0	0	o/r	o/r	0	0
<i>Typha latifolia</i> Bulrush	0	f	o/r	f	f	o/r	0
<i>Veronica anagallis-aquatica</i> Blue Water-speedwell	0	o/r	f	f	o/r	f	o/r
<i>Veronica beccabunga</i> Brooklime	o/r	f	0	0	o/r	0	f
<i>Veronica catenata</i> Pink Water-speedwell	0	0	f	0	0	0	o/r
<i>n</i> of emergent species	8	5	7	12	11	5	9
Total <i>n</i> of species	16	11	13	17	18	11	12

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**July 2007**

	Far Lake	Carp Lake	Main Lake	Village Lake (West)	Village Lake (East)	Island Lake	Reed Bed Lake
<b>Submerged and floating-leaved plants</b>							
<i>Ceratophyllum demersum</i> Rigid Hornwort	0	o/r	0	0	0	0	0
<i>Chara vulgaris</i> agg. Stonewort	d/a	d/a	d/a	f	d/a	f	d/a
<i>Elodea nuttallii</i> Nuttall's Waterweed	d/a	0	0	0	0	0	0
<i>Lemna minor</i> Common Duckweed	0	0	0	0	f	o/r	f
<i>Myriophyllum spicatum</i> Spiked Water-milfoil	d/a	d/a	d/a	d/a	d/a	o/r	f
<i>Persicaria amphibia</i> Amphibious Bistort	o/r	0	o/r	f	f	f	o/r
<i>Potamogeton crispus</i> Curled Pondweed	d/a	0	f	o/r	d/a	0	0
<i>Potamogeton pectinatus</i> Fennel Pondweed	d/a	d/a	d/a	0	o/r	0	0
<i>Potamogeton pusillus</i> Lesser Pondweed	d/a	d/a	d/a	d/a	d/a	d/a	d/a
<i>Ranunculus baudotii</i> Brackish Water-crowfoot	0	0	o/r	0	0	0	0
<i>Ranunculus</i> sp. (subg. <i>Batrachium</i> ) water-crowfoot	o/r	f	0	0	0	0	0
<i>Zannichellia palustris</i> Horned Pondweed	o/r	0	f	o/r	o/r	0	d/a
<i>n</i> of submerged and floating-leaved species	9	6	8	6	8	5	6
<b>Emergent plants</b>							
<i>Agrostis stolonifera</i> Creeping Bent	o/r	f	f	d/a	d/a	d/a	d/a
<i>Alisma plantago-aquatica</i> Water-plantain	0	0	0	0	0	0	d/a
<i>Apium nodiflorum</i> Fool's Water-cress	0	0	0	0	f	0	0
<i>Bolboschoenus maritimus</i> Sea Club-rush	0	0	0	0	0	f	0
<i>Carex acutiformis</i> Lesser Pond-sedge	0	0	0	d/a	0	0	0
<i>Eleocharis palustris</i> Common Spike-rush	0	o/r	o/r	o/r	f	f	d/a
<i>Equisetum palustre</i> Marsh Horsetail	0	0	0	o/r	0	0	0
<i>Iris pseudacorus</i> Yellow Iris	0	o/r	0	f	0	0	o/r
<i>Juncus effusus</i> Soft-rush	0	0	f	d/a	o/r	o/r	f
<i>Myosotis laxa</i> Tufted Forget-me-not	0	0	0	0	o/r	0	0
<i>Myosotis scorpioides</i> Water Forget-me-not	0	0	0	o/r	0	0	0
<i>Nasturtium officinale</i> agg. Water-cress	0	0	0	0	f	f	0
<i>Phalaris arundinacea</i> Reed Canary-grass	0	0	0	d/a	0	0	0
<i>Phragmites australis</i> Common Reed	d/a	0	d/a	d/a	d/a	d/a	d/a
<i>Ranunculus sceleratus</i> Celery-leaved Buttercup	0	0	o/r	o/r	o/r	f	f
<i>Samolus valerandi</i> Brookweed	0	0	d/a	0	0	o/r	0
<i>Schoenoplectus lacustris</i> Common Club-rush	0	0	0	0	0	0	o/r
<i>Typha latifolia</i> Bulrush	0	f	o/r	d/a	d/a	d/a	d/a
<i>Veronica anagallis-aquatica</i> Blue Water-speedwell	0	o/r	f	o/r	f	f	o/r
<i>Veronica beccabunga</i> Brooklime	0	f	o/r	0	f	o/r	d/a
<i>Veronica catenata</i> Pink Water-speedwell	0	0	o/r	0	o/r	0	d/a
<i>n</i> of emergent species	2	6	10	12	12	11	12
Total <i>n</i> of species	11	12	18	18	20	16	18

