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Front cover: Hound's-tongue *Cynoglossum officinale*, one of the rare native plants proposed for VC63's Red Data List of plants (see p21). Photo: *J.Simmons*

Back cover: The Rhododendron Leafhopper *Graphocephala fennahi* found at Temple Newsam. It is a new arrival in Yorkshire (see p50). Photo: *J.Bowers*



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Editorial

Any natural history activity, whether it is enjoying the wildlife in our gardens or investigating the ecology or life cycle of one or more taxa, entails identifying the animals, plants and/or fungi so that we know what to call them when we communicate our findings to others. Every species known to science has a scientific name consisting of two parts – a generic name and a specific epithet. This is the scientific binomial. The person who realises that he or she is looking at something new has the honour of bestowing a name on it, supported by a published description. The name of the author and the date of publication become part of the formal name. This system was devised and developed by the Swedish botanist Carl von Linné (Latinised to Linnaeus) and our system of nomenclature dates from the publication of the tenth edition of his *Systema Naturae* in 1758. One of the insects described in this publication is *Papilio machaon* Linnaeus, 1758. Scientific names are controlled by international agreement and one of the requirements is that every name is rendered in the Roman alphabet. A worker in Russia, Egypt, China or Japan can write the description in his/her own language but the full scientific name is given in the Roman alphabet.

Many animals, plants and fungi also have common or colloquial or vernacular names. *Papilio machaon* occurs widely throughout Europe and the residents of each country have their own name for it; in Britain we know it as the Swallowtail Butterfly.

Names are not fixed and unalterable. Common names may change according to fashion. Sixty years ago the bird *Prunella modularis* (Linnaeus, 1758) was generally known as the Hedge Sparrow and occasionally as the Hedge Accentor, while the rough types in t'North called it the Dunnock. Today the north country name is the one generally used though either of the others is quite acceptable – each one is completely unambiguous. Scientific names do not change through fashion but through research. All the butterflies in the tenth edition of his *Systema Naturae* were placed in *Papilio* by Linné but, as more and more were described from all over the world it became evident that some division was needed. The ones with white wings and smooth green caterpillars were named *Pieris* while the ones with multicoloured wings and spiky caterpillars were named *Nymphalis*. The specific epithets were not altered

and the author's names and publication dates were placed in brackets to indicate that they had originally been published under a different generic name. Botanists have a similar system for achieving the same ends. As the number of butterflies known from around the world increased, these divisions also became large and unwieldy and were subdivided, but the species originally included in *Pieris* were kept together by creating the name Pieridae to encompass them while the ones previously in *Nymphalis* were placed in the Nymphalidae.

What has all this got to do with *The Naturalist*? Your subscription pays for the publication of every article that we publish and the Editorial Board does not believe that we should publish articles which are designed to exclude you. Every article should be capable of being read and enjoyed by every YNU member and, therefore, we use English names where they exist. We use scientific names when talking to each other and consider them neither jargon nor elitist but it is only good manners to use English names when presenting information to the rest of the YNU membership. The English names we use in *The Naturalist* are those listed on the NBN Gateway. All vascular plants and vertebrates have English names, as do many fungi and invertebrates. Many insects which can be identified on sight do not have English names, which causes a problem to us when we lead guided walks for the public. We sometimes have to make up vernacular names on the spot! Novel English names have been proposed for groups such as mosses, micromoths and soldier flies. They are not generally welcomed by naturalists who study these groups but they are an attempt to demystify the names and reduce the barriers to understanding. Articles dealing with species which do not have vernacular names may be hard work for some readers but that is the nature of the subject. We have no plans for dumbing down such articles.

Our policy is to add the scientific name on the first occasion that an English name is used but not thereafter. We also capitalise all English names for ease of understanding – a small white butterfly is very different from a Small White Butterfly! We do not capitalise names where the species have not been identified, such as brambles, oaks and voles. One type of article where this system breaks down is with excursion reports, where any species is likely to be mentioned only once. The Editorial Board feels that scientific names can be dispensed with when dealing with animals such as mammals, birds and butterflies. Should we go further and include vascular plants and/or macromoths? What do you think?

John Newbould: President of the YNU 2012-2013

John spent most of his working life as a community pharmacist running his own business. He qualified in 1966, at a time when you had to know how to make Tincture of Belladonna and Extract of Male Fern and has indeed made them!

He was introduced to wild flowers whilst at primary school and returned to recording them in his 30s. In the 1970s he worked closely with Rotherham Biological Records Centre as a member of Rotherham Naturalists' Society and helped develop the process of moving from a card index to the computer database program Recorder 3 as personal computers became available in the late 1980s.

He joined the Yorkshire Naturalists' Union in 1978, where he was introduced to the wider world of recording other groups of plants and animals. He was a member of the Yorkshire Wildlife Trust's Council from 1984 to 1995, stepping down when appointed Treasurer of the Yorkshire Naturalists' Union in 1995 – a role he combined with that of Membership Secretary as well as General Secretary until November 2011. During most of the years that he was a YNU Trustee he has lived in Weymouth, travelling usually once a month to Yorkshire for meetings. One of his lasting legacies is the establishment of the Education Committee, which organises training for the next generation of naturalists, in particular with Leeds University, as well as the Union's annual conference. He has been particularly keen to provide training in electronic data entry. He was awarded Honorary Membership of the Union at the AGM in 2010.



In Dorset he is Field Secretary of the Dorset Natural History and Archaeological Society; a trustee of Dorset Environmental Records Centre; a member of the National Trust's Cyril Diver Project steering committee which researches the work of the founder of the Nature Conservancy at Studland. He is also a volunteer ecologist with the National Trust, working across Dorset and with the Trust's national consultancy, for whom he has produced a number of conservation evaluation reports. He has been on the Council of the National Federation for Biological Recording since 1999 as Membership Secretary and Treasurer and is currently Secretary. For the past few years he has provided administration for the NFBR Annual Conference, including finding venues. He is a member of the British Ecological Society and an affiliate member of the Institute of Ecology and Environmental Planning.

On 23 November 2012 John was privileged to receive honorary membership of the National Biodiversity Network Trust in recognition of his long-term, dedicated support for the study of natural history, and especially biological recording, within the volunteer community.

Throughout all this administrative workload, he has firmly made sure that he spends time in the field every week of the year and ensures that his records arrive with either the society recorder or a local records centre on time and in an electronic format. In 2002-5 he organised YNU surveys of Ripley Park, with particular reference to the stock of veteran trees. For the past few years he has spent some time recording underworked areas in VC65, based in Swaledale, in particular looking at plant galls (see p57).

Aquatic plants in Yorkshire canals

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Introduction

Everyday encounters with canals, in both urban and rural environments, can be positive experiences and are enhanced by the enjoyment of aquatic vegetation. Luxuriant vegetation is often to be seen while walking or cycling along towpaths or may be glimpsed from trains or buses. Some lengths of canal in Yorkshire are designated as SSSI because of the conservation value of their plant communities: e.g. Leeds & Liverpool Canal in Kirkstall Valley Park, Leeds; Pocklington Canal; Leven Canal (IWAC, 2008). This reflects the high nature conservation value that is often associated with canals (Briggs, 1996, 2006, 2012; IWAC, 2008). Other canal lengths appear to have little botanical interest; for example, the deep, sheer-sided channel of the Aire & Calder Navigation between Castleford and Wakefield and the sometimes boat-churned and extremely turbid Leeds & Liverpool Canal at Gargrave.

Yorkshire's diverse canals range from large-scale commercial waterways (e.g. the Aire & Calder and South Yorkshire Navigations) through broad (e.g. the Calder & Hebble Navigation and the Leeds & Liverpool Canal) and narrow canals (e.g. the Huddersfield Narrow Canal and the South Yorkshire section of the Chesterfield Canal) used for leisure boating, to disused and largely derelict waterways (e.g. the Barnsley Canal and the Dearne & Dove Canal) (Glister, 2004; Anon, 2006, 2009). They were largely dug in the late 18th and early 19th centuries. Some were constructed to accommodate wide boats (beam 4.3m) while others were for narrow boats (2.1m) and they have varying histories of usage, dereliction and restoration.

The aim of this contribution is to explore aquatic plants in some Yorkshire canals in the context of their diverse history and usage. The work described is far from complete: there are several canals in Yorkshire that I have not visited; moreover I have not walked the full length of the towpaths along most of the canals that I have visited. It is hoped, however, that this paper will stimulate appreciation of the extent of our Yorkshire canal flora and of the need for the inclusion of aquatic plants and their conservation value in decision-making processes that concern the use and development of canals.

Sites and methods

Aquatic plants were recorded in five canals or canal systems (Table 1). Recording was in May–September 2010–2012 at the sites indicated in Table 1. Because plants occupy a continuum from open water through wetland to terrestrial habitats, the problem arises as to which species should be regarded as aquatic plants. This was resolved by using a checklist which comprised the 184 taxa that Palmer & Newbold (1983) considered to be the aquatic-plant flora of England and Wales. In addition the list included all rushes *Juncus* spp. and the post-1990 alien Floating Pennywort *Hydrocotyle ranunculoides*. Nomenclature is in accordance with Stace (2010). Recording was done by eye from the towpath. Submerged plants were retrieved using either a grapnel (with permission from British Waterways) or a walking pole, extensible to 1.5m, with a hook attached to its end. Emergent plants that were inaccessible on the far bank were identified using binoculars. Plants in lock by-pass channels were also recorded. The subjective DAFOR abundance scale (Kent, 2012) was used while walking lengths of canal but with species recorded in only three categories; i.e. dominant/abundant (d/a), frequent (f) or occasional/rare (o/r). Alternatively, plants were recorded in 0.5km lengths of canal using the scale: 1 = <0.1% cover, 2 = 0.1–5% cover and 3 = >5% cover (Holmes, 1983); there is correspondence

between these abundance scales in that (approximately): 1 = o/r; 2 = f; 3 = d/a. The sum of abundance scores (ΣA) for each 0.5km of canal was calculated by adding together the scores (on the 1-3 abundance scale) of all species recorded. ΣA provided an integrated quantitative representation of both species richness and vegetation abundance.

Plants recorded

Submerged and floating-leaved plants found are listed in Table 2. Submerged plants were frequently well represented by pondweeds (*Potamogeton* spp.): five species being found in the Barnsley canals, the Calderdale canals, the Leeds & Liverpool Canal and the Ripon Canal, and two in the Chesterfield Canal. Of these Flat-stalked Pondweed *Potamogeton friesii* (sparse in the Ripon Canal) and Hairlike Pondweed *P. trichoides* (frequent in the Calder & Hebble Navigation between Long Cut End Bridge and the junction of the Dewsbury Arm and between Shepley Lock and Ledgard Bridge) are predominantly southern species (Preston, 1995) and have a limited distribution in Yorkshire. Flat-stalked Pondweed is previously known from the Ripon Canal (Abbott, 2005) and Hairlike Pondweed from the Calder & Hebble Navigation around 1940 (Lavin & Wilmore, 1994) and the Leeds & Liverpool Canal (Lavin & Wilmore, 1994; Abbott, 2005), although I did not find it in the latter canal. Another interesting pondweed was American Pondweed *P. epihydrus*, abundant in the Calder & Hebble Navigation along the 3.9km south-eastwards from Tuel Lane Tunnel to Salterhebble Top Lock, a species that has been known in this canal as a N. American alien since 1907 (Lavin & Wilmore, 1994), although it also has apparently native populations in the Outer Hebrides that were not discovered until 1943-1944 (Preston & Croft, 1997).

The floating-leaved Unbranched Bur-reed *Sparganium emersum* and the submerged N. American alien, Nuttall's Waterweed *Elodea nuttallii*, which was first recorded in the UK in 1966 and has spread rapidly, were dominant or abundant along parts of all five of the canal systems visited. Other submerged and floating-leaved species that were not recorded in all five canals were, nevertheless, dominant or abundant at some sites. These included water-starworts *Callitriche* spp., Rigid Hornwort *Ceratophyllum demersum*, Frogbit *Hydrocharis morsus-ranae*, Floating Pennywort, Common Duckweed *Lemna minor*, Ivy-leaved Duckweed *Lemna trisulca*, Spiked Water-milfoil *Myriophyllum spicatum* and Yellow Water-lily *Nuphar lutea*. Of these, Frogbit, a declining species in Britain (Preston *et al.*, 2002), was locally abundant in the Barugh Branch of the Barnsley Canal. This plant is, however, sold in garden centres and is liable to be discarded into the wild; hence Wilmore *et al.* (2011) regard South Yorkshire populations as introductions. Fringed Water-lily *Nymphoides peltata*, frequent and conspicuous in the Leeds & Liverpool Canal in central Leeds, presumably has a similar origin. The N. American alien Floating Pennywort, first recorded in England in 1990 and rapidly spreading, had colonized the Aire & Calder Navigation, being especially abundant in the disused channel west of Fairies Hill Lock, and had also become established in the Barugh Branch of the Barnsley Canal. A more welcome floating-leaved plant was Floating Water-plantain *Luronium natans*. This has a restricted world distribution and is specially protected within Europe (Preston & Croft, 1997). It is a scarce plant in Britain and appears to have spread from oligotrophic waters in Wales north-eastwards along the canal system in the 19th century (Preston & Croft, 1997). Lavin & Wilmore (1994) believed that it had recently increased its range in the Calderdale canals and it was sparsely distributed in the Calder & Hebble Navigation between Long Cut End Bridge and the Dewsbury Arm by 2011, and in 2012 between Brighouse and Cromwell Bottom.

The emergent plants found are listed in Table 3. Reed Sweet-grass *Glyceria maxima* is a ubiquitous canal plant and all the canals visited had some marginal vegetation dominated by it. In addition, the whole width of the Barnsley Canal channel was in places occupied by this species. There were also ten other emergent species that were recorded in all five canal

systems although only five of these were ever recorded as a dominant/abundant component of the flora; i.e. Water-plantain *Alisma plantago-aquatica*, Flowering-rush *Butomus umbellatus*, Soft-rush *Juncus effusus*, Branched Bur-reed *Sparganium erectum* and Amphibious Bistort *Persicaria amphibia*.

Variation between and along canals

In all 65 species of aquatic plant were found. Most species were recorded in the Leeds & Liverpool Canal (45 taxa) followed by the Barnsley canals (38), Ripon Canal (35) and the Calderdale canals (32) and the Chesterfield Canal (29). Thus, the two systems with greatest species richness were the continually navigated Leeds & Liverpool Canal and the derelict Barnsley canals.

Most submerged and floating-leaved species were found in the Barnsley canals (15 taxa) followed by the Calderdale canals and the Leeds and Liverpool Canal (14), the Ripon Canal (12) and the Chesterfield Canal (8) (Table 2) while most emergent ones were found in the Leeds & Liverpool Canal (31 taxa) followed by the Barnsley canals and the Ripon Canal (23), the Chesterfield Canal (21) and the Calderdale canals (18) (Table 3). There were many striking differences in the aquatic vegetation between and along canals.

Barnsley canals

The Barnsley canals had sections where a central, though shallow (<1m) open-water channel persisted, for example parts of the Barnsley Canal north of Shaw Bridge, along the Barugh Branch and the Elsecar and Worsbrough branches of the Dearne & Dove Canal. Sometimes this was known to be because of dredging; e.g. along the Elsecar Branch (Glister, 2004). Submerged/floating vegetation was often luxuriant, and dominant or abundant species in summer 2011 included water-starwort, Rigid Hornwort, Nuttall's Waterweed, Common Duckweed, Spiked Water-milfoil, Fennel Pondweed *Potamogeton pectinatus*, Broad-leaved Pondweed *P. natans*, Unbranched Bur-reed and, only in the Barugh Branch, Frogbit, Floating Pennywort and Ivy-leaved Duckweed. A part of the Barnsley Canal in a deep-shaded cutting north of Shaw Bridge had very shallow water with a monoculture of Common Duckweed forming a complete surface cover. There was usually emergent vegetation of Reed Sweet-grass in the margins and often occupying the full width of the channel (see Plate 1a, centre pages); other sometimes dominant or abundant emergent plants included Sweet-flag *Acorus calamus*, Branched Bur-reed, Bulrush *Typha latifolia* and, in the Barugh Branch, Lesser Water-parsnip *Berula erecta* and Soft-rush. Emergent species recorded, in places, as frequent included Water-plantain, Flowering-rush, Common Marsh-bedstraw *Galium palustre*, Yellow Iris *Iris pseudacorus*, Hard Rush *Juncus inflexus*, Water Mint *Mentha aquatica*, Water Forget-me-not *Myosotis scorpioides*, Water-cress *Nasturtium officinale* agg., Amphibious Bistort and Bittersweet *Solanum dulcamara*.

Calderdale canals

In Calderdale, the Aire & Calder Navigation between Castleford and Wakefield is deep (perhaps 2-3m) and much of the channel has sheer sides. In July 2011 what little aquatic vegetation there was consisted principally of scattered stands of Reed Sweet-grass and Reed Canary-grass *Phalaris arundinacea* at the margins and Floating Pennywort on the water. The exception was about 500m of disused canal between Altofts Lock and the mooring basin west of Fairies Hill Lock, bypassed by the main line of the canal since the 1950s (Taylor, 2003). Here there was much marginal vegetation, principally Reed Sweet-grass with scattered Bulrush, and extensive spreading surface cover of Floating Pennywort. Further up the Calder Valley, the canal sections of the Calder and Hebble Navigation were less deep and boat movements tended to cause turbidity. Over four days (from mid-morning to early afternoon), in July and August 2011 and September 2012, between 4 and 13 boat movements per day were observed. Nevertheless,

there was in places substantial submerged/floating vegetation. Submerged/floating species that were sometimes dominant or abundant included: a water-starwort, Nuttall's Waterweed, American Pondweed, Broad-leaved Pondweed, Hairlike Pondweed and Unbranched Bur-reed, while species recorded as frequent included Common Duckweed and Lesser Pondweed *Potamogeton pusillus*. Where there was marginal vegetation this was dominated by Reed Sweet-grass; the only other dominant or abundant emergent species were Water-plantain (possibly also with Narrow-leaved Water-plantain *Alisma lanceolatum*) in the Dewsbury Branch, Flowering-rush between Brighouse and Cromwell Bottom and Arrowhead *Sagittaria sagittifolia* between Salterhebble and Sowerby Bridge. Also conspicuous in the Dewsbury Branch, and recorded as frequent, were Sweet-flag, Hemlock Water-dropwort *Oenanthe crocata* and Bulrush (see Plate 1c, centre pages).

Chesterfield Canal

The Chesterfield Canal, observed in May and June 2010, tended to have turbid water stirred up by boats. Submerged/floating plants that were in places dominant or abundant (i.e. >5% cover over 0.5km of canal) were a water-starwort, Nuttall's Waterweed, Broad-leaved Pondweed, Fennel Pondweed and Unbranched Bur-reed. The only dominant or abundant emergent marginal species was Reed Sweet-grass, while species sometimes recorded as frequent (i.e. 0.1-5% cover over 0.5km of canal) were Water-cress, Amphibious Bistort and Branched Bur-reed. Detailed information on the distribution of aquatic plants was collected for 0.5km lengths along 7.0km of canal east of Norwood Tunnel (Table 4). There was substantial local variation along the canal; species richness per 0.5km ranged from 2 to 6 for submerged/floating plants, from 3 to 14 for emergent species, and from 6 to 17 for all aquatic plants. Even more striking was variation in the sum of abundance scores (ΣA) for each 0.5km of canal. ΣA ranged from 2 to 11 for submerged/floating species, from 3 to 15 for emergent ones and from 8 to 19 for all aquatics. Low species richness and low ΣA , for example from 2.5-3.5km east of Norwood Tunnel, were associated with tree shading and high water turbidity. The high values immediately east (0-0.5km) of Norwood Tunnel were related to a diversity of emergent species growing in a muddy area adjacent to the blocked-up tunnel mouth and to abundant submerged/floating-leaved vegetation in the transparent water of this largely unnavigated stub end of canal. Other high values of species richness and ΣA , for example from 4.5-5.5km east of Norwood Tunnel, were due to a diversity of plants growing in lock by-pass channels. Thus, over the length 5.0-5.5km, the lock by-passes and associated structures supported Creeping Bent *Agrostis stolonifera*, Fool's-water-cress *Apium nodiflorum*, Lesser Water-parsnip, Marsh-marigold *Caltha palustris*, Soft-rush, Hard Rush, Water Mint, Water-cress, Amphibious Bistort, Reed Canary-grass, Bittersweet, Lesser Bulrush *Typha angustifolia* (introduced in coir rolls used for bank stabilization) and Brooklime *Veronica beccabunga*.

Leeds & Liverpool Canal

The Leeds & Liverpool Canal between Gargrave and Skipton, when visited in June-August 2010, had highly turbid water linked to substantial boat traffic; boat movements observed over three days in the field ranged from 8-21 per day. There was only a limited presence of submerged/floating plants. Fennel Pondweed was sometimes frequent (i.e. 0.1-5% cover over 0.5km of canal) but otherwise there were only occasional patches of floating-leaved Unbranched Bur-reed and largely loose fragments of Nuttall's Waterweed, Spiked Water-milfoil and Lesser Pondweed to be seen. Emergent vegetation was intermittent, largely on the far side from the tow-path; only Reed Sweet-grass was ever dominant or abundant while Greater Pond-sedge *Carex riparia* and/or Lesser Pond-sedge *Carex acutiformis* were sometimes frequent (both species were present but were not easily separable through binoculars when growing on the far side of the canal). Detailed information on aquatic plants in 0.5km lengths along 6km of canal east of Priest Holme Railway Bridge emphasized the paucity of submerged/floating vegetation

(Table 5). The number of species (0-5) and ΣA (0-6) per 0.5km were very low. Species richness of emergent plants was greater and showed more variation along the canal; the number of emergent taxa ranged from 3-20 and ΣA from 4-23 per 0.5km of canal. Thus species richness (4-25) and ΣA (5-29) per 0.5km for all aquatic taxa also showed considerable variation. Essentially the main channel of this stretch of canal appeared to be a relatively inhospitable environment for aquatic plants, possibly because of high turbidity, the frequent presence of vertical margins and intermittent tree shading (see Plate 1d, centre pages). Higher values of species richness and ΣA tended to be associated with ancillary features:

1. Lock by-pass channels, e. g. in lengths 0-0.5km and 0.5-1km east of Priest Holme Railway Bridge. Creeping Bent, Flowering-rush, Reed Sweet-grass, Water Forget-me-not, Water Mint, Water-cress, Hemlock Water-dropwort and Reed Canary-grass were recorded in by-pass channels (see Plate 1b, centre pages).

2. Winding holes (broadenings of the canal allowing boats to turn), e.g. in lengths 2-2.5km and 3-3.5km. Sweet-flag, Creeping Bent, Marsh-marigold, Lesser Pond-sedge, Floating Sweet-grass *Glyceria fluitans*, Reed Sweet-grass, Hard Rush, Tufted Forget-me-not *Myosotis laxa*, Water Forget-me-not, Water-cress, Amphibious Bistort, Reed Canary-grass, Blue Water-speedwell *Veronica anagallis-aquatica* and Brooklime were recorded in winding holes.

3. Cattle-poached margin, e.g. in length 3.5-4km. Sweet-flag, Marsh-marigold, Floating Sweet-grass, Reed Sweet-grass, Hard Rush, Water Mint, Water Forget-me-not, Water-cress, Hemlock Water-dropwort, Celery-leaved Buttercup *Ranunculus sceleratus* and Brooklime were recorded in margins that appeared to have been poached by cattle on the far side from the towpath.

The Leeds & Liverpool Canal between Apperley Bridge and central Leeds, when visited in July and September 2011, was a friendlier habitat for aquatic plants than the canal between Gargrave and Skipton. Although fewer aquatic species in total were recorded between Apperley Bridge and Leeds (12 submerged/floating, 18 emergent) than between Gargrave and Skipton (6 submerged/floating, 30 emergent) the number of submerged/floating species recorded was much greater as was the luxuriance of the vegetation, especially the submerged/floating vegetation. The water was more or less transparent which was probably because of seemingly low boat traffic; only 4 boat movements between Apperley Bridge and Newlay Bridge (6.3km) on 6 July and none between Newlay Bridge and Leeds Canal Basin (7.6km) on 1 September, although traffic density will vary with season and day of the week. Submerged/floating species that were sometimes dominant/abundant included Nuttall's Waterweed, Fennel Pondweed, Perfoliate Pondweed *Potamogeton perfoliatus* and Unbranched Bur-reed, while species recorded as sometimes frequent included Broad-leaved Pondweed, Lesser Pondweed and Fringed Water-lily. In addition, Arrowhead, although herein generally considered to be an emergent plant (Table 3), sometimes dominated the whole width of the channel with its strap-shaped submersed leaves. Much of the canal has sheer sides, especially on the towpath side; hence marginal vegetation tended to thrive more alongside the far bank except where tree-shaded. Reed Sweet-grass was the dominant species although Flowering-rush, Hemlock Water-dropwort and Bulrush were sometimes frequent. Also dominant/abundant was emergent Arrowhead which formed a broad band of emergent leaves either side of the central channel along much of the canal.

Ripon Canal

The Ripon Canal had more or less transparent water when visited on 4 and 18 May but was moderately turbid on 26 May 2011. This was probably related to boat traffic; there were no boat movements on 4 May, 3 on 18 May and 4 on 26 May. Submerged/floating species that were in places dominant/abundant included Nuttall's Waterweed, Yellow Water-lily, Fennel Pondweed and Unbranched Bur-reed. Also, Amphibious Bistort, which was generally regarded

as an emergent species (Table 3), was dominant/abundant as a floating-leaved plant towards the south-east end of the canal. Submerged/floating species that were, in places, frequent were water-starworts, Broad-leaved Pondweed, Perfoliate Pondweed and an unidentified, non-flowering, batrachian water-crowfoot *Ranunculus* sp. Much of the first 3.0km of canal from Ripon Basin has sheer sides and/or is shaded, hence there was limited marginal vegetation. No species was dominant/abundant though Lesser Pond-sedge, Reed Sweet-grass, Yellow Iris and Reed Canary-grass were sometimes frequent (i.e. 0.1-5% cover in a 0.5km length of canal). Emergent plants were much more evident in the final 0.5km of canal before its junction with the River Ure. This section was not shaded and had a fringe of emergent vegetation about 2m wide alongside the tow-path. The most important component was Common Club-rush *Schoenoplectus lacustris* although Lesser Pond-sedge was also dominant/abundant. Other emergent species that were frequent in this marginal fringe were Yellow Iris and Branched Bur-reed.

A more quantitative analysis of the records along the Ripon Canal (Table 6) emphasized that species richness and abundance of both submerged/floating and emergent plants were markedly greater in the less shaded final 1km before the junction with the River Ure than in the initial 2.5km of canal. Thus 8-10 taxa (3-5 submerged/floating, 3-7 emergent) per 0.5km along the initial 2.5km of canal increased to 23-27 taxa (8 submerged/floating, 15-19 emergent) per 0.5km along the final 1km of canal. Furthermore, ΣA for all taxa increased from 10-16 (5-9 for submerged/floating species, 4-10 for emergent species) per 0.5km to 34-41 (14 submerged/floating, 20-27 emergent) per 0.5km.

Discussion

Clearly the five canals that were studied, with species richness ranging from 29 to 45, were all a significant resource for aquatic plants notwithstanding their different histories and usage. Of the 65 species of aquatic plant recorded (Tables 2 & 3) 61 are on the checklist published by Palmer & Newbold (1983); i.e. 33% of the England and Wales aquatic flora. The number of species found in some of these canals approached or exceeded the number of vascular aquatic plant species recorded in high-conservation-value SSSI canals in East Yorkshire; i.e. 44 in the Pocklington Canal (Goulder, 2003) and 39 in the Leven Canal (Goulder, 2006). Most also exceeded the 32 (checklist) species recorded along 12km of the Huddersfield Narrow Canal in 1978 (Morphy *et al.*, 1980) prior to its restoration. Furthermore some of the native species present had international (Floating Water-plantain) or national (Flat-stalked Pondweed, Hairlike Pondweed) scarcity value.

Differences in abundance of vegetation between and along the canals were clearly related to usage and management. The number of boats using the canals will vary with day of the week, season and weather: only limited visits were made to each canal, and never at weekends, hence the full extent of boat traffic was not seen. Nevertheless, it appeared that some lengths of canal had more boat movements and high turbidity. It is well known that there is a negative relationship between boat traffic and abundance of aquatic vegetation in English canals (Murphy & Eaton, 1983). Suppression of plant growth is due to reduction in light penetration and underwater photosynthesis caused by high turbidity and to mechanical damage of plants, although the latter can aid dispersal – loose rafts of plants can sometimes be seen accompanying boats through locks. Further potentially negative pressures were the prevalence of sheer sides, discouraging emergent vegetation, and inhibition of photosynthesis by tree shading. Suppression of aquatic plants, especially submerged/floating ones, seems to have been important in the Chesterfield Canal and the Gargrave to Skipton section of the Leeds & Liverpool Canal (Tables 4 & 5). At those sites the number of species per 0.5km was low,

although it is possible that there was some under-recording of submerged species because of the high turbidity. Mean values for submerged/floating species were only 3.7 taxa per 0.5km of canal in the Chesterfield Canal and 1.9 taxa per 0.5km in the Leeds & Liverpool Canal between Gargrave and Skipton. These contrasted, for example, with non-navigated or lightly navigated canals in East Yorkshire; i.e. means of 7.4 taxa per 0.5km in the Pocklington Canal, 5.6 taxa per 0.5km in the Driffield Canal (Goulder, 2003) and 14.5 taxa per 0.5km in the Leven Canal (Goulder, 2006) – although these include some non-vascular green plants (the bryophytes *Fontinalis antipyretica* and *Riccia fluitans*, and charophytes).

Willby & Eaton (1996) showed that biomass and diversity of plants in navigable canals, especially emergent plants, were greater in backwaters than in the main channel (backwaters being defined as places where there was a >50% increase in channel width). In the present study it was also observed that off-line refuges became important when plants were suppressed in the main channel. These included lock by-pass channels on the Chesterfield Canal and the Leeds & Liverpool Canal, and winding holes and cattle-poached margin on the Leeds & Liverpool Canal. The success of such refuges is serendipitous but it perhaps offers support for the construction of artificial refuges (described, for example, by Boedeltje *et al.*, 2001 and Briggs, 2006) along canals where vegetation is liable to suffer from restoration of navigation or increased boat traffic. However, the careful management of off-line features that are an existing integral part of the canal is easier than construction of new features. Hence lock by-pass channels are better kept with bottoms of gravel or of jointed masonry, to provide a hold for plant roots, rather than being concreted, and it might be better to keep winding holes free of tree shading.

The Apperley Bridge to Leeds section of the Leeds & Liverpool Canal, the canal sections of the Calder & Hebble Navigation and the Ripon Canal in places supported abundant and diverse aquatic vegetation including submerged/floating species. Although used by boats these lengths appeared to be less troubled by boat traffic than, for example, the Leeds & Liverpool Canal between Gargrave and Skipton. These observations accord with work by Willby *et al.* (1998) which showed that intermediate biomass and high species richness of submerged/floating species tend to coexist in regions of light to moderate boat traffic. Furthermore, Willby & Eaton (1993) specifically linked the persistence of Floating Water-plantain in canals to disturbance associated with light boat traffic. It is possible that boats moving on the Leeds & Liverpool Canal between Gargrave and Skipton tended to be making short trips, to and fro from fixed moorings along a length of canal with few locks, and did not make the long-distance journey to Leeds that involves passage through many locks. Similar self-regulation of traffic in response to heavy lockage has been observed on the Rochdale Canal which links with the Calder & Hebble Navigation at Sowerby Bridge. In that canal, which was restored and reopened to through traffic in 2002, there is vegetation of high conservation value along 19km of SSSI, including Floating Water-plantain and nine species of pondweeds *Potamogeton* spp., which benefits from self-regulation of boat traffic by heavy lockage (Leach, 2008).

Some sections of the disused Barnsley canals look to be idyllic from the perspective of wildlife conservation (Lavelle, 2002; Hutton, 2011). This is especially so where there is open water, which often has abundant and diverse submerged/floating vegetation, between marginal strips of emergent vegetation; for example in places on the Barugh Branch and the Barnsley Canal north of Shaw Bridge. This valuable habitat is, however, likely to be transient because the full width of the channel has become occupied by species-poor emergent vegetation consisting largely of Reed Sweet-grass in much of these canals. The maintenance of open water habitat is probably dependent on clearance of emergent vegetation and/or dredging which might, for example, be undertaken to facilitate angling, industrial water supply, boating or wildlife interest

or for visual amenity. Thus Willby *et al.* (1998) emphasize that maximum species richness in non-navigated canals, together with intermediate plant biomass, is likely to follow interventionist management such as weed cutting or dredging.

The diverse aquatic plants and vegetation, with their important wildlife conservation value, that were observed in this study occupied canals that are also valuable for many other reasons. Yorkshire's canals are important for their history and industrial archaeology and are a resource for outdoor learning and teaching. The Chesterfield Canal, for instance, was maintained for many years as a water supply to industries in Worksop. They are also the focus of much leisure activity. The wide range of this activity includes boating, working on and enjoying moored boats, canoeing, angling, walking, running and cycling, botanizing and birding, outdoor-sculpture appreciation, beer gardens and *al fresco* café culture. Taken together these uses are of significant economic value. There is, however, the potential for conflict between different users. The conflict between canal restoration, boating and wildlife conservation is well known (Briggs, 1996, 2006) but it is possible to achieve balance (IWAC, 2008). Although there was in places evidence of suppression of aquatic plants by boats in Yorkshire canals, it is clear that elsewhere boats and plants co-existed. Certainly the continuance of navigation and the restoration of disused waterways have saved some canals from the fate of infilling and development that has befallen much of the Barnsley canal system.

Table 1. Yorkshire canals and sites where aquatic plants were recorded.

Canal or canal system	Recording sites
Barnsley canals (Barnsley Canal and Dearne & Dove Canal). This broad-canal system linked the River Calder near Wakefield through Barnsley to the Sheffield and South Yorkshire Navigation at Swinton (about 40km). Branches served Barugh, Worsbrough and Elsecar. The system closed to navigation in stages between about 1906 and 1952 and became derelict (Russell, 1983; Glister, 2004). Approximately half of the system is now dry or in-filled, elsewhere water levels are maintained by fixed weirs for angling or industrial water supply, or the canal bed is a wet ditch often extensively occupied by emergent aquatic vegetation.	Barnsley Canal from Shaw Bridge (Grid Ref. SE372101) northwards for 7.5km through Royston Bridge and on towards Walton; the Barugh Branch from Smithy Bridge (SE347079) north-westwards for 2.1km. Dearne & Dove Canal from near Everill Gate Bridge (SE409025) north-westwards for 1.0km; the Elsecar Branch from Elsecar Basin (SE387001) north-eastwards for 3.3km; the Worsbrough Branch from Worsbrough Basin (SE352034) eastwards for 0.4km. In all 14.3km of canal.
Calderdale canals (Aire & Calder Navigation and Calder & Hebble Navigation). This waterway, which extends for about 43km from Castleford via Wakefield and Brighouse to Sowerby Bridge, is a mixture of broad-gauge canal and river navigations. The canal sections make up about 34km, plus there are truncated branches that formerly reached Dewsbury and Halifax. The waterway has been continuously open to navigation although it appears now to be used only by leisure traffic.	Aire & Calder Navigation from Fairies Hill Lock, Castleford (SE396249) south-westwards for 7.1km to Broadreach Lock at Wakefield. Calder & Hebble Navigation: from Mill Bank Lock (SE259193) 3.3km westwards to Long Cut End Bridge, and the Dewsbury Arm (1.2km); from Shepley Lock (SE215198) 1.5km westwards to Ledgard Bridge at Mirfield; from the A641 bridge at Brighouse (SE147227) 2.7km westwards to Cromwell Bottom; from Long Lees Viaduct (SE100217) 4.8km north-westwards to Tuel Lane Tunnel at Sowerby Bridge; the Salterhebble (Halifax) Arm (0.5km). In all 21.1km of canal.

Canal or canal system	Recording sites
Chesterfield Canal. This linked Chesterfield to the River Trent. A South Yorkshire section (5.5km) between the eastern portal of Norwood Tunnel and Shireoaks is narrow gauge. Through traffic ceased following the collapse of the tunnel in 1907 and the canal became derelict (Russell, 1983). This section of canal was restored for leisure navigation between 1995 and 2003.	From Norwood Tunnel portal (SK500825) at Kiveton Park for 7.0km eastwards to beyond Shireoaks.
Leeds & Liverpool Canal. This broad gauge canal, now used only for leisure navigation, has been continuously open to traffic. About 62km of the canal, from its junction with the River Aire in Leeds, is in Yorkshire.	From Priest Holme Railway Bridge (SD918539) at Gargrave for 6.0km eastwards towards Skipton; from Apperley Bridge (SE194377) south-eastwards for 13.9km to Leeds Canal Basin. In all 19.9km of canal.
Ripon Canal. This short (3.5km) broad canal links Ripon to the River Ure. Commercial traffic had ceased by the end of the 19th Century (Hadfield, 1973) and the canal became derelict. Restoration for leisure navigation was completed by 1996.	The whole 3.5km from Ripon Basin (SE315708) south-eastwards to the River Ure.

Table 2. Submerged and floating-leaved aquatic plants recorded in Yorkshire canals; May-September 2010-2012.

	Barnsley canals	Calderdale canals	Chesterfield Canal	Leeds & Liverpool Canal	Ripon Canal
<i>Azolla filiculoides</i> (Water Fern)	-	+	-	-	-
<i>Callitriche</i> spp. (water-starworts)	+	+	+	-	+
<i>Ceratophyllum demersum</i> (Rigid Hornwort)	+	-	+	-	-
<i>Elodea canadensis</i> (Canadian Waterweed)	-	-	-	-	+
<i>E. nuttallii</i> (Nuttall's Waterweed)	+	+	+	+	+
<i>Hydrocharis morsus-ranae</i> (Frogbit)	+	-	-	-	-
<i>Hydrocotyle ranunculoides</i> (Floating Pennywort)	+	+	-	-	-
<i>Juncus bulbosus</i> (Bulbous Rush)	-	+	-	-	-
<i>Lemna gibba</i> (Fat Duckweed)	-	+	-	-	-
<i>L. minor</i> (Common Duckweed)	+	+	+	+	-
<i>L. trisulca</i> (Ivy-leaved Duckweed)	+	-	-	+	-
<i>Luronium natans</i> (Floating Water-plantain)	-	+	-	-	-
<i>Myriophyllum spicatum</i> (Spiked Water-milfoil)	+	-	+	+	+
<i>Nuphar lutea</i> (Yellow Water-lily)	-	-	-	+	+
<i>Nymphaea alba</i> (White Water-lily)	+	-	-	+	-
<i>Nymphoides peltata</i> (Fringed Water-lily)	-	-	-	+	-
<i>Potamogeton crispus</i> (Curled Pondweed)	+	+	-	+	-
<i>P. epihydrus</i> (American Pondweed)	-	+	-	-	-
<i>P. friesii</i> (Flat-stalked Pondweed)	-	-	-	-	+
<i>P. natans</i> (Broad-leaved Pondweed)	+	+	+	+	+
<i>P. pectinatus</i> (Fennel Pondweed)	+	-	+	+	+
<i>P. perfoliatus</i> (Perfoliate Pondweed)	+	-	-	+	+

	Barnsley canals	Calderdale canals	Chesterfield Canal	Leeds & Liverpool Canal	Ripon Canal
<i>P. pusillus</i> (Lesser Pondweed)	+	+	-	+	+
<i>P. trichoides</i> (Hairlike Pondweed)	-	+	-	-	-
<i>Ranunculus</i> sp.* (Water-crowfoot)	-	-	-	-	+
<i>Sparganium emersum</i> (Unbranched Bur-reed)	+	+	+	+	+
<i>Zannichellia palustris</i> (Horned Pondweed)	-	-	-	+	-
n of submerged and floating-leaved taxa	15	14	8	14	12

(+) indicates present, (-) indicates not recorded. *An unidentified batrachian *Ranunculus* sp.

Table 3. Emergent aquatic plants recorded in Yorkshire canals; May-September 2010-2012

	Barnsley canals	Calderdale canals	Chesterfield Canal	Leeds & Liverpool Canal	Ripon Canal
<i>Acorus calamus</i> (Sweet-flag)	+	+	-	+	-
<i>Agrostis stolonifera</i> (Creeping Bent)	+	+	+	+	+
<i>Alisma plantago-aquatica</i> * (Water-plantain)	+	+	+	+	+
<i>Apium nodiflorum</i> (Fool's-water-cress)	-	-	+	-	-
<i>Berula erecta</i> (Lesser Water-parsnip)	+	-	+	+	+
<i>Butomus umbellatus</i> (Flowering-rush)	+	+	+	+	+
<i>Caltha palustris</i> (Marsh-marigold)	-	-	+	+	+
<i>Carex acutiformis</i> (Lesser Pond-sedge)	-	-	-	+	+
<i>C. riparia</i> (Greater Pond-sedge)	-	-	-	+	+
<i>C. nigra</i> (Common Sedge)	-	-	-	+	-
<i>Eleocharis palustris</i> (Common Spike-rush)	+	-	-	+	-
<i>Equisetum fluviatile</i> (Water Horsetail)	+	-	-	-	+
<i>E. palustre</i> (Marsh Horsetail)	-	-	-	-	+
<i>Galium palustre</i> (Common Marsh-bedstraw)	+	+	-	+	-
<i>Glyceria fluitans</i> (Floating Sweet-grass)	-	-	-	+	+
<i>G. maxima</i> (Reed Sweet-grass)	+	+	+	+	+
<i>Hippuris vulgaris</i> (Mare's-tail)	-	-	-	-	+
<i>Iris pseudacorus</i> (Yellow Iris)	+	+	+	+	+
<i>Juncus articulatus</i> (Jointed Rush)	+	-	-	+	-
<i>J. conglomeratus</i> (Compact Rush)	+	-	-	-	-
<i>J. effusus</i> (Soft-rush)	+	+	+	+	+
<i>J. inflexus</i> (Hard Rush)	+	-	+	+	+
<i>Mentha aquatica</i> (Water Mint)	+	+	+	+	+
<i>Myosotis laxa</i> (Tufted Forget-me-not)	-	-	-	+	-
<i>M. scorpioides</i> (Water Forget-me-not)	+	-	+	+	+
<i>Nasturtium officinale</i> agg. (Water-cress)	+	+	+	+	-
<i>Oenanthe crocata</i> (Hemlock Water-dropwort)	-	+	-	+	+
<i>Persicaria amphibia</i> (Amphibious Bistort)	+	+	+	+	+
<i>Phalaris arundinacea</i> (Reed Canary-grass)	+	+	+	+	+
<i>Ranunculus sceleratus</i> (Celery-leaved Buttercup)	+	+	+	+	-
<i>Sagittaria sagittifolia</i> (Arrowhead)	-	+	-	+	-
<i>Schoenoplectus lacustris</i> (Common Club-rush)	-	-	+	-	+
<i>Solanum dulcamara</i> (Bittersweet)	+	+	+	+	+

	Barnsley canals	Calderdale canals	Chesterfield Canal	Leeds & Liverpool Canal	Ripon Canal
<i>Sparganium erectum</i> (Branched Bur-reed)	+	+	+	+	+
<i>Typha angustifolia</i> (Lesser Bulrush)	-	-	+	-	-
<i>T. latifolia</i> (Bulrush)	+	+	-	+	-
<i>Veronica anagallis-aquatica</i> (Blue Water-speedwell)	-	-	-	+	-
<i>V. beccabunga</i> (Brooklime)	-	-	+	+	-
n of emergent taxa	23	18	21	31	23

(+) indicates present, (-) indicates not recorded. **Alisma lanceolatum* (Narrow-leaved Water-plantain) may sometimes have also been present

Table 4. Species richness and sum of abundance scores (ΣA) for aquatic plants in the Chesterfield Canal; May-June 2010.

	Distance eastwards from Norwood Tunnel portal (km)													
	0-0.5	0.5-1	1-1.5	1.5-2	2-2.5	2.5-3	3-3.5	3.5-4	4-4.5	4.5-5	5-5.5	5.5-6	6-6.5	6.5-7
Submerged and floating-leaved species:														
n of taxa	6	6	5	4	3	3	3	4	2	2	3	4	3	5
ΣA	11	8	10	5	5	4	4	4	2	3	4	6	4	7
Emergent species:														
n of taxa	6	3	5	3	5	3	3	8	9	9	14	5	4	5
ΣA	7	3	5	5	7	5	4	9	11	12	15	7	5	7
All aquatic species:														
n of taxa	12	9	10	7	8	6	6	12	11	11	17	9	7	10
ΣA	18	11	15	10	12	9	8	13	13	15	19	13	9	14

Table 5. Species richness and sum of abundance scores (ΣA) for aquatic plants in the Leeds & Liverpool Canal; June-August 2010.

	Distance eastwards from Priest Holme Railway Bridge, Gargrave (km)											
	0-0.5	0.5-1	1-1.5	1.5-2	2-2.5	2.5-3	3-3.5	3.5-4	4-4.5	4.5-5	5-5.5	5.5-6
Submerged and floating-leaved species:												
n of taxa	1	3	1	0	0	0	2	5	2	3	4	2
ΣA	1	3	1	0	0	0	3	6	3	3	4	2
Emergent species:												
n of taxa	16	9	3	5	15	6	14	20	19	10	12	7
ΣA	16	11	4	5	16	7	17	23	23	12	14	7
All aquatic species:												
n of taxa	17	12	4	5	15	6	16	25	21	13	16	9
ΣA	17	14	5	5	16	7	20	29	26	15	18	9

Carex acutiformis/riparia scored as one taxon.

Table 6. Species richness and sum of abundance scores (ΣA) for aquatic plants in the Ripon Canal; May 2011.

	Distance southwards from Ripon Basin (km)						
	0-0.5	0.5-1	1-1.5	1.5-2	2-2.5	2.5-3	3-3.5
Submerged and floating-leaved species							
<i>n</i> of taxa	5	3	3	4	5	8	8
ΣA	9	6	5	6	9	14	14
Emergent species							
<i>n</i> of taxa	3	6	7	4	5	15	19
ΣA	4	10	8	4	7	20	27
All aquatic species							
<i>n</i> of taxa	8	9	10	8	10	23	27
ΣA	13	16	13	10	16	34	41

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An interesting plant gall on Gorse

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On the 1 February 2013 I was searching the Gorse *Ulex europaeus* on Baildon Moor for moth larvae. I was particularly looking for the caterpillars of *Scotopteryx* (Geometridae) as a very rarely collected parasitoid *Aleiodes* (Braconidae, Rogadinae) uses the July Belle moth as a host. It seems quite likely that Lead Belle is an alternative host and Baildon Moor is where the only known Yorkshire specimen of this moth was captured in 1897.

I noticed that one of the Gorse stems was swollen and, suspecting this to be a gall, I cut the stem in two to reveal an insect larva. I took photographs of the gall and larva (see Plate II, centre pages) and posted these onto the internet forum of the British Plant Gall Society (British Galls Yahooogroup). Within an hour, Keith Palmer posted a reply suggesting that the galls were likely to be caused by the seed weevil *Stenopteropapilion scutellare*.

There are still a few galls visible on the Gorse bush and I hope to harvest these later in the year in order to see the adult beetle.