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**July 2010**

	Far Lake	Carp Lake	Main Lake	Village Lake (West)	Village Lake (East)	Island Lake	Reed Bed Lake
<b>Submerged and floating-leaved plants</b>							
<i>Chara vulgaris</i> agg. Stonewort	0	d/a	o/r	o/r	d/a	0	0
<i>Elodea nuttallii</i> Nuttall's Waterweed	d/a	o/r	0	0	0	0	0
<i>Lemna minor</i> Common Duckweed	o/r	0	0	0	f	f	f
<i>Myriophyllum spicatum</i> Spiked Water-milfoil	f	0	f	d/a	d/a	0	0
<i>Persicaria amphibia</i> Amphibious Bistort	o/r	0	o/r	f	o/r	f	o/r
<i>Potamogeton berchtoldii</i> Small Pondweed	o/r	0	o/r	0	0	0	0
<i>Potamogeton crispus</i> Curled Pondweed	0	0	0	o/r	o/r	0	0
<i>Potamogeton pectinatus</i> Fennel Pondweed	o/r	d/a	f	f	o/r	0	0
<i>Potamogeton pusillus</i> Lesser Pondweed	0	o/r	d/a	d/a	d/a	o/r	f
<i>Ranunculus baudotii</i> Brackish Water-crowfoot	0	0	o/r	0	o/r	0	0
<i>Ranunculus circinatus</i> Fan-leaved Water-crowfoot	0	0	0	o/r	0	0	0
<i>Ranunculus</i> sp. (subg. <i>Batrachium</i> ) water-crowfoot	0	o/r	0	0	f	0	0
<i>Zannichellia palustris</i> Horned Pondweed	0	0	0	0	o/r	0	f
<i>n</i> of submerged and floating-leaved species	6	5	7	7	10	3	4
<b>Emergent plants</b>							
<i>Agrostis stolonifera</i> Creeping Bent	f	f	f	d/a	d/a	d/a	d/a
<i>Alisma plantago-aquatica</i> Water-plantain	0	0	0	0	0	0	f
<i>Apium nodiflorum</i> Fool's Water-cress	0	0	0	o/r	0	0	0
<i>Bolboschoenus maritimus</i> Sea Club-rush	0	0	0	0	0	d/a	0
<i>Carex acutiformis</i> Lesser Pond-sedge	0	0	0	d/a	0	0	0
<i>Eleocharis palustris</i> Common Spike-rush	0	o/r	o/r	o/r	f	d/a	f
<i>Iris pseudacorus</i> Yellow Iris	0	o/r	0	o/r	0	0	o/r
<i>Juncus effusus</i> Soft-rush	o/r	0	o/r	f	o/r	o/r	o/r
<i>Mentha aquatica</i> Water Mint	0	0	0	0	o/r	0	0
<i>Myosotis laxa</i> Tufted Forget-me-not	0	0	0	o/r	f	f	0
<i>Myosotis scorpioides</i> Water Forget-me-not	0	0	0	o/r	0	0	0
<i>Nasturtium officinale</i> agg. Water-cress	0	0	0	o/r	o/r	o/r	0
<i>Phalaris arundinacea</i> Reed Canary-grass	0	0	0	f	0	0	0
<i>Phragmites australis</i> Common Reed	f	0	d/a	d/a	d/a	d/a	d/a
<i>Ranunculus sceleratus</i> Celery-leaved Buttercup	0	0	f	o/r	o/r	f	o/r
<i>Samolus valerandi</i> Brookweed	0	0	o/r	o/r	o/r	f	0
<i>Schoenoplectus lacustris</i> Common Club-rush	0	0	0	o/r	0	0	o/r
<i>Typha latifolia</i> Bulrush	0	d/a	0	d/a	d/a	d/a	o/r
<i>Veronica anagallis-aquatica/catenata</i> Blue/Pink Water-speedwell	0	o/r	f	o/r	f	f	f
<i>Veronica beccabunga</i> Brooklime	0	f	o/r	o/r	o/r	o/r	f
<i>n</i> of emergent species	3	6	8	17	12	12	11
Total <i>n</i> of species	9	11	15	24	22	15	15