***Andricus gemmeus* – a new gall for Yorkshire**

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On Saturday 13 October 2012 I presented photographs of some recent interesting Yorkshire galls to a YNU Entomological Section indoor meeting at Doncaster Museum. I included a photograph of the agamic generation of *Andricus gemmeus*, caused by a gall wasp on Pedunculate Oak *Quercus robur*. It had been first recorded in Britain by Jerry Bowdrey in Colchester Cemetery in October 2008 during an invertebrate survey. Further research indicated that this insect had been spreading north-westwards across Europe, so it was not surprising that it had finally been recorded in Britain. In September 2012 I received an email from Jerry Clough giving details of where he had found this gall at four different sites in Clumber Park. I thought the arrival of *A. gemmeus* in Yorkshire must be imminent!

On the following day, Sunday 14 October, the Doncaster Naturalists' Society gathered at Scabba Wood for the fungus foray. This privately owned woodland is near Sprotbrough Flash Nature Reserve and approximately one square kilometre in area. Ian Farmer and I decided to record the galls rather than the fungi. To our amazement *A. gemmeus* was found on three different trees in the woodland and also on an oak in the garden of the owners. These are the first Yorkshire records. The galls were found on mature oaks bordering different rides within the wood. The galls are roughly spherical in shape and covered in small conical protuberances and often appear on epicormic shoots growing from the trunk of mature Pedunculate Oak. The Yorkshire galls have all been yellow in colour but more mature specimens seen in other parts of the country often have reddish tints at the tip.

Table 1. *Andricus gemmeus* in Scabba Wood

Grid Reference	No. of galls
SE52545 01301	2
SE52576 01475	2
SE52231 01701	5
SE52868 01310	8

On 23 October *A. gemmeus* was recorded on two separate trees at Denaby Ings SE5000. On 3 November in Sandall Park SE6005, at the north-eastern edge of Doncaster, four galls were found on oaks by the lake. Later that day, further galls were recorded on oaks growing in fairly open spaces in Sandall Beat Wood by Doncaster Racecourse SE6103, near to the children's play area.

Gall wasps on oak have two generations, the sexual and the agamic. Different generations of the more common cynipids usually gall different parts of the same host of Pedunculate Oak or Sessile Oak *Q. petraea*. The sexual generation of the Common Spangle *Neuroterus quercusbaccarum* galls the male catkins and occasionally the leaves in spring forming the Currant Gall, but the agamic generation in late summer forms golden discs on the underside of the leaves. However, *Andricus gemmeus* belongs to a group of cynipids with heteroecious life cycles. *A. quercuscalicis*, the Knopper Gall on the acorn, is one of the most common examples of this life cycle, where the different generations develop on different species of

oak. The sexual generation of the Knopper Gall forms on the catkins of Turkey Oak *Quercus cerris* while the agamic generation forms the striking galls on the acorns of Pedunculate Oak and occasionally Sessile Oak. *A. gemmeus* is a further example of this fascinating life cycle, which, because the sexual generation occurs on buds on the branches and trunks of Turkey Oak, has so far not been recorded in Britain.

A plant gall meeting at the RSPB Reserve at Old Moor in early September led to the discovery of yet another unusual gall causer. Margaret Redfern examined a small purplish swelling on a stem of Creeping Bent *Agrostis stolonifera*. After further research she identified the causer as the nematode *Subanguina graminophila* (see Plate III, centre pages). Later in October Ian Farmer recorded another interesting gall in Sandall Park, when he found some old specimens of the Ram's Horn Gall *Andricus aries* on the buds of Pedunculate Oak (see Plate III, centre pages). This was the second Yorkshire record; Bill Ely had discovered the first specimens on Hatfield Moor in 2011.

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A provisional Vascular Plant Red Data List for VC63 - an evaluation of current status

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Introduction

The first reference to Rare and Scarce Plants Documentation in VC63 formed the subject of a paper I submitted to BSBI News (Wilmore, 1997). Unfortunately, the content and rationale of this paper was not followed up and implemented at the time, because it was overtaken and submerged by pressures of my ongoing ecological consultancy work and, importantly, by the completion of my work on introduced plant species in Yorkshire (Wilmore, 2000), followed by the initiation of work on the production of *The South Yorkshire Plant Atlas* (Wilmore *et al.*, 2011). The Atlas proved to be a major project occupying, essentially, ten years from 2001 to 2011. During those ten years the desideratum of a Red Data Plant List for VC63 lay dormant.

Only now, in 2012, has it been possible to turn attention once more to the consideration of forming some provisional ideas on the presentation of a Red Data list for S.W. Yorkshire. I stress that this paper is, at this stage, discussing and presenting provisional information only. The appearance of *The South Yorkshire Plant Atlas* (*op.cit.*), containing comprehensive data totalling over 200,000 individual records and describing over 2000 vascular plants, has been an enormous help in informing the determination and evaluation of RDB species in VC63. However, other factors have also become important. The former national authorities on Rare and Scarce Plant Species (Perring & Farrell, 1977, 1983; Stewart *et al.* 1994; Wigginton, 1999) have been superseded since 1997 by the current authority (Cheffings & Farrell, 2005).

Furthermore, the authors of the *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002), considered that it was important to separate native from introduced species and, in doing so, carried out a reassessment of the total British and Irish flora. Three new terms appeared for Introduced (or Alien) species - **Archaeophytes** (those which became naturalised before 1500 AD); **Neophytes** (ones introduced after 1500 AD) and **Casuals** (plants unable to persist for more than c.5 years and are therefore dependent on constant reintroduction). These three terms became the norm for evaluating all introduced plants and the authors of the new Red Data List (*op.cit.*) chose to include a number of scarce Archaeophytes based on three reasons: 1) an evidence of some decline and the need for conservation action, 2) the lack of a known 'native' distribution and 3) because of their cultural and historic importance i.e. their relationship with humans and our activities. In essence, most of these rare Archaeophytes are arable weeds; this category of introductions will be discussed below in further detail, in relation to its status in VC63.

A further important development incorporated in Cheffings & Farrell (2005) was the adoption of the commitment made in 'Plant Diversity Challenge: The UK's response to the Global Strategy for Plant Conservation' (JNCC, 2004), whereby all UK vascular plants are assessed using IUCN (International Union for the Conservation of Nature and Natural Resources – now the World Conservation Union (WCU)) criteria. In this regard, six IUCN categories of nature conservation concern can be highlighted: **Extinct (EX)**; **Extinct in the Wild (EW)** (i.e. surviving only in captivity); **Critically Endangered (CR)**; **Endangered (EN)**; **Vulnerable (VU)**; **Near Threatened (NT)**. Three further categories are listed which are not considered to be of nature conservation concern: **Least Concern (LC)**, **Data Deficient (DD)** where insufficient data exist to allow a definite assessment of risk to be made and **Not Evaluated (NE)** where no evaluation has been made against the IUCN criteria. A mention should also be made of the **Waiting List (WL)** – this category was adopted to cater for taxa for which there were either insufficient data, taxonomic uncertainty or uncertainty over native, Archaeophyte or Neophyte status, and plants occasionally fall into this category in the lists below. Finally, one or two taxa are shown in the **Parking List (PL)**, a further category where insufficient data are present to assign them to other categories or where there is evidence that they are Neophytes.

The compilation of the Provisional Vascular Plant Red Data list for VC63 has been undertaken utilising six separate categories to accommodate all taxa under consideration. These are: **1) Native Species**; **2) Native Species Presumed Extinct in the VC**; **3) Hybrids**; **4) Archaeophytes**; **5) Grey Area Species – Native or Introduced**; **6) Unconfirmed Species**. Tabulated lists are given below covering each of these categories and associated information includes **a) UK status** (i.e. abundant, frequent, rare, etc. - based on mapped or other evidence given in Preston *et al.* (2002)); **b) VC63 status** (based on data collected during the past 40 years and/or on personal observation/evidence); **c) the IUCN Threat/Non-Threat Category** (as given in Cheffings & Farrell (2005). The checklist order follows Stace (2010) in all six categories. Species which have the symbols * ? shown in the IUCN Threat/Non Threat column are those which seem, to the author, to have a somewhat anomalous National Threat Category designation.

As stated above, this paper is not a definitive Red Data List for Vascular Plants in VC63. It opens the door to invite and encourage botanists in the region to participate in the more detailed fieldwork which is required to achieve this. At the same time, the information below, presented in a new and slightly different format, provides a factual, realistic and far more comprehensive assessment than ever before achieved on the current status of rare, scarce or at-risk plant species in S.W. Yorkshire.

The Provisional Red Data Plant List for VC63

1) Native Species

This list contains all those eligible plants which are Native in some parts of Great Britain and Ireland (Preston *et al.*, 2002) even though they may not necessarily be native in VC63 and for which there is reasonable current evidence that extant populations are present in the vice county. The critical taxa included in the genera *Rubus* (brambles), *Hieracium* (hawkweeds) and *Taraxacum* (dandelions) have been omitted, as it is felt that insufficient data exist at the moment to enable a worthwhile assessment to be made on these groups throughout the vice county.

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/Non Threat
<i>Huperzia selago</i>	Locally frequent	Very Rare	LC
<i>Lycopodium clavatum</i>	Locally frequent	Rare	LC
<i>Selaginella selaginoides</i>	Locally frequent	Very Rare	LC
<i>Equisetum hyemale</i>	Scattered	Very Rare	LC
<i>Trichomanes speciosum</i> (sporophyte)	Very Rare	Very Rare	LC *?
<i>Pilularia globulifera</i>	Rare	Very Rare	NT
<i>Thelypteris palustris</i>	Rare	Very Rare	LC
<i>Dryopteris cambrensis</i>	Unquantified	Rare	Not listed
<i>Polypodium interjectum</i>	Locally abundant	Rare	LC
<i>Fumaria capreolata</i> ssp. <i>babingtonii</i>	Widespread	Casual only - Rare	LC
<i>Fumaria muralis</i>	Widespread	Occasional	LC
<i>Trollius europaeus</i>	Locally frequent	Very Rare	LC
<i>Ranunculus sardous</i>	Locally frequent	Rare	LC
<i>Ranunculus baudotii</i>	Locally frequent	Very Rare	LC
<i>Ranunculus circinatus</i>	Locally frequent	Very Rare	LC
<i>Ribes alpinum</i>	Locally frequent	Introduced - Rare	LC
<i>Saxifraga granulata</i>	Widespread	Introduced – Rare	LC
<i>Chrysosplenium alternifolium</i>	Locally abundant	Very Rare	LC
<i>Myriophyllum verticillatum</i>	Locally frequent	Rare	VU
<i>Myriophyllum alterniflorum</i>	Locally abundant	Very Rare	LC
<i>Astragalus danicus</i>	Locally frequent	Very Rare	EN
<i>Onobrychis viciifolia</i>	Locally frequent	Casual only - Scattered	NT
<i>Lotus subbiflorus</i>	Local	Casual only – Very Rare	LC *?
<i>Hippocrepis comosa</i>	Locally frequent	Rare	LC
<i>Vicia sylvatica</i>	Widespread	Rare	LC
<i>Vicia lathyroides</i>	Locally frequent	Rare	LC
<i>Vicia lutea</i>	Rare	Casual only – Very Rare	NT
<i>Vicia bithynica</i>	Rare	Casual only – Very Rare	VU
<i>Lathyrus palustris</i>	Very Rare	Very Rare	NT
<i>Lathyrus nissolia</i>	Locally abundant	Rare	LC
<i>Lathyrus aphaca</i>	Local, scattered	Casual only – Very Rare	VU
<i>Ononis spinosa</i>	Locally frequent	Very Rare	LC
<i>Medicago sativa</i> ssp. <i>varia</i>	Local	Casual only – Very Rare	Not listed
<i>Medicago minima</i>	Local	Casual only – Rare	VU
<i>Genista pilosa</i>	Rare	Casual only – Very Rare	NT
<i>Genista anglica</i>	Locally frequent	Rare	NT
<i>Ulex minor</i>	Locally frequent	Rare	LC
<i>Filipendula vulgaris</i>	Locally abundant	Scarce	LC
<i>Rubus saxatilis</i>	Locally abundant	Very Rare	LC
<i>Potentilla fruticosa</i>	Very Rare	Casual only – Rare	NT
<i>Potentilla argentea</i>	Locally frequent	Very Rare	NT
<i>Potentilla tabernaemontani</i>	Scattered	Rare	LC
<i>Potentilla erecta</i> ssp. <i>strictissima</i>	Local	Very Rare	LC
<i>Agrimonia procera</i>	Widespread	Very Rare	LC
<i>Aphanes australis</i>	Widespread	Occasional	LC

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/Non Threat
<i>Rosa obtusifolia</i>	Scattered	Rare	LC
<i>Rosa tomentosa</i>	Locally frequent	Rare	LC
<i>Rosa sherardii</i>	Widespread	Rare	LC
<i>Rosa rubiginosa</i>	Widespread	Occasional	LC
<i>Ulmus minor</i> ssp. <i>angustifolia</i>	Not listed	Introduced – Rare	PL
<i>Ulmus plotii</i>	Scattered	Introduced – Rare	PL
<i>Myrica gale</i>	Locally abundant	Local	LC
<i>Betula pubescens</i> ssp. <i>tortuosa</i>	Not listed	Introduced – Rare	WL
<i>Parnassia palustris</i>	Locally abundant	Rare	LC
<i>Euphorbia stricta</i>	Very local	Casual only – Rare	LC *?
<i>Salix caprea</i> ssp. <i>sphacelata</i>	Rare	Rare	LC
<i>Salix phylicifolia</i>	Locally frequent	Rare	LC
<i>Salix repens</i>	Widespread	Scattered	LC
<i>Viola hirta</i> ssp. <i>calcarea</i>	Not listed	Rare	Not listed
<i>Viola canina</i> ssp. <i>canina</i>	Widespread	No modern records	NT
<i>Viola tricolor</i> ssp. <i>tricolor</i>	Widespread	Scattered	NT
<i>Linum bienne</i>	Locally frequent	Casual only – Rare	LC
<i>Linum perenne</i>	Rare	Casual only – Rare	LC *?
<i>Hypericum montanum</i>	Scattered	Scattered	NT
<i>Geranium rotundifolium</i>	Locally abundant	Casual only – Rare	LC
<i>Geranium columbinum</i>	Locally abundant	Rare	LC
<i>Epilobium lanceolatum</i>	Locally frequent	Rare	LC
<i>Epilobium tetragonum</i> ssp. <i>lamyi</i>	Locally abundant	Casual only – Rare	LC
<i>Epilobium anagallidifolium</i>	Locally frequent	Very Rare	LC
<i>Althaea officinalis</i>	Locally frequent	Casual only – Very Rare	LC
<i>Daphne mezereum</i>	Rare	Introduced – Rare	VU
<i>Turritis glabra</i>	Rare	Casual only – Very Rare	EN
<i>Rorippa islandica</i>	Rare	Casual only – Very Rare	LC *?
<i>Erophila glabrescens</i>	Scattered	Very Rare	LC
<i>Teesdalia nudicaulis</i>	Scattered	Rare	NT
<i>Iberis amara</i>	Local	Casual only – Very Rare	VU
<i>Viscum album</i>	Locally abundant	Occasional	LC
<i>Rumex longifolius</i>	Locally abundant	Rare	LC
<i>Rumex palustris</i>	Locally frequent	Rare	LC
<i>Rumex maritimus</i>	Locally frequent	Rare	LC
<i>Arenaria leptoclados</i>	Locally abundant	Rare	LC
<i>Stellaria pallida</i>	Locally frequent	Rare	LC
<i>Stellaria neglecta</i>	Locally abundant	Occasional	LC
<i>Stellaria palustris</i>	Locally frequent	Occasional	VU
<i>Sagina maritima</i>	Locally frequent	Casual only – Very Rare	LC
<i>Scleranthus annuus</i> ssp. <i>annuus</i>	Locally frequent	Occasional	EN
<i>Dianthus deltoides</i>	Scattered	Casual only -Rare	NT
<i>Impatiens noli-tangere</i>	Rare	Very Rare	LC
<i>Anagallis tenella</i>	Widespread	Scattered	LC
<i>Samolus valerandi</i>	Widespread	Occasional	LC
<i>Arctostaphylos uva-ursi</i>	Locally frequent	Rare	LC
<i>Andromeda polifolia</i>	Locally frequent	Occasional	LC
<i>Pyrola rotundifolia</i> ssp. <i>rotundifolia</i>	Rare	Very Rare	NT
<i>Hypopitys monotropa</i>	Scattered	Rare	EN
<i>Asperula cynanchica</i>	Locally frequent	Rare	LC
<i>Galium uliginosum</i>	Widespread	Occasional	LC
<i>Gentianella amarella</i> ssp. <i>amarella</i>	Widespread	Scattered	LC
<i>Lithospermum purpureocaeruleum</i>	Rare	Casual only – Very Rare	LC
<i>Symphytum tuberosum</i>	Locally frequent	Casual only – Very Rare	WL
<i>Myosotis stolonifera</i>	Locally frequent	Very Rare	LC
<i>Cynoglossum officinale</i>	Locally frequent	Very Rare	NT
<i>Atropa belladonna</i>	Widespread	Occasional	LC

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/Non Threat
<i>Veronica scutellata</i>	Widespread	Occasional	LC
<i>Veronica anagallis-aquatica</i>	Locally abundant	Occasional	LC
<i>Callitriche hermaphroditica</i>	Scattered	Very Rare	LC
<i>Verbascum nigrum</i>	Locally abundant	Casual only – Rare	LC
<i>Verbascum pulverulentum</i>	Local	Casual only – Very Rare	LC
<i>Scrophularia umbrosa</i>	Scattered	Very Rare	LC
<i>Limosella aquatica</i>	Scattered	Very Rare	LC
<i>Marrubium vulgare</i>	Scattered	Casual only – Very Rare	LC
<i>Scutellaria minor</i>	Locally frequent	Rare	LC
<i>Clinopodium ascendens</i>	Locally frequent	Very Rare	LC
<i>Clinopodium calamintha</i>	Local	Casual only – Very Rare	VU
<i>Clinopodium acinos</i>	Locally frequent	Very Rare	VU
<i>Thymus pulegioides</i>	Locally frequent	Very Rare	LC
<i>Mentha pulegium</i>	Rare	Casual only – Very Rare	EN
<i>Salvia verbenaca</i>	Locally frequent	Very Rare	LC
<i>Euphrasia nemorosa</i>	Widespread	Occasional	LC
<i>Euphrasia pseudokernerii</i>	Locally frequent	Very Rare	EN
<i>Odontites vernus ssp. serotinus</i>	Not listed	Rare	LC
<i>Parentucellia viscosa</i>	Locally frequent	Casual only – Very Rare	LC
<i>Rhinanthus angustifolius</i>	Very Rare	Very Rare	WL
<i>Rhinanthus minor ssp. stenophyllus</i>	Scattered	Rare	WL
<i>Pedicularis palustris</i>	Locally abundant	Very Rare	LC
<i>Orobanchae hederaceae</i>	Scattered	Casual only – Very Rare	LC
<i>Orobanchae minor</i>	Locally frequent	Very Rare	LC
<i>Pinguicula vulgaris</i>	Locally abundant	Occasional	LC
<i>Utricularia vulgaris</i>	Scattered	Very Rare	LC
<i>Utricularia australis</i>	Scattered	Very Rare	LC
<i>Campanula patula</i>	Local	Casual only – Very Rare	EN
<i>Campanula trachelium</i>	Locally abundant	Occasional	LC
<i>Wahlenbergia hederacea</i>	Locally frequent	Very Rare	NT
<i>Jasione montana</i>	Locally abundant	Rare	LC
<i>Carlina vulgaris</i>	Locally abundant	Occasional	LC
<i>Cirsium eriophorum</i>	Locally frequent	Rare	LC
<i>Cirsium dissectum</i>	Locally frequent	Rare	LC
<i>Cirsium acaule</i>	Locally abundant	Rare	LC
<i>Serratula tinctoria</i>	Locally frequent	Very Rare	LC
<i>Hypochaeris glabra</i>	Local	Casual only – Very Rare	VU
<i>Sonchus palustris</i>	Rare	Introduced – Very Rare	LC *?
<i>Filago vulgaris</i>	Locally frequent	Scattered	NT
<i>Gnaphalium sylvaticum</i>	Locally frequent	Local	EN
<i>Aster tripolium</i>	Locally frequent	Casual only – Very Rare	LC
<i>Aster linosyris</i>	Very rare	Casual only – Very Rare	LC *?
<i>Chamaemelum nobile</i>	Locally frequent	Casual only – Very Rare	VU
<i>Tripleurospermum maritimum</i>	Locally frequent	Casual only – Very Rare	LC
<i>Valerianella locusta</i>	Locally frequent	Rare	LC
<i>Dipsacus pilosus</i>	Locally frequent	Rare	LC
<i>Scabiosa columbaria</i>	Locally abundant	Scattered	LC
<i>Anthriscus caucalis</i>	Locally frequent	Scattered	LC
<i>Oenanthe fistulosa</i>	Locally frequent	Occasional	VU
<i>Oenanthe lachenalii</i>	Locally frequent	Rare	LC
<i>Oenanthe aquatica</i>	Locally frequent	Occasional	LC
<i>Apium graveolens</i>	Locally frequent	Very Rare	LC
<i>Apium inundatum</i>	Widespread	Very Rare	LC
<i>Sison amomum</i>	Locally abundant	Rare	LC
<i>Spirodela polyrhiza</i>	Scattered	Scarce	LC
<i>Baldellia ranunculoides</i>	Scattered	Very Rare	NT
<i>Luronium natans</i>	Locally frequent	Rare	LC *?

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/Non Threat
<i>Alisma lanceolatum</i>	Locally frequent	Occasional	LC
<i>Hydrocharis morsus-ranae</i>	Locally frequent	Occasional	VU
<i>Stratiotes aloides</i>	Rare	Introduced – Rare	NT
<i>Potamogeton coloratus</i>	Locally frequent	Very Rare	LC
<i>Potamogeton epihydrus</i>	Very Rare	Rare	VU
<i>Potamogeton obtusifolius</i>	Locally frequent	Very Rare	LC
<i>Potamogeton trichoides</i>	Scattered	Very Rare	LC
<i>Paris quadrifolia</i>	Locally frequent	Very Rare	LC
<i>Colchicum autumnale</i>	Locally frequent	Casual only – Very Rare	NT
<i>Gagea lutea</i>	Scattered	Occasional	LC
<i>Epipactis palustris</i>	Scattered	Very Rare	LC
<i>Epipactis phyllanthus</i>	Scattered	Very Rare	LC
<i>Neottia nidus-avis</i>	Scattered	Very Rare	NT
<i>Spiranthes spiralis</i>	Locally frequent	Very Rare	NT
<i>Platanthera chlorantha</i>	Locally frequent	Very Rare	NT
<i>Gymnadenia conopsea</i>	Locally frequent	Very Rare	LC
<i>Dactylorhiza incarnata</i> ssp. <i>coccinea</i>	Rare	Very Rare	WL
<i>Anacamptis pyramidalis</i>	Locally frequent	Occasional	LC
<i>Anacamptis morio</i>	Locally frequent	Very Rare	NT
<i>Himantoglossum hircinum</i>	Rare	Very Rare	NT
<i>Ophrys insectifera</i>	Scattered	Rare	VU
<i>Sisyrinchium bermudiana</i>	Rare	Casual only – Very Rare	Not listed
<i>Iris foetidissima</i>	Locally abundant	Casual only – Very Rare	LC
<i>Allium schoenoprasum</i>	Rare	Casual only – Very Rare	LC *?
<i>Allium oleraceum</i>	Locally frequent	Scattered	VU
<i>Allium scorodoprasum</i>	Locally frequent	Casual only – Very Rare	LC
<i>Allium vineale</i>	Locally abundant	Very Rare	LC
<i>Leucojum aestivum</i>	Rare	Casual only – Very Rare	LC *?
<i>Narcissus pseudonarcissus</i>	Locally frequent	Rare	LC
<i>Convallaria majalis</i>	Scattered	Introd. & Native - Occasional	LC
<i>Muscari neglectum</i>	Rare	Casual only – Very Rare	VU
<i>Ruscus aculeatus</i>	Locally frequent	Casual only – Rare	LC
<i>Sparganium erectum</i> ssp. <i>oocarpum</i>	Not listed	Very Rare	WL
<i>Juncus compressus</i>	Scattered	Occasional	NT
<i>Juncus gerardii</i>	Locally frequent	Casual only – Rare	LC
<i>Juncus ranarius</i>	Scattered	Casual only – Very Rare	LC
<i>Eriophorum latifolium</i>	Locally frequent	Very Rare	LC
<i>Bolboschoenus maritimus</i>	Locally frequent	Introduced – Very Rare	LC
<i>Scirpus sylvaticus</i>	Widespread	Rare	LC
<i>Eleocharis uniglumis</i>	Locally frequent	Very Rare	LC
<i>Eleocharis acicularis</i>	Scattered	Occasional	LC
<i>Eleogiton fluitans</i>	Locally frequent	Rare	LC
<i>Cyperus longus</i>	Rare	Casual only – Rare	NT
<i>Cladium mariscus</i>	Locally frequent	Rare	LC
<i>Carex vulpina</i>	Very Rare	Very Rare	VU
<i>Carex muricata</i> ssp. <i>pairae</i>	Locally abundant	Rare	LC
<i>Carex arenaria</i>	Locally abundant	Rare	LC
<i>Carex dioica</i>	Locally frequent	Rare	LC
<i>Carex strigosa</i>	Locally frequent	Very Rare	LC
<i>Carex hostiana</i>	Locally abundant	Rare	LC
<i>Carex lepidocarpa</i>	Locally abundant	Rare	LC
<i>Carex pallescens</i>	Widespread	Occasional	LC
<i>Carex digitata</i>	Scarce	Rare	LC *?
<i>Carex ericetorum</i>	Scarce	Rare	VU
<i>Carex acuta</i>	Widespread	Occasional	LC
<i>Carex elata</i>	Locally frequent	Occasional	LC

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/Non Threat
<i>Festuca altissima</i>	Scattered	Very Rare	LC
<i>Festuca rubra</i> ssp. <i>litoralis</i>	Scattered	Casual only – Very Rare	LC
<i>Festuca ovina</i> ssp. <i>hirtula</i>	Not listed	Very Rare	WL
<i>Festuca ovina</i> ssp. <i>ophiolicola</i>	Not listed	Very Rare	WL
<i>Festuca filiformis</i>	Widespread	Rare	LC
<i>Festuca longifolia</i>	Very Rare	Casual only – Very Rare	LC *?
<i>Vulpia ciliata</i> ssp. <i>ambigua</i>	Locally frequent	Very Rare	LC
<i>Poa infirma</i>	Local	Casual only – Very Rare	LC
<i>Poa humilis</i>	Widespread	Rare	LC
<i>Catabrosa aquatica</i>	Widespread	Very Rare	LC
<i>Catapodium maritimum</i>	Locally frequent	Casual only – Very Rare	LC
<i>Koeleria macrantha</i>	Widespread	Occasional	LC
<i>Polypogon monspeliensis</i>	Local	Casual only – Very Rare	LC
<i>Alopecurus aequalis</i>	Scattered	Rare	LC
<i>Phleum arenarium</i>	Scattered	Casual only – Very Rare	LC
<i>Melica nutans</i>	Locally frequent	Occasional	LC
<i>Bromus commutatus</i>	Locally abundant	Occasional	LC
<i>Bromus racemosus</i>	Locally frequent	Rare	LC
<i>Bromus hordeaceus</i> ssp. <i>longipedicellatus</i>	Not listed	Very Rare	WL
<i>Bromopsis benekenii</i>	Rare	Very Rare	LC *?
<i>Hordeum secalinum</i>	Locally abundant	Occasional	LC
<i>Molinia caerulea</i> ssp. <i>arundinacea</i>	Scattered	Occasional	LC

2) Native species presumed Extinct in the Vice County

This section lists those plants for which no records have been received for around 20 years and which may now be presumed to be extinct in VC63. A number of them are almost certainly casuals which may come and go intermittently over time, but this list essentially highlights those which will repay further investigation to either overturn or confirm their present extinct status. Where known, the date(s) and details of last verified occurrence are given. (C) shown after the species name denotes where it is suggested/assumed that the species was only a casual in VC63, although no absolute definitive proof can be ascertained with older historical records.

Species	UK Status (Preston et al, 2002)	Dates/details of last verified occurrence, where known	IUCN Threat/Non Threat
<i>Lycopodiella inundata</i>	Rare	Thorne Moors, 1970	EN
<i>Diphasiastrum alpinum</i>	Locally frequent	Lees (1888)	LC
<i>Hymenophyllum tunbrigense</i>	Locally frequent	Nr. Todmorden, 1837	LC
<i>Hymenophyllum wilsonii</i>	Locally frequent	Lees (1888)	NT
<i>Cryptogramma crispa</i>	Locally frequent	Knotts Wood, 1862	LC
<i>Asplenium obovatum</i>	Locally frequent	Lees (1888)	NT
<i>Asplenium viride</i>	Locally frequent	Lees (1888)	LC
<i>Gymnocarpium robertianum</i>	Locally frequent	Lees (1888)	LC
<i>Dryopteris aemula</i>	Locally frequent	Luddendenfoot, 1862	LC
<i>Dryopteris submontana</i>	Rare	Sprotboro' 1981 ?	LC
<i>Dryopteris cristata</i>	Very Rare	Thorne Waste, 1871	CR
<i>Fumaria bastardii</i> (C)	Locally frequent	Campsall C.Park, 1977	LC
<i>Pulsatilla vulgaris</i>	Rare	Went Vale, 1870	VU
<i>Ranunculus parviflorus</i>	Locally frequent	Hatfield Moor, 1970	LC
<i>Myosurus minimus</i>	Locally frequent	unconfirmed	VU
<i>Lotus tenuis</i>	Locally frequent	Lindrick Dale, 1966	LC
<i>Rosa stylosa</i>	Locally frequent	Levitt Hagg, 1871	LC
<i>Rosa micrantha</i>	Locally frequent	Roche Abbey, 1838	LC

Species	UK Status (Preston et al, 2002)	Dates/details of last verified occurrence, where known	IUCN Threat/Non Threat
<i>Viola lactea</i>	Locally frequent	Thorne Moors, 1970	VU
<i>Viola persicifolia</i>	Rare	Thorne Moors, 1981	EN
<i>Viola lutea</i>	Locally frequent	Murgatroyd (1995)	LC
<i>Radiola linoides</i>	Scattered	Miller (1804)	NT
<i>Hypericum elodes</i>	Locally frequent	Loxley Valley, 1985	LC
<i>Lythrum hyssopifolia</i> (C)	Rare	Lees (1888)	EN
<i>Circaea alpina</i>	Rare	Lees (1888)	LC
<i>Cardamine impatiens</i>	Scattered	Scabba Wood, 1981	NT
<i>Matthiola sinuata</i> (C)	Very Rare	Anston Stones, 1986	VU
<i>Persicaria mitis</i> (C)	Scattered	Bentley Common, 1973	VU
<i>Fallopia dumetorum</i> (C)	Local	Thorpe Salvin, 1988	VU
<i>Rumex pulcher</i> (C)	Locally frequent	Denaby Ings, 1969	LC
<i>Drosera anglica</i>	Locally frequent	Lees (1888)	NT
<i>Drosera intermedia</i>	Locally frequent	Thorne Moors, 1976	LC
<i>Minuartia verna</i>	Locally frequent	Levitt Hagg, 1992	NT
<i>Minuartia hybrida</i>	Scattered	Shaftholme Junct, 1993	EN
<i>Moenchia erecta</i> (C)	Locally frequent	Lees (1888)	LC
<i>Corrigiola litoralis</i> (C)	Very Rare	Manvers tip, 1993	CR
<i>Herniaria glabra</i> (C)	Very Rare	Wombwell, 1993	LC
<i>Illecebrum verticillatum</i> (C)	Very Rare	Brodsw'th Colliery, 1987	EN
<i>Polycarpon tetraphyllum</i> (C)	Very Rare	Wentworth, 1803	LC
<i>Silene conica</i> (C)	Rare	Huddersfield, 1873	VU
<i>Petrorhagia nanteuillii</i> (C)	Very Rare	Thorne area, 1947	VU
<i>Lysimachia thysiflora</i>	Local	Kelham Island, 1988	LC
<i>Trientalis europaea</i>	Locally frequent	Soil Hill, Halifax, 1874	LC
<i>Centunculus minimus</i>	Locally frequent	Maltby Woods, 1840s	NT
<i>Pyrola minor</i>	Locally frequent	Maltby Woods, 1888	LC
<i>Pyrola media</i>	Locally frequent	Ray Gate, Halifax, 1980s	VU
<i>Galium constrictum</i>	Rare	Shirley Pool, 1987	LC
<i>Centaureum pulchellum</i> (C)	Locally frequent	Lees (1888)	LC
<i>Gentianella campestris</i>	Locally frequent	Maltby Common, 1962	VU
<i>Gentiana pneumonanthe</i>	Rare	Hatfield/Lindholme, 1887	LC *?
<i>Cuscuta europaea</i>	Scattered	Wheatley Wood, 1920	LC *?
<i>Cuscuta epithymum</i>	Locally frequent	Lees (1888)	VU
<i>Callitriche truncata</i>	Local	Hatfield/Lindholme, 1980	LC *?
<i>Callitriche obtusangula</i>	Widespread	Hatfield Moor, 1976	LC
<i>Teucrium scordium</i> (C)	Very Rare	Miller (1804)	EN
<i>Salvia pratensis</i> (C)	Rare	Brightside, Sheffield, 1911	NT
<i>Orobanche rapum-genistae</i>	Scattered	Calderdale, 1850s	NT
<i>Utricularia minor</i>	Locally frequent	Wath Wood, 1983	LC
<i>Carduus tenuiflorus</i> (C)	Locally frequent	East Ardsley, 1981	LC
<i>Cirsium heterophyllum</i>	Locally frequent	Sandbeck Park, 1974	LC
<i>Filago lutescens</i>	Rare	Lees (1888)	EN
<i>Antennaria dioica</i>	Locally abundant	Lindrick Common, 1947	LC
<i>Senecio paludosus</i>	Very Rare	Rushy Moor, 1976 ?	CR
<i>Tephrosia palustris</i>	Extinct	Rossington, 1785	EX
<i>Sium latifolium</i>	Locally frequent	Went Valley, pre-1980	EN
<i>Oenanthe pimpinelloides</i>	Locally frequent	Doncaster Carr, 1974	LC
<i>Oenanthe fluviatilis</i>	Scattered	Fishlake, 1946	LC
<i>Meum athamanticum</i>	Local	Warley, Halifax, 1775	NT
<i>Petroselinum segetum</i>	Locally frequent	Pontefract, 1865	LC
<i>Peucedanum palustre</i>	Local	Rochdale Canal, 1970s	VU
<i>Torilis nodosa</i> (C)	Locally frequent	Bradford, 1991	LC
<i>Scheuchzeria palustris</i>	Very Rare	Thorne Moors, 1870s	LC *?
<i>Potamogeton lucens</i>	Locally frequent	Hatfield Moor, 1976	LC
<i>Potamogeton gramineus</i>	Scattered	Thorne Dikes 1880s	LC
<i>Potamogeton alpinus</i>	Locally frequent	Drain, Hatfield Moor, 1980	LC

Species	UK Status (Preston et al, 2002)	Dates/details of last verified occurrence, where known	IUCN Threat/Non Threat
<i>Potamogeton praelongus</i>	Scattered	Hatfield Moor, 1975	NT
<i>Potamogeton friesii</i>	Scattered	Chesterfield Canal, 1991	NT
<i>Potamogeton compressus</i>	Scattered	Sheffield Canal, 1979	EN
<i>Groenlandia densa</i>	Locally frequent	Thorpe Marsh NR, 1985	VU
<i>Epipactis purpurata</i>	Locally frequent	Ecclesall Wood, 1670	LC
<i>Neottia cordata</i>	Locally frequent	Lees (1888)	LC
<i>Platanthera bifolia</i>	Scattered	Armthorpe, 1981	VU
<i>Pseudorchis albida</i>	Scattered	Todmorden area, C19 th	VU
<i>Gymnadenia densiflora</i>	Rare	Lindrick Dale, 1991	DD
<i>Coeloglossum viride</i>	Scattered	Cragg Vale, 1980s	VU
<i>Dactylorhiza incarnata</i> ssp. <i>incarnata</i>	Scattered	Thwaite House, 1975	LC
<i>Dactylorhiza traunsteinerioides</i>	Scattered	Thorne Moors, 1989	LC
<i>Neotinea ustulata</i>	Scattered	Kirk Smeaton, 1976	EN
<i>Allium sphaerocephalon</i> (C)	Very Rare	East Ardsley, 1991	VU
<i>Sparganium angustifolium</i>	Locally abundant	Doncaster Carr, 1796	LC
<i>Sparganium natans</i>	Locally frequent	Herb. Salt 1800	LC
<i>Eleocharis multicaulis</i>	Locally frequent	Thorpe Marsh, 1982	LC
<i>Eleocharis quinqueflora</i>	Locally frequent	Sheffield Moors, 1801	LC
<i>Blysmus compressus</i>	Locally frequent	Shireoaks Marsh, 1975	VU
<i>Schoenus nigricans</i>	Locally frequent	Rushy Moor, 1900	LC
<i>Rhynchospora alba</i>	Locally frequent	Lees (1888)	LC
<i>Carex diandra</i>	Locally frequent	Adwick-le-Street, 1850	NT
<i>Carex divulsa</i> ssp. <i>leersii</i>	Locally frequent	Wagon La, Bingley, 1976	LC
<i>Carex divisa</i>	Locally frequent	Goole 1880 ?	VU
<i>Carex elongata</i>	Rare	Fishlake area, 1946	LC *?
<i>Carex distans</i>	Locally frequent	Maltby Valley, 1989	LC
<i>Carex oederi</i>	Locally frequent	Nr. Maltby, 1948	LC
<i>Carex limosa</i>	Locally frequent	Thorne Moors, c. 1870	LC
<i>Parapholis strigosa</i> (C)	Locally frequent	Dewsbury tip, 1960	LC
<i>Deschampsia setacea</i>	Local	Lees (1888)	LC
<i>Calamagrostis stricta</i>	Rare	Thorne Moors, 1970	VU
<i>Gastridium ventricosum</i> (C)	Rare	Kirk Smeaton, 1976	LC *?
<i>Leymus arenarius</i> (C)	Locally frequent	Siddal, Halifax, 1980s	LC

3) Hybrids

This is a difficult category to quantify and assess. Hybrids are produced in many common and widespread genera, e.g. *Salix* (willows), *Rosa* (roses), *Epilobium* (willowherbs), and *Rumex* (docks), but such hybrids are very often, in fact almost exclusively, the province of the specialist and tend to be shunned, overlooked or not catered for by the general botanist. Sometimes, hybrids are collected by non-specialists and sent to referees for identification or verification, but such instances are quite rare. The result is that we have, certainly in VC63 and, I feel, fairly generally throughout the country, a very incomplete and sporadic picture of the distribution of hybrids across the board. In terms of the table below, the VC63 Status column will often be 'Very Rare', 'Rare' or 'Scarce'. I would stress that this is only a very provisional assessment but the best that we have at the moment. Much more work needs to be done on the accurate recording of hybrids generally, to produce anything like a meaningful distribution pattern. It will also be noticed that many hybrids are not listed in Preston *et al.* (2002), so no UK status can be ascertained, while Cheffings & Farrell (2005), do not seem to cater for very many hybrids at all (at least of those which occur in the VC63 list).

In the table below, the statement 'No Modern Records' under VC63 Status indicates that there is no inclination to suggest that any hybrid is extinct – this would be unrealistic, as there is always the possibility of hybrids occurring where one or both parents exist.

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/ Non Threat
<i>Equisetum x litorale</i>	Locally frequent	Rare	Not listed
<i>Polystichum x bicknellii</i>	Rare	Very Rare	Not listed
<i>Dryopteris x complexa</i>	Rare	Rare	Not listed
<i>Dryopteris x deweveri</i>	Scattered	Rare	Not listed
<i>Prunus x fruticans</i>	Scattered	Very Rare	Not listed
<i>Sorbus x thuringiaca</i>	Not listed	Planted – Very Rare	Not listed
<i>Potentilla x suberecta</i>	Locally frequent	Very Rare	Not listed
<i>Geum x intermedium</i>	Locally abundant	Rare	Not listed
<i>Rosa x irregularis</i>	Locally frequent	No Modern Records	Not listed
<i>Rosa x andrzejowski</i>	Not listed	No Modern Records	Not listed
<i>Rosa x involuta</i>	Very Rare	No Modern Records	Not listed
<i>Rosa x dumalis</i>	Widespread	Scattered	Not listed
<i>Rosa x dumetorum</i>	Locally frequent	Rare	Not listed
<i>Rosa x rothschildii</i>	Scattered	Very Rare	Not listed
<i>Rosa x molletorum</i>	Not listed	Rare	Not listed
<i>Rosa x nitidula</i>	Scattered	Rare	Not listed
<i>Ulmus x vegeta</i>	Locally frequent	Rare	Not listed
<i>Ulmus x hollandica</i>	Scattered	Rare	Not listed
<i>Salix x smithiana</i>	Widespread	Scattered	Not listed
<i>Salix x stipularis</i>	Rare	No Modern Records	Not listed
<i>Salix x holosericea</i>	Widespread	Rare	Not listed
<i>Salix x capreola</i>	Scattered	Rare	Not listed
<i>Salix x multinervis</i>	Widespread	Scarce	Not listed
<i>Salix x laurina</i>	Scattered	Rare	Not listed
<i>Viola x scabra</i>	Rare	Rare	Not listed
<i>Viola x bavarica</i>	Scattered	Very Rare	Not listed
<i>Viola x ritschliana</i>	Not listed	No Modern Records	Not listed
<i>Viola x contempta</i>	Scattered	Very Rare	Not listed
<i>Epilobium x subhirsutum</i>	Not listed	Rare	Not listed
<i>Epilobium x erroneum</i>	Not listed	Rare	Not listed
<i>Epilobium x limosum</i>	Rare	Rare	Not listed
<i>Epilobium x rivulare</i>	Not listed	Very Rare	Not listed
<i>Epilobium x haussknechtianum</i>	Not listed	Very Rare	Not listed
<i>Epilobium x aggregatum</i>	Rare	Very Rare	Not listed
<i>Epilobium x heterocaule</i>	Not listed	Very Rare	Not listed
<i>Circaea x intermedia</i>	Locally frequent	No Modern Records	Not listed
<i>Nasturtium x sterile</i>	Widespread	Occasional	Not listed
<i>Rumex x propinquus</i>	Rare	Rare	Not listed
<i>Rumex x hybridus</i>	Scattered	Rare	Not listed
<i>Rumex x weberi</i>	Not listed	Very Rare	Not listed
<i>Rumex x schulzei</i>	Not listed	Very Rare	Not listed
<i>Rumex x ruhmeri</i>	Not listed	Very Rare	Not listed
<i>Rumex x abortivus</i>	Not listed	Very Rare	Not listed
<i>Rumex x dufftii</i>	Scattered	Very Rare	Not listed
<i>Drosera x obovata</i>	Rare	No Modern Records	Not listed
<i>Cerastium arvense x tomentosum</i>	Not listed	Very Rare	Not listed
<i>Cerastium x pseudoalpinum</i>	Not listed	Very Rare	Not listed
<i>Vaccinium x intermedium</i>	Not listed	Occasional	Not listed
<i>Galium x pomeranicum</i>	Scattered	Very Rare	Not listed
<i>Myosotis x suzae</i>	Not listed	Very Rare	Not listed
<i>Veronica x lackschewitzii</i>	Local	Very Rare	Not listed
<i>Linaria x sepium</i>	Scattered	Very Rare	Not listed
<i>Mentha x gracilis</i>	Widespread	Occasional	Not listed
<i>Mentha x piperita</i>	Widespread	Occasional	Not listed
<i>Carduus x stangii</i>	Rare	No Modern Records	Not listed
<i>Cirsium x celakovskianum</i>	Not listed	Very Rare	Not listed
<i>Centaurea x gerstlaueri</i>	Not listed	Very Rare	Not listed
<i>Senecio x baxteri</i>	Rare	Very Rare	Not listed

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/ Non Threat
<i>Potamogeton x angustifolius</i>	Scattered	No Modern Records	Not listed
<i>Potamogeton x nitens</i>	Scattered	No Modern Records	Not listed
<i>Platanthera x hybrida</i>	Not listed	No Modern Records	Not listed
<i>Dactylorhiza x transiens</i>	Rare	Very Rare	Not listed
<i>D. fuchsii x D. incarnata ssp. coccinea</i>	Not listed	Very Rare	Not listed
<i>Dactylorhiza x venusta</i>	Scattered	Rare	Not listed
<i>Dactylorhiza x insignis</i>	Not listed	Very Rare	Not listed
<i>Typha x glauca</i>	Scattered	Very Rare	Not listed
<i>Juncus x surrejanus</i>	Scattered	Very Rare	Not listed
<i>Juncus x diffusus</i>	Scattered	Very Rare	Not listed
<i>Juncus x kern-reichgeltii</i>	Not listed	Very Rare	Not listed
<i>Carex x boeninghausiana</i>	Rare	No Modern Records	Not listed
<i>Carex x pseudoaxillaris</i>	Scattered	Very Rare	Not listed
<i>Carex x fulva</i>	Locally frequent	No Modern Records	Not listed
<i>X Schedolium loliaceum</i>	Locally frequent	Occasional	Not listed
<i>Festuca rubra x Vulpia myuros</i>	Not listed	Very Rare	Not listed
<i>Holcus x hybridus</i>	Not listed	Very Rare	Not listed
<i>Agrostis x murbeckii</i>	Not listed	Very Rare	Not listed
<i>X Agropogon luteus</i>	Not listed	Very Rare	Not listed
<i>Calamagrostis x gracilescens</i>	Not listed	No Modern Records	VU
<i>Alopecurus x brachystylus</i>	Scattered	Very Rare	Not listed
<i>Glyceria x pedicellata</i>	Widespread	Very Rare	Not listed

4) Archaeophytes

The rationale governing the inclusion of rare Archaeophytes in the Great Britain Red Data List (*loc.cit.*) has been given above. In terms of the occurrence of the selection of rare (RDB) Archaeophytes in VC63 given below, I venture to suggest that, virtually without exception, the occurrence of all taxa listed from historical times to the present day has been of an essentially casual or ephemeral nature. This is based on the author's personal knowledge over the last forty years, coupled with the inferences gained from comments in the literature of Lees (1888) and others. This contention is reinforced when one considers that the overwhelming majority of the species involved are arable weeds which come and go according to the changing pattern of crop rotation and other agricultural practices, the temporary dumping of farm manure and other activities directly linked to human occupancy. All these factors militate against the suggestion of any permanent or even semi-permanent establishment of such plants, or the creation of isolated refugia which remain undisturbed by human activity for considerable lengths of time.

The above remarks are substantiated at first hand when we consider the case of the famous 'shoddy weeds' episode, the heyday of which lasted from about 1980 to 1995 in the 'Rhubarb Triangle' area of East Ardsley, Rothwell and Wakefield in West Yorkshire. Here, the agricultural practice was geared essentially to the production of root crops which were 'manured' with wool shoddy waste (a mixture of discarded imported wool waste and rags) from the industrial mills of the Heavy Woollen District of West Yorkshire, based around Batley and Dewsbury. The application of this 'manure' resulted in the appearance of very many exotic species (some being first records for Great Britain) which were introduced as seed in the fibres of the imported wool from Europe and further afield. These invaders continued to appear as long as wool shoddy was being used in appreciable quantity as fertiliser on the fields. In the late 1990s, however, the main focus of agricultural production changed markedly from root crops to cereal production, which did not require the application of wool shoddy fertiliser. Predictably, the occurrence of the contingent of strange alien colonists immediately diminished, such that now, in the second decade of the 21st century, minimal amounts of shoddy fertiliser are used and the occurrence of exotic adventives is negligible.