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### July 2013

	Far Lake	Carp Lake	Main Lake	Village Lake (West)	Village Lake (East)	Island Lake	Reed Bed Lake
<b>Submerged and floating-leaved plants</b>							
<i>Callitriche</i> sp. water-starwort	0	0	0	0	0	0	o/r
<i>Ceratophyllum demersum</i> Rigid Hornwort	0	0	0	0	d/a	0	0
<i>Chara vulgaris</i> agg. Stonewort	0	0	o/r	0	0	0	0
<i>Elodea nuttallii</i> Nuttall's Waterweed	d/a	d/a	0	0	0	0	0
<i>Lemna minor</i> Common Duckweed	0	0	0	0	o/r	f	o/r
<i>Myriophyllum spicatum</i> Spiked Water-milfoil	0	o/r	0	d/a	d/a	0	0
<i>Persicaria amphibia</i> Amphibious Bistort	0	0	o/r	f	o/r	o/r	0
<i>Potamogeton crispus</i> Curled Pondweed	o/r	0	0	0	o/r	0	0
<i>Potamogeton pectinatus</i> Fennel Pondweed	o/r	o/r	f	f	f	0	0
<i>Potamogeton pusillus</i> Lesser Pondweed	o/r	o/r	o/r	o/r	d/a	0	o/r
<i>Ranunculus baudotii</i> Brackish Water-crowfoot	0	f	0	0	0	0	0
<i>Ranunculus circinatus</i> Fan-leaved Water-crowfoot	0	0	d/a	o/r	f	0	0
<i>Ranunculus</i> sp. (subg. <i>Batrachium</i> ) water-crowfoot	o/r	0	0	0	0	0	0
<i>Zannichellia palustris</i> Horned Pondweed	0	0	0	0	o/r	0	f
<i>n</i> of submerged and floating-leaved species	5	5	5	5	9	2	4
<b>Emergent plants</b>							
<i>Agrostis stolonifera</i> Creeping Bent	o/r	f	f	d/a	f	f	f
<i>Alisma plantago-aquatica</i> Water-plantain	0	0	0	0	0	0	o/r
<i>Bolboschoenus maritimus</i> Sea Club-rush	0	0	0	0	0	o/r	0
<i>Carex acutiformis</i> Lesser Pond-sedge	0	0	0	d/a	0	0	0
<i>Eleocharis palustris</i> Common Spike-rush	0	o/r	o/r	o/r	o/r	d/a	f
<i>Iris pseudacorus</i> Yellow Iris	0	o/r	0	o/r	o/r	0	0
<i>Juncus effusus</i> Soft-rush	o/r	o/r	o/r	f	o/r	o/r	o/r
<i>Mentha aquatica</i> Water Mint	0	0	o/r	0	f	o/r	0
<i>Myosotis laxa</i> Tufted Forget-me-not	0	0	o/r	0	o/r	f	0
<i>Myosotis scorpioides</i> Water Forget-me-not	0	0	0	o/r	0	0	0
<i>Nasturtium officinale</i> agg. Water-cress	0	0	o/r	0	o/r	o/r	0
<i>Phalaris arundinacea</i> Reed Canary-grass	0	0	0	o/r	0	0	0
<i>Phragmites australis</i> Common Reed	f	0	d/a	d/a	d/a	d/a	d/a
<i>Ranunculus sceleratus</i> Celery-leaved Buttercup	0	0	o/r	o/r	o/r	f	f
<i>Samolus valerandi</i> Brookweed	0	0	0	0	0	f	0
<i>Schoenoplectus lacustris</i> Common Club-rush	0	0	0	0	0	0	o/r
<i>Typha latifolia</i> Bulrush	0	d/a	o/r	d/a	d/a	d/a	0
<i>Veronica anagallis-aquatica/catenata</i> Blue/Pink Water-speedwell	o/r	o/r	o/r	f	f	d/a	f
<i>Veronica beccabunga</i> Brooklime	0	o/r	o/r	0	o/r	o/r	o/r
<i>n</i> of emergent species	4	7	11	11	12	13	9
Total <i>n</i> of species	9	12	16	16	21	15	13

### Reference

Palmer, M. & Newbold, C. (1983) *Focus on Nature Conservation No. 1, Wetland and Riparian Plants in Great Britain*. Nature Conservancy Council, Shrewsbury.