There was a suggestion during the 1980s heyday of the shoddy weed period that example(s) of this unique agricultural habitat should be considered for selection as Sites of Scientific Interest (SSI) in West Yorkshire – now variously known as Sites of Interest for Nature Conservation (SINC) or Local Wildlife Sites (LWS). This suggestion was never implemented as, after consultation with representatives from English Nature (now Natural England), it was felt that the assemblage of plants was too ephemeral, impermanent (and also non-native!) to justify recognition as permanent, established (or even semi-established) refugia. This decision was vindicated, as we have seen above, when the change from root crop to cereal production took place.

In the table below, (EX) in the IUCN Threat/Non Threat column indicates that the plant is believed extinct in VC63, with details of the last occurrence being given in Column 3.

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status or Dates/ details of last verified occurrence, where known	IUCN Threat/ Non Threat
<i>Papaver argemone</i>	Locally frequent	Rare	VU
<i>Ranunculus arvensis</i>	Locally frequent	Rare	CR
<i>Adonis annua</i>	Rare	Maltby area, 1900	EN (EX)
<i>Euphorbia exigua</i>	Locally abundant	Occasional	NT
<i>Rumex alpinus</i>	Locally frequent	Rare	NT
<i>Spergula arvensis</i>	Abundant	Widespread	VU
<i>Silene noctiflora</i>	Locally frequent	Occasional	VU
<i>Silene gallica</i>	Scattered	Branton, 1937	EN (EX)
<i>Chenopodium bonus-henricus</i>	Widespread	Fairly widespread	VU
<i>Chenopodium glaucum</i>	Scattered	Doncaster, 1976	VU (EX)
<i>Chenopodium vulvaria</i>	Rare	East Ardsley, 1981	EN (EX)
<i>Chenopodium urbicum</i>	Rare	East Ardsley, 1981	CR (EX)
<i>Chenopodium murale</i>	Scattered	Rare	VU
<i>Galium tricornutum</i>	Rare	Bolton, Bradford, 1990	CR (EX)
<i>Lithospermum arvense</i>	Locally frequent	Medge Hall, 1976	EN (EX)
<i>Hyoscyamus niger</i>	Locally frequent	Very rare	VU
<i>Veronica triphyllos</i>	Very rare	Cantley Park (1978)	EN (EX)
<i>Misopates orontium</i>	Locally frequent	Very rare	VU
<i>Stachys arvensis</i>	Widespread	Scattered	NT
<i>Galeopsis segetum</i>	Extinct	Barnby Dun, 1885	EX (EX)
<i>Galeopsis angustifolia</i>	Scattered	Occasional	CR
<i>Galeopsis speciosa</i>	Widespread	Scattered	VU
<i>Nepeta cataria</i>	Locally frequent	Very rare	VU
<i>Campanula rapunculus</i>	Very rare	Very rare	EN
<i>Centaurea calcitrapa</i>	Very rare	Rothwell, 1986	CR (EX)
<i>Arnoseris minima</i>	Extinct	Finningley area, 1950s ?	EX (EX)
<i>Anthemis arvensis</i>	Locally frequent	Rare	EN
<i>Anthemis cotula</i>	Locally frequent	Occasional	VU
<i>Glebionis segetum</i>	Locally frequent	Scattered	VU
<i>Valerianella rimosa</i>	Rare	Cantley Park, 1983	EN (EX)
<i>Valerianella dentata</i>	Locally frequent	Cantley Park, 1983	EN (EX)
<i>Caucalis platycarpus</i>	Not listed	Lees (1888)	EX (EX)
<i>Scandix pecten-veneris</i>	Locally frequent	Clay Bridge, 1996	CR (EX)
<i>Bupleurum rotundifolium</i>	Very rare	Very rare	EN
<i>Carum carvi</i>	Scattered	Very rare	EN
<i>Imperatoria ostruthium</i>	Scattered	Wentworth, 1935	NT (EX)
<i>Torilis arvensis</i>	Scattered	Very rare	EN
<i>Lolium temulentum</i>	Rare	Very rare	CR
<i>Apera spica-venti</i>	Locally frequent	Occasional	NT
<i>Bromus secalinus</i>	Scattered	Rare	VU

5) Grey Area Species – Native or Introduced

The small selection of taxa included under this heading are those plants for which there is, at present, no concurrence of opinion among the experts as to whether they are native or of introduced origin in any particular situation or location. All have a definite claim to be of cultivated or garden origin in many situations.

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/ Non Threat
<i>Helleborus foetidus</i>	Widespread	Occasional	LC
<i>Helleborus viridis</i>	Widespread	Occasional	LC
<i>Dianthus armeria</i>	Scattered	No Modern Records	EN
<i>Fritillaria meleagris</i>	Scattered	Local	WL

6) Unconfirmed Species

This section contains just what it says - those plants which have been reported but have never been confirmed. Some or, indeed, most of them are likely to have been misidentifications for other closely related species e.g. Great Pignut *Bunium bulbocastanum* for Pignut *Conopodium majus*, while others have never, to our knowledge, been correctly recorded in the Vice County e.g. Large Yellow-sedge *Carex flava*.

Species	UK Status (Preston <i>et al.</i> , 2002)	VC63 Status – Native, unless otherwise stated	IUCN Threat/ Non Threat
<i>Equisetum variegatum</i>	Scattered	---	LC
<i>Dryopteris x brathaica</i>	Not listed	---	Not listed
<i>Cornus suecica</i>	Locally frequent	---	NT
<i>Primula elatior</i>	Local	---	NT
<i>Arctostaphylos alpinus</i>	Local	---	LC
<i>Galium pumilum</i>	Rare	---	EN
<i>Stachys germanica</i>	Very rare	---	VU
<i>Thymus serpyllum</i>	Very rare	---	LC *?
<i>Melampyrum sylvaticum</i>	Rare	---	EN
<i>Euphrasia confusa</i>	Locally frequent	---	DD
<i>Crepis mollis</i>	Local	---	EN
<i>Tephrosia integrifolia</i> ssp. <i>integrifolia</i>	Rare	---	EN
<i>Bunium bulbocastanum</i>	Rare	---	LC *?
<i>Epipactis leptochila</i>	Rare	---	DD
<i>Dactylorhiza kerryensis</i>	Scattered	---	Not listed
<i>Orchis anthropophora</i>	Scattered	---	EN
<i>Carex saxatilis</i>	Scattered	---	LC
<i>Carex flava</i>	Very rare	---	VU
<i>Puccinellia fasciculata</i>	Locally frequent	---	VU
<i>Deschampsia cespitosa</i> ssp. <i>alpina</i>	Rare	---	DD
<i>Aira caryophyllaea</i> ssp. <i>multiculmis</i>	Not listed	---	Not listed

Aims and Future Plans

As stated above, this paper is entirely a work-in-progress document – a first stage at producing a viable Red Data Book for Vascular Plants in VC63. Much fieldwork is needed to achieve what I would regard as a comprehensive reference source for rare and scarce plants in the region – to put flesh on the bare bones of this present provisional checklist! I am intending to circulate definitive survey guidelines and an inventory of suggested targets in Spring 2013, with a view to organising a series of field trips for Rare and Scarce Plant Recording in the 2013 field season, and I am hereby encouraging and inviting my indefatigable, stalwart, South Yorkshire Plant Atlas recording team, members of Bradford Botany Group, YNU members (and anyone else keen to help!) to join me again and take up the challenge of this new project. In the meantime, if any of you have accurate current information on any of the plants listed above and, particularly if you

can provide amended or updated information on any of those which we believe are currently extinct in the Vice County, then please do get in touch as such data will be very valuable. Please get in touch, also, with any comments, criticisms or other thoughts on the information set out in this paper. Many thanks in advance for any help you can give.

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The Gledhow Valley Woods Nest Box Scheme

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I moved to the Gledhow area of Leeds in 1986, near to the woods on either side of Gledhow Valley Road. As a birdwatcher I soon realised that the provision of nest boxes there might ease a shortage of suitable natural breeding holes. I hoped to attract Pied Flycatcher, which readily takes to nest boxes.

After consultation with the appropriate officer at Leeds City Council, the Gledhow Valley Woods nest box scheme started in 1989 with an initial 17 boxes, of which 12 were standard boxes with holes designed for Blue Tits and Great Tits, together with 5 open-fronted boxes. I soon learned where not to place boxes as in certain locations some were regularly knocked down and/or vandalised. Luckily, not much vandalism occurred during the breeding seasons and nowadays it is rare.

Each winter I try to replace up to 8 boxes and add a few new ones. The boxes last for up to 12 years, occasionally longer. All the hole boxes in the Woods have metal plates fitted round the entrance hole as Grey Squirrels like to enlarge holes or remove lids if they can. After no success with the open-fronted boxes, all the boxes are now standard hole boxes. In the breeding season the boxes are checked weekly for 7 weeks from the beginning of May. The first check reveals a range of activity. Some Great Tits will be feeding young up to 14 days old by this time whereas

most pairs will still be laying or incubating eggs. It does seem that the more boxes I put up, the more attempts at breeding are made. On average, 5.5 of every 10 extra boxes put up will be occupied, 3.7 by Great Tits and 1.8 by Blue Tits (see Table 1). The percentage of boxes used for a breeding attempt was 91% in 1990 and, apart from a few years at 50-55%, is generally around the 70-80% mark. The numbers of pairs attempting to breed has risen from 8 in 1990 to 84 in 2012. A breeding attempt is defined as the construction of a nest.

Table 1. Overall Use of Nest Boxes 1990-2012

Year	Total no. of hole boxes	Breeding attempts	% of total no. of boxes	Successful	% of total no. of boxes	Numbers fledging	Average per box
1990	34	31	91.2	25	73.5	189	7.6
1991	37	33	89.2	30	81.1	223	7.4
1992	39	26	66.7	24	61.5	200	8.3
1993	44	31	70.1	27	61.4	214	7.9
1994	45	34	75.6	28	62.2	219	7.8
1995	52	38	73.1	33	63.5	262	7.9
1996	68	51	75.0	47	69.1	331	7.1
1997	69	50	72.5	45	65.2	333	7.4
1998	70	57	81.4	39	55.7	255	6.5
1999	69	39	56.5	30	43.5	192	6.4
2000	68	52	76.5	44	64.7	334	7.6
2001	68	51	75.0	44	64.7	298	6.8
2002	68	55	80.1	49	72.1	358	7.3
2003	74	61	82.4	54	73.0	308	5.7
2004	75	63	84.0	54	72.0	364	6.7
2005	83	71	85.5	53	63.9	270	5.1
2006	85	63	74.1	50	58.8	345	4.9
2007	93	67	72.1	55	59.1	230	4.2
2008	94	66	70.2	43	45.7	176	4.1
2009	102	51	50.0	39	38.2	250	6.4
2010	109	56	51.4	47	43.1	335	7.1
2011	112	72	64.3	62	55.4	404	6.5
2012	114	84	73.7	59	51.8	246	4.2

The failure rate of breeding attempts is usually about 10-12% of the total number of boxes available for use. The major exceptions to this have been in 4 years only. The first was in 1998 when a Great Spotted Woodpecker learned how to predate the boxes using the same *modus operandi* each time. This was to create a hole at the back lower corner of one side of the box and then drag the chicks out. Thirteen boxes were predated that season, leading to much hurried strengthening of remaining boxes and replacement of damaged ones. Fortunately, only 3 such predations occurred in 1999 and none since then. Wet and cold weather in 2005, 2008 and 2012 led to food shortages and many nests were deserted at various stages. In 2008, 23 out of 66 attempts failed and in 2012, 25 out of 84 did likewise. In the years following the wet ones, i.e. 1999, 2006 and 2009, breeding attempts were significantly lower, presumably due to poor breeding success the previous year. It does not look good for 2013.

The boxes are used by Blue Tit, Great Tit and Nuthatch (see Tables 2 and 3). The number of Blue Tits using the boxes has shown a slow upward trend, apart from a couple of boom years and an odd low year, whereas Great Tit numbers have soared from 4 pairs in 1990 to a record 43 pairs in 2012. Nuthatches have made just 4 breeding attempts in boxes since 1990.

Table 2. Occupation of nest boxes by Blue and Great Tits, showing success rates.

Year	Blue Tits				Great Tits			
	Attempts	Successes	Fledglings	Average	Attempts	Successes	Fledglings	Average
1990	26	21	161	7.7	5	4	28	5.6
1991	29	26	195	7.5	4	4	28	7.0
1992	21	20	168	8.4	5	4	32	6.4
1993	25	22	179	8.1	6	5	35	5.8
1994	23	19	154	8.1	11	9	60	6.7
1995	25	21	170	8.1	12	11	86	7.8
1996	38	36	269	7.5	13	13	62	4.8
1997	37	34	272	8.0	13	11	61	5.5
1998	37	24	183	7.6	20	15	72	4.8
1999	26	21	136	6.5	13	9	56	6.2
2000	33	29	234	8.1	19	15	100	6.7
2001	30	25	181	7.2	21	19	117	6.2
2002	33	30	231	7.7	22	19	127	6.7
2003	32	27	180	6.7	29	27	128	4.7
2004	33	28	193	6.9	30	26	171	6.6
2005	39	27	145	5.4	32	26	125	4.8
2006	33	25	192	7.7	29	24	149	6.2
2007	36	27	121	4.5	30	27	105	3.9
2008	42	26	101	3.9	24	17	75	4.4
2009	32	26	184	7.1	19	13	66	5.1
2010	35	28	225	8.1	21	19	110	5.8
2011	36	30	205	6.8	36	32	199	6.2
2012	40	29	128	4.4	43	30	118	3.9

Table 3. Nuthatch Nest Box Occupation

Year	Attempts	Successes	Fledglings	Average
1995	1	1	6	6.0
2006	1	1	4	4.0
2007	1	1	4	4.0
2012	1	0		

There were no breeding attempts by Nuthatches in any other years.

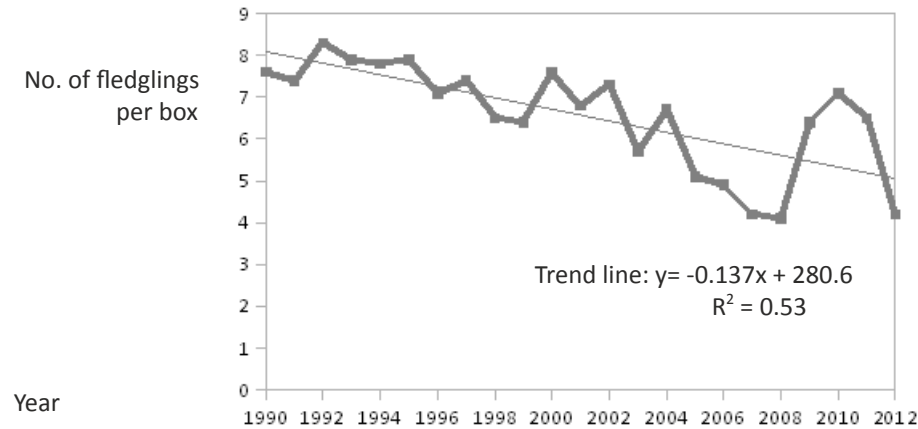


Figure 1. Average number of fledglings per box, all species.

The average number of fledglings from successful boxes is 7.5 for Blue Tits and 6.3 for Great Tits. In the cold wet springs of 2005, 2008 and 2012 the average was 4.3 and 4.0 respectively. However, there has been a statistically significant downwards trend in the average number of fledglings during the study period (see Fig. 1). The decline affects both Blue Tits and Great Tits. In the Great Spotted Woodpecker year of 1998 the productivity of surviving nests was normal, as it was whole broods that were predated, whereas in the wet and cold years, broods of 1, 2 or 3 chicks fledging was common. The maximum number of fledging birds was 404 in 2011 and the minimum was 176 in 2008.

Where there is a lack of suitable food for the nestlings, a typical find can be a nest containing a brood of dead chicks. One such box in 2005 contained 5 dead chicks of varying ages: 2 at 14 days old, 1 at 9 days, 1 at 6 days and 1 at 4 days, implying that the parents struggled to find enough food, resulting in regular deaths of their brood, before finally giving up. Chicks can be abandoned at any stage but it is usually up to 15 days old. In the poor years cited, some pairs still fledged average-sized broods, with Blue Tits producing between 1 and 7 fledglings and Great Tits from 1 to 6. Presumably these were experienced pairs, better able to cope with the awful weather conditions. However, 7 and 6 are low maximums as in other years pairs regularly fledged up to 10 young.

Some birds are tidy nesters and, as their offspring succumb, their bodies are removed from the nest completely or removed from the nest cup to the nest rim. Others leave the bodies in the cup, where they get trampled on by the remaining siblings. Once I found a nest that had been constructed on top of a dead adult Great Tit that had presumably died while roosting in the box sometime in the winter months. The feathers were in good condition on an emaciated body.

In the years 2009-2011, 2 boxes, always in the same part of the woods, contained perfectly constructed, lined nests, each made from the same nest material but not containing any eggs. On checking these boxes in 2009, I found that there was a Great Tit sitting very low in one of the boxes each week it was checked for 5 weeks. However, only one of the boxes was occupied each week, so I presumed that this one Great Tit was moving between these 2 boxes. In 2010 and 2011 again there were 2 identical nests, and a Great Tit was sitting low in just one box for 3 weeks at least, but again no eggs. In 2012 there was just one box with a perfect nest in the same area but no sign of the Great Tit. My thoughts are that it was one bird having a phantom incubation. I have not come across this behaviour before.

One pair of Great Tits usually has a second brood each year. It is usually a smaller clutch of eggs and is not always successful. Very occasionally 2 pairs lay a second clutch, but I have never found any Blue Tits doing the same. Looking at the period 1990-2012, it can be seen that in the first 13 years overall productivity never fell below 6.4 fledglings per nest. That figure or greater has only been attained 3 times in the last 10 years. This is presumably due to the food supply during the breeding season affecting clutch sizes and the survival of the nestlings. It is a worrying trend.

In conclusion, the scheme has so far produced 6334 young birds from 981 successful nests. It has been very enjoyable to monitor the boxes and it is great to be in a Bluebell wood in May. Has the ambition bird ever appeared? Just once, in 2006, when a male Pied Flycatcher took up residence at a box between May 9th and 21st. Unfortunately, no female appeared so I will just have to keep checking those boxes.

Onset of Summer Plumage in Black-headed Gulls at Doncaster Lakeside, based on field observations January to March 2012

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Introduction

The general phenomenon of Black-headed Gulls *Chroicocephalus ridibundus* attaining their chocolate-brown head plumage in spring is familiar to even the most casual observer, although the precise monitoring of this and an examination of the timing and potential causations of spring moult would appear to be absent from the literature. Harris (1971) concentrated on the strategic aspects of primary feather moult in Herring Gull *Larus argentatus*, Lesser Black-backed Gull *L. fuscus* and Great Black-backed Gull *L. marinus*. Walters (1978) examined four gull species including Black-headed Gull, again focusing on primary moult only (April to September) and the work of Palomares *et al.* (1997) on Black-headed Gulls examined biometric variations rather than plumage.

During the winter months and up to late March, impressive evening roosts of gulls, numbering into the thousands, gather at Doncaster Lakeside, South Yorkshire (SE5901) providing one of Doncaster's ornithological spectacles. The primary species is the Black-headed Gull but to this can be added Common Gull *Larus canus*, Herring Gull, Lesser Black-backed Gull and Great Black-backed Gull. Rarer ones have also made visits at appropriate seasons as passage migrants or vagrants. These include Kittiwake *Rissa tridactyla*, Little Gull *Hydrocoloeus minutus*, Mediterranean Gull *L. melanocephalus*, Yellow-legged Gull *L. michahellis*, Caspian Gull *L. cachinnans*, Iceland Gull *L. glaucoides* and Glaucous Gull *L. hyperboreus* (see Yorkshire Naturalists' Union Annual Bird Reports www.ynu.org.uk and Doncaster and District Ornithological Society website www.doncasterbirding.co.uk).

During the late summer, autumn and winter months both immature (first-year) and adult Black-headed Gulls have white heads with a small dark, anti-glare area in front of each eye and a conspicuous comma-shaped black mark behind the eye. Some also have a faint dark smudge above the eye which can extend faintly over the crown. The characteristic adult summer plumage is typified by the head becoming a smart dark chocolate-brown with a neat white post-ocular margin and a white nape. For first-year birds the brown head markings develop to varying degrees, retaining some white feathers (see Plate V, centre pages).

Methods

From January to the end of March 2012 regular visits were made to Lakeside where the progressive increase in numbers of Black-headed Gulls exhibiting summer plumage was monitored and elements of courtship behaviour were noted. Counts were generally made around sunset when large numbers of birds had already returned to the roost from feeding elsewhere, thus enabling a larger and more representative sample of the roost to be observed.

To avoid being dazzled by the setting sun and to ensure the gulls were well illuminated, counts were made looking to the east across the main bay. The number of gulls exhibiting summer plumage was expressed as a percentage of the sample counted.

Subsequently the daily daytime maximum temperatures for Bessacarr, Doncaster (as given in www.waccuweather.com/en/gb/bessacarr) and day length in minutes calculated from daily

sunrise to sunset times at nearby Finningley Airport (53°28'1"N 1°0'0"W) (as given in <http://www.sunrise-and-sunset.com/en/united-kingdom/finningley>) were collated and used for comparative purposes.

Results

Evidence of Black-headed Gulls beginning to develop their summer plumage was first noticed on 17 January, when three (0.37%) out of a sample of 800 roosting gulls were exhibiting the characteristic chocolate-brown heads. The percentage frequencies of birds in summer plumage monitored on twelve dates from 17 January to 14 March 2012 are shown in Fig.1.

Discussion

Temperature: Examination of the data showed no statistically significant correlation between maximum daytime temperature and the percentage of birds exhibiting summer plumage, with a correlation coefficient well below 0.4.

Day length: There was a highly significant correlation between day-length and % of the population exhibiting summer plumage with a correlation coefficient of well over 0.95 (see Figure 2). Whilst this analysis cannot, of itself, demonstrate a causal relationship, there is a considerable literature based on laboratory experiments (i.e. Lofts & Murton, 1968; Payne, 1972; Stokkan, 1979) that demonstrate how environmental features such as day-length govern moult and breeding cycles in birds from temperate regions. One potential causal influence in the acceleration of plumage change may be a reinforced endocrinal response to the proliferation of courtship behaviour in the population from around mid-February (see Figure 1).

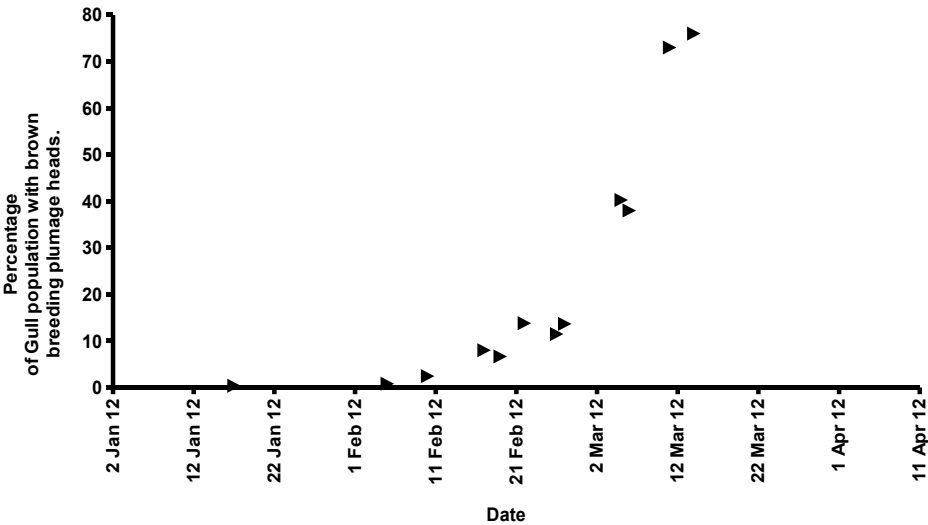


Figure 1: Percentage of roosting Black-headed Gulls at Lakeside showing onset of brown-headed summer plumage January to March 2012.

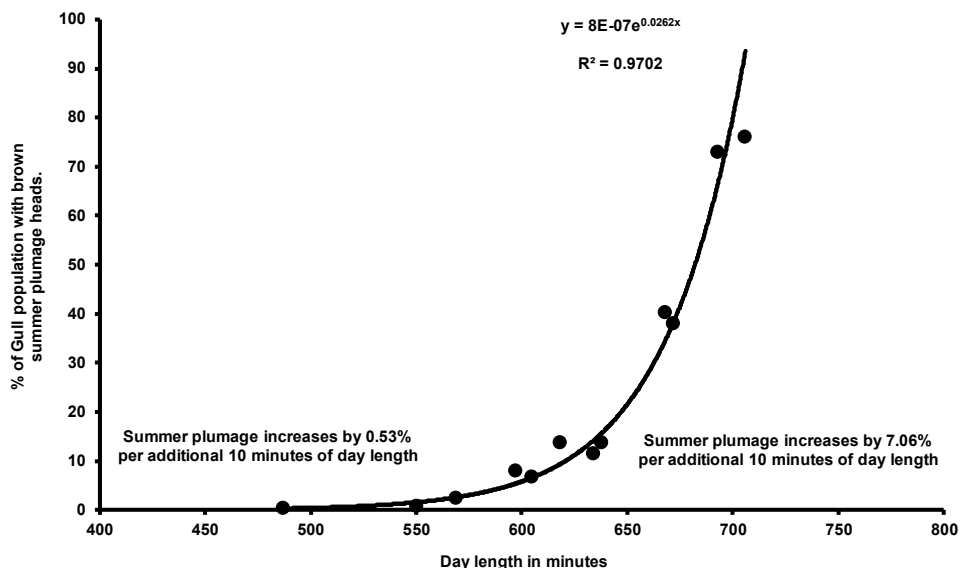


Figure 2: Relationship between the percentage of Black-headed Gulls showing onset of brown-headed summer plumage and increase in day length from January to March.

Acknowledgements

Thanks are due to Dr John R. Mather for valuable alterations to an earlier draft and for the annotated series of Black-headed Gull study skins from his collection kindly photographed by Ann Mettam (see Plate V, centre pages). Dr Paul Simmons drew attention to some literature references.

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Notes on Sowerby's Beaked Whale strandings on the Yorkshire coast

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Introduction

Sowerby's Beaked Whale, *Mesoplodon bidens*, is a member of the Ziphiidae, a group of small and secretive oceanic whales, found in all oceans over the deep sea where they have become deep-diving specialist feeders.

Sowerby's Whale is confined exclusively to the depths of the North Atlantic, away from the edge of the Continental shelf, and only in recent years has some of its biology begun to be elucidated. Although a diet of squid has been suggested as being most probable by much of the literature, there have been only limited findings of stomach contents, and recently available information suggests this whale is primarily piscivorous, feeding at depth on small bathypelagic fishes including principally myctophids (lantern-fish), diretmids and melamphaeids (Pereira *et al.*, 2011).

Having transgressed the continental shelf and entered the North Sea basin, Sowerby's Beaked Whale and other deep-diving whales, including the Sperm Whale, and the Northern Bottle-nosed Whale, are confined within an alien environment that not only becomes increasingly shallow as they progress further south within the basin, but which is also devoid of the particular oceanic trophic resources upon which they depend; the North Sea basin thus becomes a 'trap' for these whales in particular (Smeenk, 1997).

A comparatively large number of strandings of Sowerby's Whale has occurred around the British Isles during the period since the species was first discovered in 1800, and an analysis of all British and Irish records from 1800 to 2002, during which period there were 70 occurrences, demonstrated the widespread distribution of these strandings around the British and Irish coastlines, with as many records of the whale along the western North Sea perimeter as on the Atlantic-facing coastlines of the British Isles. North Sea occurrences accumulate principally between July and October. (MacLeod *et al.*, 2004).

Yorkshire records

All occurrences of this deep-water whale are of great interest. Records from the shallow central North Sea (ICES Division 4b between 56° 30' N and 53° 30' N) are not numerous, and only four specimens are known to have occurred on the Yorkshire sector. The first was an adult male 4.53 metres in length, which stranded alive in September 1885 within the Humber estuary at Chalk Bank, and was the first English occurrence (Southwell and Clarke, 1885 and 1886). No part of this whale was preserved.

Although subsequent, but rare, strandings occurred both to the north and south of the Yorkshire coastal area in the intervening years, it was not until October 1972 that another Yorkshire stranding occurred, at Filey Bay, followed only recently by two further occurrences, in August 2012 (again within the Humber estuary) and in September 2012 from Bridlington Bay at Fraithorpe beach. Another female was found in early September 2012 at Wainfleet Flats, on the Lincolnshire coast, thus indicating that a small pod of the whales was involved in the strandings.

The Filey 1972 and the Humber 2012 specimens were both dissected by the author, though, unfortunately only some little time after their discovery and following brief internal examinations, the skeletons of both whales were subsequently prepared for inclusion in the marine collections held at Scarborough.

Stranding at Filey Bay October 10 1972

Although the stranding of this whale was the subject of a brief field note shortly afterwards (Massey, 1973), further details are given here for the first time. The whale appeared on the sands at Hunmanby Gap during the overnight tides of 10/11 October; it was in perfect condition, with no external evidence of trauma, and was believed to have stranded alive. This whale was an adult male 4.35m total horizontal length, with large teeth having a gum insertion length of 48mm. A female Sowerby’s Beaked Whale and her calf had also live-stranded just a short time before, on October 9, on the beach at Bredene on the coast of Belgium (Dr P. E. Purvis (pers. comm.); De Smet, 1981) and it is probable these strandings were related and that all three individuals comprised a family group that had entered the North Sea together. When examined a few days after stranding, the body was almost entirely black, with numerous long white scars scattered along and across the body; a small patch of white marked the extreme angle of the mouth. Morphometric data are given in Table 1.

Following the recording of the stranding by still and cine photography, plaster moulds were prepared of large parts of the body to enable a cast of the whale to be preserved with the skeleton. The whale was dissected, following which the skeleton was removed; no stomach contents or platyhelminth parasites were found either in the stomach complex or the intestine. The head was removed intact and the anatomy of the blowhole was the subject of a dissection by Dr P.E. Purvis of the British Museum (Nat. Hist.) following which the skull was prepared.

The skull displays an unusual and remarkable deformity of the right occipital area where the bone has failed to ossify or occlude during early development, leaving an extensive foramen exposing the cranial cavity, but the edges of the foramen had continued to grow outwards as thick bony excrescences; a few small nodules of isolated bone that were apparently developing within the connective tissue enclosing this foramen were discovered during the final cleaning of the skull. No other part of the skull or of the rest of the skeleton shows any other anomaly and, in confirmation of the initial diagnosis that the animal was adult, the epiphyses of the vertebrae are fused.

Table 1. Morphometric data, male *Mesoplodon bidens* Filey Bay 10 Oct 1972

Horizontal length	4350mm
Width of flukes	1150mm
Upper snout to line of blowhole	580mm
Width of blowhole	90mm
Upper snout to anterior point of dorsal fin	3100mm
Basal length of dorsal fin	380mm
Upper snout to ant point of eye	600mm
Length of eye	35mm
Depth of eye	17mm
Posterior point of eye to ear	115mm
Upper snout to angle of jaw	440mm
Lower snout to angle of jaw	455mm
Lower snout to anterior point of tooth insertion	230mm
Basal length of tooth at gum insertion	48mm

Lower snout to anterior point of flipper	1020mm
Anterior point of flipper to mid dorsal line	660mm
Lower snout to anus	3135mm
Lower snout to anterior point of genital aperture	2800mm
Anus to centre of flukes	1440mm
Length of flipper, anterior point to tip	515mm
Length of flipper, posterior angle to tip	305mm
Circumference of body at eye	1200mm
“ “ anterior point of flippers	1600mm
“ “ anterior point of dorsal fin	2000mm
“ “ vent	1500mm

First Yorkshire occurrence of *Conchoderma auritum*

The stalked barnacle *C. auritum* is well known as an epibiont on the teeth of male Sowerby's Beaked Whales, and the Filey Bay whale was consequently examined for its presence. Attempts by the public to remove the tooth on the exposed left side of the head had destroyed any traces of possible attachment of *C. auritum* from the tooth of that side, but on the later lifting of the head from the sand, the right tooth was found to be almost hidden by an attached colony of this barnacle. This remains the only known occurrence of this barnacle on the Yorkshire coast.

Stranding at Stone Creek, 16 August 2012

Discovered on the Humber shore by a group of ornithologists, this whale could not initially be examined because a creek rendered it unreachable. A number of telephoto images were taken by the group showing a dorsal view, the only aspect available as the animal was laid on its side, but sufficient to enable its specific identification.

The animal appeared perfectly fresh and very recently stranded, but its sex was unknown. On the evidence from the images, which included gulls on and about the carcass indicating a fairly large size, and which also gave sufficient detail of the head to suggest that no teeth were visible above the gum, it was concluded that the stranding was of a sub-adult or adult female Sowerby's Whale.

Unfortunately the whale was transported about by subsequent tides and its position lost for some time until it was eventually deposited high up the shore. When examined in September the carcass was in poor condition and partially submerged in a pool of putrid water. As a result, the morphometric data that could be recorded was limited, nor could the sex be ascertained from external or internal genital features due to their condition, but the sex was reaffirmed as female from the head, no teeth having erupted above the gum. The horizontal length of the whale, 4.28 metres, together with such measurements as could be compared to the tabulated data in Table 1, of the Filey Bay 1972 male, all confirmed this female to be slightly smaller than that individual. Examination of the stomach complex and gut was made but no remains of prey, parasitic infection or ingested plastic waste were discovered.

Continued preparation of the skeleton currently prevents examination of the vertebrae to determine their fusion or otherwise with the epiphyses, and skeletal examination has thus been limited to the partially cleaned skull, upon which the animal is tentatively regarded as being adult.

Stranding at Fraisthorpe beach 30 September 2012

This whale was observed to strand alive about mid-day on the ebbing tide. Despite the efforts of a large number of people to try and save the whale during the following hours, it died later that day. The whale was an immature female, 4.10 metres long, and the smallest of those Sowerby's Beaked Whales so far recorded from the Yorkshire coast. A Cetacean Strandings Investigation Programme (CSIP) team from the Zoological Society of London carried out an autopsy the following day and made a brief video recording for inclusion in the Scarborough archives. The stomach contained numerous nematodes, but no other gut contents were seen; the gut was heavily stained with bile, suggesting the whale had not ingested for some time. A later press release by CSIP confirmed the whale had a bacterial brain infection of *Vibrio vulnificus*, the probable cause of its distress.

Incidence of Sowerby's Beaked Whale in the southern North Sea

Historically, the occurrence of Sowerby's Beaked Whale along the north-east (2 records) and Yorkshire (4 records) coasts is an extremely rare event, and in this context the stranding of two individuals on the Yorkshire sector during 2012 is particularly exceptional. However, a greater incidence of strandings of Sowerby's Beaked Whale is found in the southern North Sea (south of 53° 30' N) with 14 strandings recorded for the Netherlands alone between 1900 and 2007 (Camphuysen *et al.*, 2008).

The few rare strandings known from the NE and Yorkshire coasts, therefore, give little indication of a greater frequency of individuals of this species that must be passing south through the central North Sea. The number of strandings of these whales in the southern North Sea, particularly on the coastlines of the Netherlands, Belgium and Germany, further suggests the increasingly distressed or diseased condition of these whales by the time they have traversed the North Sea basin and have reached the particularly shallow confines of the continental, eastern sector. The strandings from that area therefore more realistically indicate the frequency and numbers, not just of Sowerby's Whale, but also of other oceanic deep-diving whales penetrating the North Sea.

Moving and still images of three of the strandings, together with skeletal material of the Filey Bay 1972 and Humber 2012 occurrences, and the first Yorkshire specimens of *Conchoderma auritum*, detailed above, are preserved in the marine biological collections of the Yorkshire Coast Maritime Archive, a private facility located in Scarborough.

Acknowledgements

I am indebted to Andy Gibson for the opportunity to examine photographs of the Stone Creek stranding and for information leading to an examination of the carcass and recovery of the skeleton.

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Seals at Teesmouth: a historical review

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Introduction

Reviews of the presence and status changes of Harbour Seal *Phoca vitulina* and Grey Seal *Halichoerus grypus* in the coastal and tidal waters of Watsonian Yorkshire (Tees to Humber) have been compiled in Clarke & Roebuck (1881) and Howes (1984, 1985a & b). The situation for the Holderness coast and the Humber region was reviewed and updated in Howes (2000) and the occurrences of the Arctic vagrants Harp Seal *Phoca groenlandica* and Hooded Seal *Cystophora cristata* were noted in Howes (1989, 1990) and in Massey & Howes (2003). The following account seeks to provide a similar review and update of the seal occurrences and status changes in the Tees estuary and adjacent Teesmouth areas from Hartlepool (NZ5333) in the north to Saltburn-by-the-Sea (NZ6612) in the south.

Seals at Teesmouth

Pre-19th Century

In the accounts of the bursar of the monastery of Durham, frequent references were made from Pentecost 1530 to Pentecost 1534 to sums paid for "Seaylls and Seall Calves", as the conservancy of the Tees during this period belonged to the Bishop of Durham. It is likely that at least some of these animals would have originated from the Tees estuary. Other evidence of the presence of seals is provided in a document dated 1530 which relates to regulations of the fisheries in the Tees; this mentions "Sealles, purposes [porpoises] and sturgeons and other like fish" (Lofthouse, 1887). Further indications of the antiquity of the tradition of seals frequenting the Cleveland coast and the Tees estuary are place names such as Seal Goit near Saltburn and Seal Sands within the Tees estuary, this latter featuring on a map dated 1762 (Lofthouse, 1887). Since Grey Seals only made their appearance as a breeding species in local waters in the 20th Century, it is assumed that the species referred to in these sources is the Harbour Seal.

References to seals inhabiting Teesmouth feature in the histories of Cleveland (Graves, 1808) and Hartlepool (Sharp, 1816). Clarke and Roebuck (*loc.cit.*), in reviewing Tees data from a number of references and correspondents, reported that in 1802 "they interfered to such an extent with the salmon fishery that determined efforts were proposed for their extirpation." Between 1820 and 1830 the Tees population was estimated to be about 1,000 strong, though it was claimed that the numbers had reduced by 1862 to 3 individuals. The inferred interpretation of this count may be misleading since the timing of the count is crucial with the seasonality of occurrence at a summer breeding/moult site.

Mid 19th Century Decline

Lofthouse (1887) noted that 20 to 30 seals could still be seen hauled out on the sandbanks during the 1860s but conceded that the population had probably been diminishing from the middle of the century due to the effects of industrial and urban developments around the tidal Tees and to the dramatic increase in water pollution and shipping. Indeed, Clarke and Roebuck (*loc.cit.*) commented that “the seals exhibited great dread of the steamboats which had greatly increased in numbers on the river...” Successive editions of Ordnance Survey sheets from the 19th Century to the present show that the estuary sandbanks and mudflats were progressively reclaimed for agriculture and industrial development such that now only about 10% of the original area remains. Although it was alleged that the last ‘native’ [Harbour] seal was killed c1870, sporadic records from the Teesmouth area from the 1880s to 1903 still persisted and are presented here in Table 1.

Coincidental with the decline of the Tees population, Harbour Seals began to be noticed in the Wash at least by the 1860s (Vaughan, 1978) and the Lincolnshire naturalist John Cordeaux noticed groups of 15 or 20 on the Wash mudflats in 1872 (Bonner, 1976). It would have been interesting to know if the Tees population had transferred to the Wash, ultimately giving rise to the largest English breeding population.

Table 1: Late 19th and early 20th century records of Harbour Seal in the Teesmouth region.				
Date	Location	OS Grid ref.	Record	Reference
1880	Redcar	NZ6125	One seen on rocks	Lofthouse, 1887
1880-81	Redcar	NZ67	One shot during winter	Lofthouse, 1887
24.08.1881	Middlesbrough	NZ42	Two pursued by boats in the Dock entrance	Lofthouse, 1887
1881	Eston	NZ52	One opposite ironworks	Lofthouse, 1887
15.01.1883	Tees estuary		One shot	Lofthouse, 1887
02.1883	Eston Jetty	NZ5222	One captured	Lofthouse, 1887
25.10.1885	Eston Jetty	NZ5222	One seen and young female caught	Lofthouse, 1885
28.07.1887	Tees estuary		One exhibited alive in Middlesbrough market	Lofthouse, 1887
05.03.1890	Coatham Sands	NZ52	Young seal shot	Nelson, 1890
28.01.1901	River Tees		One shot	Lofthouse, 1901
07.12.1902	Teesmouth		One caught	Nelson, 1903a
1903	Yarm	NZ4112	One shot	Nelson, 1903b

Mid 20th Century Return

Harbour Seals seem to have re-appeared in the Teesmouth area by the 1960s. One was seen off South Gare during the summer of 1964 and the species was reported but regarded as “rather scarce” (Bell, 1966). Bonner and Whittames (1974) suggested that the increasing Wash population could potentially function as a reservoir from which areas where indigenous Harbour Seal populations had been reduced might be replenished. A link with the expanding Wash population was indicated in 1971, when one of 197 dispersing Wash pups tagged on 26 June was found dead in the Victoria Dock at Hartlepool 66 days later on 30 August (Bonner & Whittames *loc.cit.*). Dispersing Wash-tagged pups arrive on the Yorkshire/Cleveland coast 32 to 66 days after tagging with a mean of 47 days (Howes, 1984).

In October 1977 five adults were present off South Gare, two of which were indulging in ‘porpoising’ courtship behaviour (Howes, 1984) and fourteen were counted during an aerial survey by the Sea Mammal Research Unit on 2 December 1977 (R.W. Vaughan pers. comm.). By the 1980s groups began to haul-out regularly on the 294ha Seal Sands National Nature Reserve within the Tees estuary (NZ5225; 5226 and 5326) but the formation of a viable breeding colony was possibly delayed by the epidemic of the Phocine Distemper Virus (PDV).

Phocine Distemper Virus

This is a paramyxovirus of the genus *Morbillivirus* that is pathogenic for seals, particularly affecting Harbour Seals. The population along the east coast of England (mainly the Wash) was reduced by 52% following the PDV epizootic in 1988 and by 22% by the epizootic of 2002. These events were responsible for the deaths of an estimated 17,000 Harbour Seals in the southern North Sea and it is anticipated that these epizootic events may recur at 15 or 17 year intervals (SCOS, 2010; Thompson & Duck, 2010). Since the Harbour Seal is a relatively sedentary species with well separated populations, disease transmission between populations suggests another vector species could have been involved. With Grey Seals being far less susceptible to the fatal effects of the virus and undertaking long distance movements, it is suggested that they could act as subclinically infected carriers of the virus between mixed colonies of Grey and Harbour Seals (Härkönen *et al.*, 2006).

Tees Seal Monitoring Programme

From 1989 to 1992 a Tees seals project was initiated by David Bellamy Associates. Two scientific personnel were employed (in association with Durham University Biology Department) to investigate the seal population.

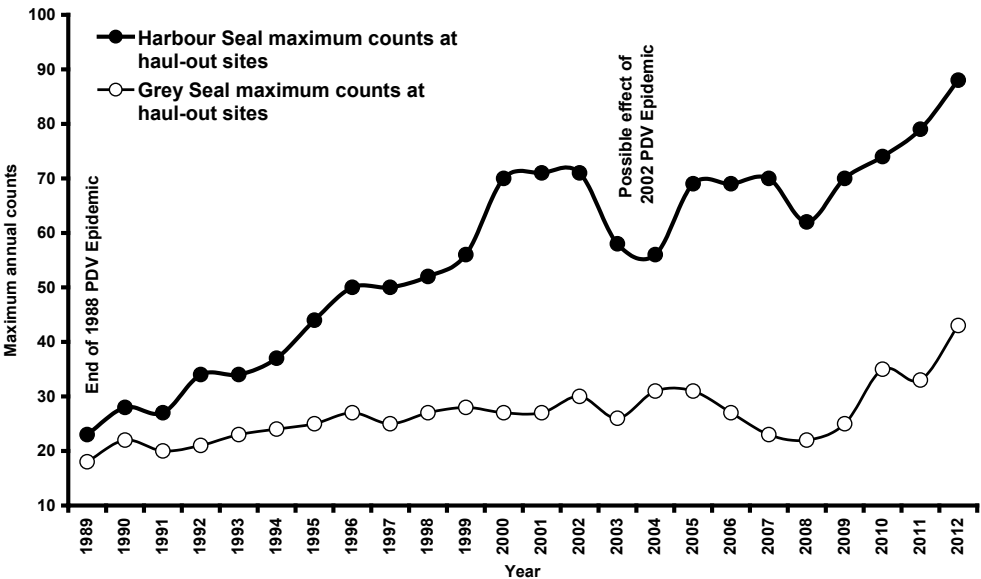


Figure 1: Maximum annual Harbour Seal and Grey Seal counts in the Tees Estuary. Based on Jackson & Wilson (1990), Wilson (1994), Smurthwaite (1996), Turner (2003), Gibson (2005) and Woods (2008 to 2012).

This was found to number about 23 individuals which were potentially subject to PDV and the effects of elevated organochlorine and heavy metal concentrations. In 1993 the relatively newly formed Industry Nature Conservation Association (INCA) adopted the running of the Tees Seal Monitoring Programme, publishing population data and detailing conservation management and public participation developments annually (Jackson & Wilson, 1990). The programme and its associated projects have produced a remarkable body of research, much of it available online (see references).

The maximum summer counts of Harbour and Grey Seals hauled out on the tidal mud- and sandflats from 1989 to 2012 are shown in Figure 1, based on the INCA reports.

Harbour Seal Pup Production

Harbour Seal (see Plate VI, centre pages) is the only seal to breed in the Tees estuary, since Grey Seal pups are unable to swim for some considerable time after being born and their nurseries are therefore dependent upon secure areas above the high water mark. Such areas are lacking in the intertidal features of the Tees, which comprise mainly intertidal mud- and sandflats. Wilson (2001) showed that, although Harbour Seal numbers increased from about 24 to 50 individuals between 1989 and 1997, the birth rate remained below 10% of the population. Seven of the twelve pups born live between 1989 and 1997 stranded dead, only five appearing healthy at approximately one month of age. Wilson (2001) also notes that though the seven non-viable pups had apparently received normal patterns of maternal care, they had gradually weakened, becoming unable to follow their mothers and had finally succumbed. Blubber samples from the first three moribund pups revealed elevated levels of polychlorinated biphenyl compounds (PCBs). Analysis of local fish and invertebrates also revealed elevated levels of PCBs. A possible causal link between the PCB levels and the poor reproductive performance was suggested (Wilson, 2001). Subsequently Rachel Smurthwaite (2006) has quantified the levels of the heavy metals zinc, copper, lead, cadmium, arsenic, chromium and mercury in the tissues and faeces of Tees seals and in their locally sampled prey (fish and crustaceans) (see http://etheses.dur.ac.uk/2651/1/2651_663.pdf).

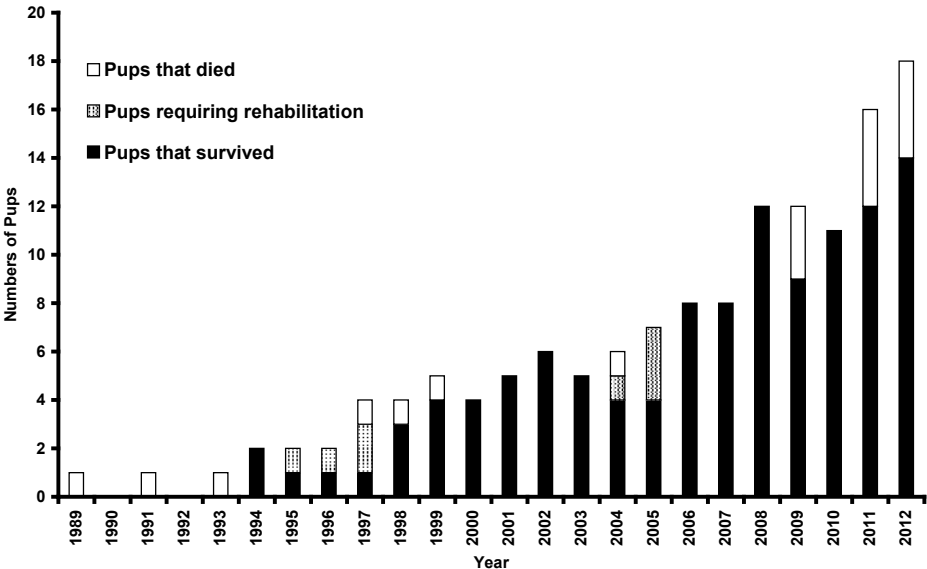


Figure 2: Annual Harbour Seal pup production in the Tees estuary 1989 to 2012 including numbers of deaths and individuals which required rehabilitation. Based on Jackson & Wilson (1990), Wilson (1994), Smurthwaite (1996), Turner (2003), Gibson (2005) and Woods (2008-2012).

Unsuccessful breeding took place in 1989, 1991 and 1993 but successful rearing of pups, though at a sub-optimal level, has occurred since 1994 (see Figures 2 and 3). Figure 2 shows that, despite pup mortality occasionally continuing to feature in annual censuses, the numbers of viable weaned pups has increased to 14 in 2012. However, this could simply be a function of increasing numbers of mature Harbour Seals summering at Teesmouth. By expressing the number of viable pups as a proportion of the maximum numbers of Harbour Seals counted during their summertime haul-outs, Figure 3 demonstrates that this proportion has risen from zero (1989 to 1993) to 15.9% in 2012 with an anomalous 19.4% in 2008. Although still below the normal reproductive rate of 20-30% of a population as described by Reijnders (1982), this could be an important expression of improving environmental conditions within the foraging range of the Teesmouth seals. This would appear to be consistent with a general reduction in the levels of heavy metals in the river sediments since the early 1990s (Mann *et al.*, 2009). It is also possible, however, that this increase in reproduction rate could simply be a function of increasing numbers of mature Harbour Seals summering at Teesmouth, although INCA has anecdotal evidence of large numbers of Harbour Seal remaining in the estuary throughout the year.

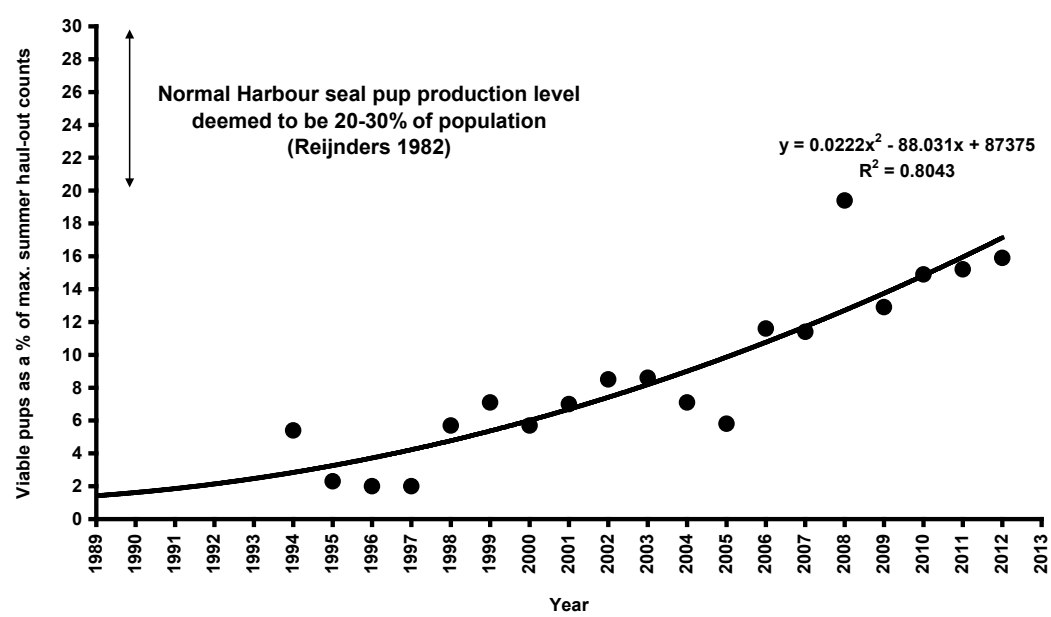


Figure 3: Viable pups as a % of the maximum summer Harbour Seal haul-out counts. Based on Jackson & Wilson (1990), Wilson (1994), Smurthwaite (1996), Turner (2003), Gibson (2005) and Woods (2008 to 2012).

Grey Seal

The few pre-19th Century allusions to Grey Seal on the Yorkshire coast came from the Teesmouth region. Graves (1808) listed “the great seal or sea calf of Pennant’s Zoology” for the Cleveland area. A large seal skull thought to be from a Grey Seal was dredged from the Tees during the 1880s and a large seal thought to be this species was seen off Teesmouth on 18 November 1883 (Lofthouse, 1887). Anecdotal evidence dating from the 1920s of an apparent increase of Grey Seals feeding along the Yorkshire coast consisted of claims by the commercial fishermen that Grey Seals were becoming sufficiently numerous to warrant their control (Fortune, 1928). The source of these and subsequent Teesmouth specimens is probably the Farne Islands off the north Northumbrian coast, which, since the 19th Century

and until recently have supported the largest English breeding population. However, it is now equalled at Donna Nook to the south of the Humber mouth. Of the Grey Seal pups tagged between 1958 and 1980 on the Farne Islands 13 were recovered in the Teesmouth area (see Table 2).

Table 2. Farne Island tagged Grey Seals recovered in the Teesside area 1958 to 1980 (supplied by the Sea Mammal Research Unit)

Code	Date tagged	Date recovered	Journey time (days)	Recovery site
5160	25 Nov. 1958	23 Dec. 1958	29	Hartlepool
6014	24 Nov. 1960	26 Dec. 1961	33	Marske by the Sea
6157	17 Dec. 1960	11 Jan. 1961	26	Little Scar, Hartlepool Bay
6204	17 Dec. 1960	13 Jan. 1961	28	Coatham Rocks
6327	24 Dec. 1960	31 July 1961	39	South Gare, Teesmouth
6476	01 Nov. 1961	01 Feb. 1962	92	Hartlepool
6617	10 Nov. 1961	15 Nov. 1962	370	Bran Sands, Teesmouth
6770	17 Nov. 1961	26 Dec. 1961	39	Marske by the Sea
751	23 Dec. 1964	06 Jan. 1965	14	Little Scar, Hartlepool Bay
1316	22 Oct. 1968	04 June 1970	586	North Sea off Teesmouth
2096	17 Nov. 1970	30 Nov. 1970	14	Marske by the Sea
25097	23 Nov. 1979	20 April 1980	150	Coatham Sands
25146	26 Nov. 1979	06 May 1980	163	Coatham Sands

Table 2 shows that the appearance of Grey Seals in the Teesmouth area within the first twelve months after being tagged ranged from 14 to 163 days, giving a mean arrival time of 45 days.

The maximum annual counts at haul-out sites have ranged from 18 in 1989 to 43 in 2012, the trend being shown in Fig. 1. Breeding has not been recorded and is not expected as the Seal Sands and adjacent sand and mud banks are totally inundated at each tide, leaving no safe nursery sites for pups which cannot take to the water for up to six weeks (INCA 2002).

Dietary studies based on fish skeletal remains identified from 22 faecal samples collected during 1989 on a predominately Grey Seal haul-out at Seal Sands showed that small sized Cod *Gadus morhua*, Whiting *Merlangius merlangus*, Haddock *Melanogrammus aeglefinus*, Flounder *Platichthys flesus*, Dab *Limanda limanda* and Lesser Sand Eel *Ammodytes tobianus* were taken (Wilson, 1994).

Arctic Vagrant Seals

Hooded Seal, a relatively solitary pelagic animal of the North Atlantic, is normally confined to regions of pack ice and ice-flows in high arctic waters, shunning the circulating system of the Gulf Stream. Adults undertake long migratory movements to assemble at moulting areas where they remain from mid-June to mid-July. The eastern population gathers in the Denmark Strait to the east of Greenland. These seals feed on deep water prey taken from the sea bed (Massey & Howes, 2003). In 2004 two Hooded Seals, a juvenile and an adult presumed to have been its mother, were present off the ConocoPhillips jetties in the Tees estuary. The juvenile was rescued by the RSPCA but died in transit to the rescue centre in Norfolk. An autopsy showed rubber gloves, plastic and other debris in its stomach (Gibson, 2005). In November 2011 volunteers from British Divers Marine Life Rescue attended a Hooded Seal stranding at Saltburn-by-the-Sea (Anon, 2012). These would appear to be only

the second and third occurrences in Yorkshire (VC62) waters (see Massey & Howes, 2003).

Bearded Seal *Erignathus barbatus* is normally found in relatively shallow waters along the European, Asiatic and North American coasts of the Arctic Ocean. Its food consists entirely of bottom-living animals including shrimps, crabs, clams, whelks and bottom fish such as Flounder. On 20 January 1999, a specimen, evidently the third English record of this normally non-migratory seal, turned up in Hartlepool Dock, stayed for about two weeks and was much photographed (Gibson 2005).

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Rosemary Beetle *Chrysolina americana* - a new beetle record for Mid-west Yorkshire

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On 21 October 2012, while looking round my garden in the late morning sunshine, I noticed a dark, rounded beetle of medium size at rest on a senescent flower spike of *Agastache* sp. – an ornamental plant in the mint family. Examination of the insect, secured in a glass tube, soon showed that it was not a dark form of Harlequin Ladybird *Harmonia axyridis*, as I had initially thought, but was a much more interesting beast - one which I had never seen before and which had been practically unknown in Britain before the late 1990s.

I provisionally identified it as *Chrysolina americana*, a member of the family Chrysomelidae and sometimes called the 'Rosemary Beetle' after one of its favourite food plants. This beetle is widespread in Mediterranean lands, being associated with plants such as sage, lavender and other Lamiaceae. My identification was kindly verified by Mr. M. L. Denton, who had once found a specimen in Essex but knew of no Yorkshire records. Later Mr. R. Marsh, YNU recorder for Coleoptera, advised us of two earlier records for the county, both from VC61.

When examined closely *C. americana* is a beautiful and striking insect with an overall length of 7-8mm. and a dome-shaped body. It resembles a very large, somewhat elongate ladybird. The upper body surface is shiny, metallic dark green with five narrow orange-brown longitudinal stripes on each elytron. The pronotum bears similar stripes, though fewer in number. The head and legs are black. The insect is distinctive; the only British beetle with which it might be confused by non-coleopterists is *Chrysolina cerealis*, known from only a couple of sites in Snowdonia.

Little had been heard in Britain of *C. americana* before the early summer of 1994 when three specimens were found at the RHS Gardens in Wisley, Surrey, on plants of Rosemary *Rosmarinus*
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officinalis, pot-grown from local stock, which had stood out of doors during the previous winter (Halstead, 1996). Close scrutiny of Rosemary and lavender plants growing elsewhere at Wisley disclosed no further specimens. The source of the infestation remained obscure but the beetle was found, sometimes in considerable numbers, at several other sites in south-east England over the following years (Duff, 2003; Menzies, 2003) and four years later was mapped from 28 UK hectads, including a location near Edinburgh (Cox, 2007).

The (international) trade in garden plants and shrubs is no doubt responsible for the rapid dispersal of this handsome insect across Britain; I myself may unwittingly have helped its spread by transplanting lavenders and Rosemaries from Northampton to Huddersfield on moving house in 2010, though I am not aware of records of *C. americana* from anywhere within 40 miles of my former home.

It is still unclear what conditions are required in Britain for this species to establish a permanent colony, and whether its life cycle in such a colony would be the same as in its native range. Nor have I seen any studies on predation or parasitism on *C. americana* in this country similar to those ongoing for other recent immigrant species such as the Harlequin Ladybird and the Horse-Chestnut Leaf Miner Moth *Cameraria ohridella* (Pocock *et al.*, 2011). Here we have a chunky, colourful, distinctive, garden-dwelling insect; many aspects of whose life history remain obscure. What an attractive subject for the attention of general naturalists! (Particularly for those, such as myself, who are growing less enthusiastic with age for forays across swamp and fen, moor and mountain in pursuit of our obsession). I shall certainly keep my garden Lamiaceae under close scrutiny during the coming summer.

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Field Note - Rhododendron leafhopper in VC64

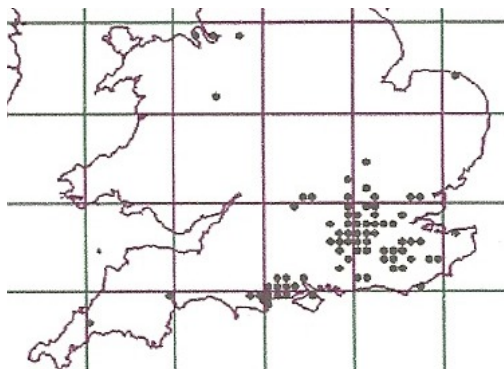
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The Rhododendron leafhopper *Graphocephala fennahi* is an Hemipteran of the family Cicadellidae. It was introduced into Britain from the USA in the 1930s. As its name suggests its food plant is the Rhododendron *Rhododendron ponticum* on which it feeds by sucking sap from the underside of leaves. Rhododendron leafhoppers are handsome and unmistakable insects, c.10mm in length, green and red above and yellow below with a black stripe through the eye. The genus comprises two closely related species distinguishable only by examination of the genitalia but *Graphocephala coccinea* has never been recorded outside North America (Wheeler & Valley, 1980). Rhododendron leafhoppers over-winter as ova laid in the sepals of the flower buds. Adults are seen from mid-summer until November. In sunny conditions they can be found resting on the upper side of leaves, retreating to the underside on perception of danger. When disturbed they not only hop like other leafhoppers but readily fly.

Rhododendron leafhoppers do not cause the extensive damage to leaves that some other species of leafhoppers inflict on fruit trees and, despite high densities found in some populations in Southern England, no economic damage has been observed (*loc.cit.*). In his comprehensive study of Rhododendron pests Antonelli (1980) does not even mention *Graphocephala* species. However, it has recently been suggested that oviposition by *G. fennahi* is a vector for the transmission of the fungus *Pycnostysanus azaleae* which causes Bud Blast Disease on Rhododendron (Anon, 2012).

Figure 1. Distribution map of *Graphocephala fennahi* from the Auchenorrhyncha Recording Scheme.



G. fennahi is one of the target species in the Biological Record Centre RISC (Recording Invasive Species Counts) scheme (Fig. 1). It is mainly confined to Central Southern and South-east England and has not, according to the Auchenorrhyncha Recording Scheme website (www.Ledra.co.uk), spread as far north as expected given the distribution of its host-plant, suggesting either limited climatic tolerance or an inability to traverse the large gaps in the geographic distribution of its food-plant. Range extension is thus thought to be dependent on the transfer of eggs from nursery stock. However, the map shows some pockets outside its main range with one 10km square occupied in Norfolk, one on the Welsh borders and three in Merseyside. To these must be added a Yorkshire location, the landscaped gardens of Temple Newsam House in VC64. This is the most northerly location for the insect and indeed is to the north of the published distribution map. *G. fennahi* is found at Temple Newsam in Rhododendrons by the main lake (SE355322), between the lake and the estate farm, in the Walled Garden and in Rhododendrons in the adjacent woods. In hot weather in high summer it can be numerous. This year hardly provided those conditions but, even so, on 5 November 2012, after two nights of heavy frost, 16 were located in an 80m stretch of Rhododendrons and laurels adjacent to the main lake path. It has been present to our personal knowledge since at least 2000. Temple Newsam originally acquired its nursery stock from the north, from Parcevall Hall Gardens in Wharfedale, but in the last twenty years has sourced its stock from the Midlands. It is, therefore, likely that the colony started in the late 1990s when some Rhododendron plants were acquired from a site in the Midlands. If this is so, the Temple Newsam colony has survived for 12-15 years, which in turn casts doubt on the supposition that *G. fennahi*'s range extension is limited by climatic tolerance.

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Recording in VC65 July 2012

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Introduction

Adrian Norris and John Newbould organised a week's residential survey based at Low Fremington on the River Swale. Terry Crawford, Tony Wardhaugh and Moira Wardhaugh also contributed. This report is a summary of what was achieved.

Records were generated in: 1 x 1km square in VC62
50 x 1km squares in VC65
1 x 1km square in VC66 (Durham)
7 x 1km squares in VC69 (Westmorland with North Lancashire)

A number of squares surveyed in VC65 are now in the administrative county of Durham including NY91 (Bowes) and NY81 (Balderhead) which is barely accessible by road, whilst SD78 (Dentdale) and SD79 (Garsdale) are now in Cumbria. We surveyed a new site in Stang Forest, with a different suite of species compared to an adjacent site surveyed in 2011. We also surveyed at Rutherford Bridge, which is the eastern end of the Brignall Banks Nature Reserve (an SSSI), and which must surely be worth a VC65 visit. The River Greta passes through this woodland, which appears to be accessible from either Brignall or Greta. JAN also visited Nosterfield LNR to record plant galls.

The VC66 visit on Saturday 14 July was to Hell Kettles SSSI (NZ281109) where there are two ponds. Croft Kettle is fed from an underground spring originating in the Magnesian Limestone and is crystal clear while Double Kettle is fed by surface water. The notable botanical species of this site is Great Fen-sedge *Cladium mariscus* at its only known location in the NZ 100km square (see Plate VII, centre pages). On this date WAE took part in the Richmond BioBlitz in NZ10 and all records were added to the NEYEDC files during the day or immediately afterwards.

On Sunday 15 July JAN and AN joined a Botanical Society of the British Isles (BSBI) meeting at Raven Seat (NY863033) to visit How Edge Scars. This area is surely worth a visit by birdwatchers with the farmer telling us of breeding Snipe, Oystercatcher, Lapwing (50 pairs), Ring Ouzel and Curlew.

The summary of species recorded is as follows:

Group	VC65	VC66	VC69	VC62
Vertebrates	20 mammals & 68 birds	1 fish, 5 birds		
Mollusca	557 records	22 records	59 records	7 records
Butterflies	7 species, 17 records		3 records	
Moths	32 records (3 nights with an actinic trap)	1 record	2 records	
Ichneumons	32 species representing 42 records, One new to Yorkshire and many new to VC65.			
Ladybirds	4 species = 8 records	1 record		

Odonata	2 records	1 record		
Orthoptera	1 record			
Plant Galls	251 records in 43 x 1km squares of 62 species on 44 host plants	10 species on six hosts	14 species on 11 hosts	
Other insects	77 species of other insects representing 174 records and 2 woodlice = 2 records			
Flowering Plants	653 records	78 records	51 records	
	1827 records	119 records	129 records	7 records

Data have been sent to the YNU Records Officer, except for Ladybirds and Orthoptera which have been deposited using the recently launched iRecord scheme (<http://www.brc.ac.uk/iRecord/>).

Hell Kettles VC66 (NZ281109)

This is north of the River Tees at Croft adjacent to the A167 and was surveyed with permission of the farmer at North Oxen-le-Fields. The site is a designated SSSI and has National Biodiversity Priority Habitats:

- Aquifer-fed naturally fluctuating water body.
- Hedges
- Neutral grassland

NVC Communities: Small area of W6 Alder–Stinging Nettle woodland; hedges: W21 Hawthorn–Ivy scrub; MG5 Crested Dog’s tail–Common Knapweed grassland but here dominated by Yorkshire Fog *Holcus lanatus* and, in wet areas, MG8 Crested Dog’s-tail–Marsh Marigold grassland; swamp vegetation includes a small area of S2 Great Fen-sedge on the margin of Croft Kettle and S4 Common Reed beds surrounding both water bodies.

Following one of the wettest summers on record, we found luxurious grass growth swamping many smaller herbs. Pignut *Conopodium majus* was present throughout the neutral grassland field together with small numbers of Chimney Sweeper moths *Odezia atrata*. Other neutral grassland forbs included Common Cat’s-ear *Hypochaeris radicata*, Bird’s-foot-trefoil *Lotus corniculatus*, Quaking-grass *Briza media*, Betony *Stachys officinalis* adjacent to Double Kettle, Meadow Buttercup *Ranunculus acris*, Lady’s Bedstraw *Galium verna*, Sheep’s Sorrel *Rumex acetosella* and Self-heal *Prunella vulgaris*, together with Sweet Vernal-grass *Anthoxanthum odoratum*, Timothy *Phleum pratense* and Tufted Vetch *Vicia cracca*.

Between Double Kettle, the larger fishing pond to the north which is fed by surface water, and Croft Kettle to the south fed by an aquifer in the Magnesian Limestone, is a small area of wet grassland typical of the MG8 NVC community. Here, with the Marsh Marigold *Caltha palustris* and Common Spike-rush *Eleocharis palustris*, sedges such as False Fox-sedge *Carex otrubae* and Hairy Sedge *Carex hirta* were noted together with Southern Marsh-orchid *Dactylorhiza praetermissa*.

The vegetation types surrounding the two areas of open water are quite different from one another. Croft Kettle shines bright blue on an aerial photograph, reflecting the fresh supply of alkaline water. JAN has only seen this phenomenon once before at Mottisfont House, Romsey, South Hampshire (VC11). Two species of *Chara* have been reported but none were observed in 2012. Small Alder *Alnus glutinosa* were present on the southern bank. If these

are allowed to develop they will load nutrients (via rotting leaves) into the water body. Great Fen-sedge, which requires high levels of light, low nitrogen and a pH of 8, could be lost if the more common Alder grows larger (Hill *et al.*, 2004). Elsewhere, Common Reed *Phragmites australis* and a small area of Tubular Water-dropwort *Oenathe fistulosa* surround the pond.

Common Reed surrounds Double Kettle, which has fishing platforms in places. Brown Trout was seen on open margins. Other plants of interest included Sharp-flowered Rush *Juncus acutiflorus*, Hard Rush *J. inflexus*, Blunt-flowered Rush *J. subnodosus*, Greater Bird's-foot-trefoil *L. pedunculatus*, Amphibious Bistort *Persicaria amphibia* and Water Forget-me-not *Myosotis scorpioides*.

The northern hedge was a broken Hawthorn *Crataegus monogyna* hedge separating the field from neighbouring arable land, whilst the A167 roadside hedge was also dominated by Hawthorn and included White Bryony *Bryonia dioica* with the plant gall *Jaapiella bryonica*.

Birds included red data species Reed Bunting as well as Sedge Warbler and Moorhen with passage Swift and Oystercatcher; Common Blue Damselfly *Enallagma cyathigerum* was also recorded.

The VC65 surveys based at Low Fremlington 54°23'N 1°55'W

The principal objective of the surveys was to obtain invertebrate data in little-worked areas of North-west Yorkshire, taking the opportunity to record other groups when appropriate. Recording sites were selected randomly from previously unvisited squares where safe parking could be achieved. There was a small amount of casual recording whilst driving along.

Designations: Many of the places surveyed are located within the Arkengarthdale, Gunnerside and Reeth SSSI, Bowes Moor SSSI, Lune Forest SSSI, the Mallerstrang – Upper Swaledale SSSI and the Yorkshire Dales National Park.

Mammals

Without doubt, the most frequently recorded mammal was Rabbit and this was certainly under-recorded as we tended to note only the adults and not places where there were droppings. There was a single record of Stoat as a road kill at Healaugh (SE020990) and a single record of Common Rat, also a road kill, at Feetham Heights (SE999979). This summer we recorded just three Hedgehogs, all road kills, at Reeth (SE037995), Langthwaite (NZ005024) and West Park (NY995199). In 2011, we recorded a total of 13 road kills in three days in VC65.

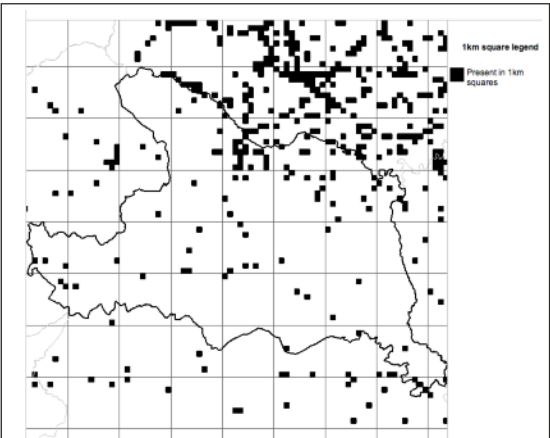


Figure 1. 1km square distribution of Hedgehog in VC65.
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However, the most interesting records were in some way the most disappointing. The evening of 12 July was the warmest of the week. AN and JAN walked towards Reeth and, at the place where Arkle Beck runs alongside the B6270 (to the east of the road bridge) is a tree-lined patch of still water (SE042991). Here we used a heterodyne bat detector loaned by the Sutton Poyntz Biodiversity Group. Four species of bat were tentatively recorded but readings were between 17 and 80mhz. Noctule was seen flying at tree height at dusk. There was a reading at 48mhz, which undoubtedly was Daubenton's Bat as three or four were seen skimming low over the water. We also had readings around 40mhz, which was likely to be Common Pipistrelle and 55mhz from Soprano Pipistrelle. No bats were recorded in the rougher water in open countryside 300m west.

Russ (2012) comments that using a heterodyne detector, whilst ideal for introducing people to the different calls of bats, is dependent on the experience and ability of the user and also on whether a good visual observation can be made. This reduces the number of species where a determination can be made with certainty, especially if there is only a brief fly-past. Russ goes on to recommend a frequency-division (FD) detector allowing recordings to be made. Broadband systems are available enabling simultaneous monitoring across the full range of bat frequencies. Basic FD recordings do not retain amplitude, allowing only limited analysis, whilst more expensive recorders restore amplitude information, enabling a more detailed sonogram analysis. The more sophisticated FD/zero system is the Anabat recorder with an ability to capture and analyse information on call structure and frequency parameters. This system comes complete with software AnalookW, which produces sonograms using zero analysis rather than the more common FFT. Such equipment would allow an 80% chance of differentiation between various other *Myotis* species e.g. Whiskered Bat and Natterer's Bat, which have a range of 40-60mhz and could possibly have been present.

Birds

Just sixty-six bird records were collected during the visit. These ranged from four records of House Sparrow, mostly in villages but at Croft, south of the Durham border, a flock was feeding in a cornfield. Yellow Wagtail was seen on wires by the Yorkshire Water pumping station adjacent to Calf Hall Wood, Richmond, with Grey Wagtail present on rocks in the River Swale at Grinton Bridge and later that evening WAE reported Spotted Flycatcher on willows at the same location. Our host (Mark Stocks) reported that Kingfisher was often seen in the same area.

Our Sunday visit to Raven Seat was most interesting. This farm is virtually on the old Westmorland border west of Keld along a little-used road. Snipe and three Ring Ouzel were noted as we approached the farm. Oystercatcher, Lapwing and Curlew were calling to the west of the farm with all five birds breeding in the area. Elsewhere, Oystercatcher was seen most days with the largest number flying over being seven at Crackpot. Mark Stocks reported that Lapwing numbers have crashed in the Swaledale valley around Fremington but they were present in small numbers at Balderhead and Hunderthwaite Moor on our visits (both in VC65 but in the administrative county of County Durham). WAE insisted on stopping in a lay-by off the A66 adjacent to Bowes Moor where breeding Redshank complained bitterly for the 30 minutes or so that he swished his sweep net. We had three locations where Curlew was probably breeding and two places where Swallows were probably breeding.

Mollusca

645 records were located by the main members of the group which included AN, TC, TW and MW. The wet conditions may have resulted in slugs becoming more common and some smaller snail species being rarely noticed. Our results found most species of slugs to be in small numbers, whilst the proportions of smaller snails appeared to be much the same as normal. Amongst the VC69 records we were able to add another site for *Vertigo alpestris* at Oxenthwaite (NY823119). This snail is usually found on mossy limestone walls shaded by trees.

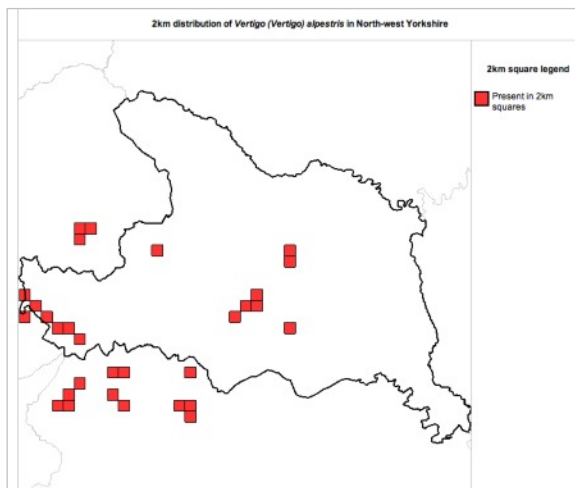


Fig.2 Tetrad Distribution of *Vertigo alpestris* in VC65.

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It is perhaps worthy of note that the only new VC record for the trip was the location and identification of *Lymnaea (Stagnicola) fusca* at the ponds at Hell Kettles. The site proved to be very poor in molluscs, due mainly to the poor quality of the herbage surrounding the site. The freshwater molluscs proved to be particularly few both in numbers and in variety. Several of the ponds seem to have disappeared over the years, despite the very wet weather which has prevailed in recent years. All of the molluscan records will be placed on the NBN via The Conchological Society of Great Britain & Ireland.

Entomology

Lepidoptera: a disappointing week due to poor weather, with TC and JAN recording just eight species of butterfly with Ringlet the most frequent. TC found Large Skipper and Speckled Wood at Lartington. On the moors, Green-veined White was seen at 380m at How Edge Scars and at 350m at Balderhead. Small Tortoiseshell, Red Admiral, Meadow Brown, Ringlet and Speckled Wood were seen at the Richmond BioBlitz. We used an Actinic moth trap at Low Fremington on three evenings with disappointing results - just a dozen records including Garden Pebble *Evergestis forficalis* and Dusky Brocade *Apamea remissa*. Chimney Sweeper was recorded in a number of places on the Magnesian Limestone east of Richmond in the Croft-on-Tees area, where TC recorded Narrow-bordered 5-spot Burnet *Zygaena lonicerae* and JAN recorded Mullein Moth *Shargacucullia verbasci* larvae. For JAN, the most interesting record was of the Yarrow Plume-moth *Gillmeria pallidactyla* in MG1 grassland on a roadside verge north of Bielby. At Oxenthwaite Bridge in VC69 TC recorded Muslim Footman *Nudaria mundana*, whose larvae feed on small lichens, often on stone walls.

Ladybirds: JAN recorded 2-spot Ladybird *Adalia 2-punctata* at Nosterfield with 7-spot Ladybird *Coccinella 7-punctata* at Nosterfield and Croft-on-Tees in the lowlands and at 350m above Fremington on Stinging Nettle *Urtica dioica*. The national recorder Dr Helen Roy

has now verified these records for the national Ladybird Recording Scheme. WAE recorded Cream-spot Ladybird *Calvia quatuordecimguttata* at Bowes and Stone House Bridge in Dentedale while 7-spot Ladybird and the spotless *Rhizobius litura* were at Richmond.

Parasitica: The rare ichneumon *Banchus palpalis* was collected by WAE at Balderhead (NY903187) and is an addition to the Yorkshire list. *Banchus* species have become very scarce throughout the UK since the middle of last century. The additions to the VC65 list are *Ctenochira gilvipes* from Bowes and Gardale, *Acrotomus succinctus* from Richmond, *Glypta mensurator* from Stang Forest, Newby Head Gate and Dent Head, *Dusona bicoloripes* from Richmond, *Diadegma latungula* from Bowes, *Phrudus monilicornis* from Richmond, *Probles microcephalus* from Stang Forest, *Orthocentrus fulvipes* from Richmond, *Diplazon annulatus* from Dent Station, *Amblyteles armatorius* from Richmond and *Tycherus bellicornis* and *Tycherus nigridentis* from Bowes. Some of these are quite common in more southerly parts of the county. A couple of dryinid wasps (parasites of leafhoppers but members of the Aculeata, not Parasitica) got into WAE's collecting bottle by mistake (either theirs or his) - *Anteon jurineanum* from the moors between Ribbleshead and Dentedale (SD790813) and *Anteon pubicorne* from Bowes (NY997134).

Orthoptera: WAE swept a Common Green Grasshopper *Omocestus viridulus* on moorland above Balderhead (NY903187).

Odonata: JAN noted two species in VC65, Common Blue Damselfly *Enallagma cyathigerum* and Blue-tailed Damselfly *Ischnura elegans*, both at Nosterfield.

Plant Galls: JAN assisted by WAE made 250 records from 45 hosts in VC65. Of these, Hawthorn provided 52 records, 21% of the total, with 25 each of the records being the galls *Phyllocoptes goniothorax* and *Eriophyes crataegi*. There was also a single record of the fungal gall *Gymnosporangium clavariiforme* and one of the aphid *Dysaphis crataegi*. Sycamore *Acer pseudoplatanus* was the next most common host with 28 records of two gall mites, *Aceria pseudoplatani* forming an erineum and *Aceria cephalonea* forming small 'nails'. There were 19 records from Ash *Fraxinus excelsior* and just two from oak, which is rare in Swaledale. A single record of the Oak Apple *Biorhiza pallida* at Nova Scotia (NY992159) on a young tree and the Common Spangle gall *Neuroterus quercusbaccarum* on a street tree at Croft-on-Tees (NZ288097) were the only oak gall wasp records. Both are new to square NY within Yorkshire. WAE recorded the Cola-nut Gall *Andricus lignicolus* on Pedunculate Oak at Richmond.

In *The Naturalist* 137, pp48-49, JAN reported on the occurrence of the mite gall *Aceria tenuis* on Cock's-foot *Dactylis glomerata* and the Weevil gall *Apion rubens*, both in VC65. In 2012, he recorded both galls again at Raven Seat (NY863033) at 400m. This is the second report of *Aceria tenuis* and the third report of *Apion rubens* in VC65.

Table 2. Interesting Plant Galls from VC65.

Gall causer	Host plant	Group	Location
<i>Aceria fraxinicola</i> = <i>A. fraxini</i>	Ash <i>Fraxinus excelsior</i>	Gall Mite	Calf Hall Wood (NZ146006) and Low Whita (SD999979)
<i>Nasovonia nigra</i> = <i>N. compositella</i> ssp. <i>nigra</i>	Hawkweeds <i>Hieracium</i> sp.	Aphid	Reeth Bridge (SE042991)
<i>Teraneura ulmi</i>	Wych Elm <i>Ulmus glabra</i>	Aphid	Sandbeck West Bridge (SE167998) and Low Fremington (SE042991)

Gall causer	Host plant	Group	Location
<i>Eriosoma patchiae</i> (See Plate IV, centre pages)	Wych Elm <i>Ulmus glabra</i>	Aphid	Cotherstone (NZ006204 & NZ011200), Crackpot (SD974967), Croft (NZ285102), VC69 at Oxenthwaite (NY823119)
<i>Dysaphis crataegi</i>	Hawthorn <i>Crataegus monogyna</i>	Aphid	Nosterfield LNR (SE277793)
<i>Rhopalomyia millefolii</i>	Yarrow <i>Achillea millefolium</i>	Gall midge	Roadside verge north of Bielby(SE117941)
<i>Cronartium ribicola</i>	Red Currant <i>Ribes rubrum</i>	Fungal gall	Calf Hall Wood
<i>Jaapiella bryoniae</i>	White Bryony <i>Bryonia dioica</i>	Gall midge	Crow Beck (NZ277098) and in VC66 Croft-on-Tees (NZ285106)
<i>Gymnosporangium clavariiforme</i>	Hawthorn <i>Crataegus monogyna</i>	Fungal Gall	Feetham Holm (SD999980)
<i>Livia juncorum</i>	Toad Rush <i>Juncus bufonius</i>	Psyllid gall	Balderhead (NY904187)

A number of the plant gall records appear to be interesting but little information on the status of these species is available on the NBN Gateway.

Flowering Plants and Ferns

Broad Habitat types in the survey area:

1. Rivers: River Swale and Arkle Beck in Swaledale. River Greta (VC65, now within County Durham), River Tees at Croft on the County Boundary and Cotherstone (VC65 County Durham).
2. Boundary and linear features, hedgerows
3. Inland rock outcrops and scree habitats
4. Upland mixed ashwoods in the upper dale
5. Lowland mixed deciduous woodland (west of Richmond)
6. Wet woodland in valley bottoms
7. Upland hay meadows
8. Upland flushes, fens and swamps.

Surveys: No systematic surveys of the vegetation of the Rivers were undertaken nor invertebrate sampling. This was due to the high water levels and brown colouration of the fast flowing water following heavy rainfall during the previous week. Birds associated with rivers were noted.

Hedgerows were surveyed for invertebrates only, with no systematic vegetation surveys. However, the principal woody plants in the upper dale were Sycamore, Ash, Hazel *Corylus avellana* and Hawthorn. The ground flora included Dog's Mercury *Mercurialis perennis*, Ivy *Hedera helix* and Wood Melick *Melica uniflora* was plentiful north of Colt Park Wood SE059987.

Inland rock outcrops and scree habitats: The Chert quarries at Fremington Edge proved too difficult to survey but we did manage the rock areas above Oxnop Beck Head (SD938946) where Wall-rue *Asplenium ruta-muraria*, Black Spleenwort *A. adiantum-nigrum* and Brittle

Bladder-fern *Cystopteris fragilis* were located in rock crevices away from the grazing sheep. This area was really species-poor acid grassland with Sheep's Fescue *Festuca ovina* and Heath Bedstaw *Galium saxatile* forming NVC U4 community. There were surprises here such as Wild Strawberry *Fragaria vesca* at 498m.

It was How Edge Scars (NY866026), visited during the BSBI meeting led by Linda Robinson, the BSBI recorder for VC65, which proved to have the most interesting habitat of this type. Here a tufa spring provided Common Butterwort *Pinguicula vulgaris* and the wet rocks had Marsh Hawk's-beard *Crepis paludosa*, Primrose *Primula vulgaris*, Aspen *Populus tremula*, Hazel, Rowan *Sorbus aucuparia* and Bilberry *Vaccinium myrtillus*. The fern flora here included Beech Fern *Phegopteris connectilis* and Oak Fern *Gymnocarpium dryopteris*.

Upland Mixed Ashwoods: of NVC classification W9 Ash, Rowan and Dog's Mercury (Rodwell, 1991). Whilst preparing this report, it has been necessary to compare the survey results with representations of woodland boundaries on the 1:25,000 maps and with aerial photographs. This has been undertaken using the Bedfordshire Natural History Society's Grab a Grid Reference web page. The woodlands appear much larger on the aerial photographs than on the OS maps. The software for geo-rectifying such images is beyond the scope of a natural history society¹. However, this increase in Dales woodland cover is in line with Hooftman and Bullock (2012) who demonstrate an increase in woodland cover in Dorset (VC9).

Woodland edges surveyed included Intake Wood above Fremington (SE04599), Rutherford Bridge (NZ034121), Brokes Lane (SE152995) and north of Throsgate Wood adjacent to Sand Beck west bridge (SE167997). We surveyed a ride in the Stang Forest at Doorgill Bridge (NZ023085) and some woodland at Thwaite (NZ035112). Typically Ash and Hazel are important in the understory of these Dales woodlands, with a significant amount of Sycamore. Rowan and Downy Birch *Betula pubescens* amongst the tree layer. Unlike in 2011, when we surveyed Gunnerside Gill, Alder was missing from the steep valley sides. Oaks were largely absent except for a few trees seen on a steep east-facing valley slope at Crackpot (SD975969). Linda Robinson considers that oak is only found at How Edge Scars and Grinton churchyard (pers. comm.). However, Rodwell illustrates transition zones of oak–birch woodland with the Ash–Rowan–Dog's Mercury woodlands at Kisdon Force (SD899011), an area we visited on the YNU V65 excursion in 2009. Wych Elm was a constant whilst English Elm *Ulmus procera* was rare. Hawthorn and Blackthorn *Prunus spinosa* were found mainly on the lower slopes. JAN was surprised how rarely Bird Cherry *P. padus* appeared on his woodland lists. Dog Rose *Rosa canina* and Honeysuckle *Lonicera periclymenum* were generally present as scrub. Amongst the herbs, Dog's Mercury was usually present, and Foxglove *Digitalis purpurea* indicated the more acidic nature of the soils. Crosswort *Cruciata laevipes*, Herb Robert *Geranium robertianum*, Strawberry, Herb Bennet *Geum urbanum* and Sweet Cicely *Myrrhis odorata* were found on the wood edges at lower altitudes.

The Stang Forest survey included roadside edges, a beck and a woodland ride. JAN has surveyed many plantations both in Yorkshire and Dorset and generally find that native trees and plants are found on the fringes and along woodland rides. Here there are none, with wild habitat represented only by moorland gill vegetation. However, the 1904 map held by North Yorkshire CC Archive Service shows moorland with no history of woodland. We are left to speculate whether the moorland or the current Sitka Spruce forest is the better carbon bank.

¹ Up-to-date map information can often be found on OpenStreetMap.org and we recommend anyone visiting a new area to consult it as well as the official OS map. It can also be edited if observations do not correspond with what is shown. Eds.

Lowland mixed deciduous woodland: There are a number of these woods in the Swale valley in the Richmond area. We made a very brief visit (curtailed due to heavy rain and poor light) to the National Trust's Calf Hall Wood (NZ146005) where Ash and Beech *Fagus sylvatica* had a ground flora of Ramsoms *Allium ursinum*. Shrubs including Red Currant *Ribes rubrum* are present on a clay soil, showing the potential for a visit earlier in the season.

Wet woodlands in valley bottoms: During the survey, we visited a number of places in valley bottoms with rivers. Here, in the western areas, there is NVC W7 Alder–Ash–Yellow Pimpernel woodland community where we recorded mainly plant galls. In the eastern lowland areas e.g. along the River Tees at Croft is the lowland community, which may also contain Crack Willow *Salix fragilis* agg. Typical trees and shrubs present in the W7 woodland (in addition to Alder) include: Downy Birch, Ash, Rowan, willows and Hazel. Alder is found in every 10km square in VC65. Grime *et. al.* (2007) describe it as having an altitudinal limit of 250m and requiring the moist soils of river banks and other waterlogged habitats. Its seeds are heavy and dispersed by wind or water, restricting potential sites for establishment. Recording of Alder was to a minimum of six figures to allow future mapping along riverbeds. Typical places for W7 Alder included Low Fremington – Reeth Bridge (SE042991), Thwaite Beck (NZ035112), Rutherford Bridge (NZ034121), Low Whita (SE00098) and Calf Hall Wood (NZ146006).

Lowland Acid Grassland: Whilst surveying along High Lane on the south side of the Swale valley (SD99009752), I discovered particularly herb-rich acid grassland at a little over the 300m contour. The JNCC habitat description (Anon, 2011) has a rather loose definition of upland and lowland, suggesting a boundary at around 300m. With around 40 plant species recorded in a small area, this is a good example of this habitat type although the size of the grassland area would cause difficulty in mapping as I estimate it is less than 0.25ha. Grasses ranged from Wavy Hair-grass *Deschampsia flexuosa*, Sheep's Fescue, Mat-grass *Nardus stricta*, Common Bent *Agrostis capillaris*, Quaking-grass, Sweet Vernal-grass to the larger Yorkshire Fog. Herbs included the Lady's-mantle *Alchemilla glabra*, rare Hardheads *Centaurea nigra*, Common Rock-rose *Helianthemum nummularium*, Tormentil *Potentilla erecta*, Sheep's Sorrel, Devil's-bit *Succisa pratensis* and Lady's Bedstraw *Galium verum*. This is a complex mix with a nearest fit to the NVC community U1 Sheep's-Fescue–Common Bent–Sheep's Sorrel.

Upland Hay Meadows: This was a major disappointment of the timing of our survey. Despite heavy rain, the vast majority of hay meadows had either been cut or were cut during our visit and so no surveys were possible. Swaledale is described as being one of the UK's important centres for this habitat type (Anon, 2011). We did look at a few roadside verges which are also included in this habitat type.

Upland Flushes, Fens and Swamps: The JNCC definition of this broad habitat includes wetlands in upland situations which receive water and nutrients from surface and/or groundwater sources as well as rainfall. Such areas are typically found above the limit of agricultural enclosure (Anon, 2011). Two places in particular were typical of this broad habitat type. Walking south from Raven Seat to How Edge Scars, we passed across moorland with MG6 Star Sedge -Sphagnum communities with the Soft Rush sub-community. Here Brown Bent *Agrostis canina* was interspersed with Heath Rush *Juncus squarrosus* and Mat-grass. Wet flushes featured Star Sedge *Carex echinata*, Marsh Thistle *Cirsium palustre* and Marsh Violet *Viola palustris*.

At High Oxnop, we found an interesting example of an upland flush running along the west roadside verge (SD929964) at around 400m (see Plate VII, centre pages). Here an example of NVC community MG9 Yorkshire Fog–Tufted Hair-grass was present with around 30 plants recorded in a 30m stretch. My attention was drawn to this verge by a rich display of Common Spotted Orchid *Dactylorhiza fuchsii* together with the ever-present hybrid seen in wet situations. Grasses present included Sweet Vernal-grass *Anthoxanthum odoratum* and Quaking-grass. Lady’s Mantle was plentiful. In the running water, there was a starwort and Brooklime *Veronica beccabunga*. There were three species of rush including Soft Rush *Juncus effusus*, Jointed Rush *J. articulatus* and Round-fruited Rush *J. compressus*. Common Twayblade *Listera ovata* and Lesser Spearwort *Ranunculus flammula* were also present.

Botanical Data were assembled in Excel with an output showing a small range of the features tabulated in Plantatt (Hill *et al.*, 2004) with reference particularly to Ellenberg Indicator Values. Two of the roadside verge communities at High Oxnop (SD929964) and at High Lane (SD990975) were small discreet areas. At High Oxnop 36 species were identified, of which 35 are natives and just one, Sweet Cicely, is classed as a neophyte introduced after 1500AD. At High Lane all 40 plants found are considered native.

Table 3. Ellenburg Indicator Values on two botanical survey sites 2012.

Ellenburg values	Light requirements	Water requirements	pH	Nitrogen levels
High Oxnop	6.95	6.54	5.7	4.5
High Lane	6.8	5.7	5.2	4.1

For light a value of 7 reflects well-lit places with some partial shade.
 For water a value of 7 indicates that plants are mainly in constantly moist or damp soils but not wet. Interestingly, in 2012 the High Oxnop site was mainly a stream.
 A pH value below 6 indicates moderately acid soils whilst nitrogen levels of 4-5 are indicators of sites of moderate fertility. A repeat survey in perhaps ten years time would indicate any change.

The list of UK Biodiversity habitats is an interesting mix. Two significant habitats for birds are excluded from this list. The one major habitat we were seeing is the Yorkshire Fog – Soft Rush pasture NVC MG10 community. In particular, Averis *et. al.* (2004) discuss the sward typical of acid grassland communities, with large stands of Soft Rush together with Mat-grass, Sweet Vernal-grass, Sheep’s Fescue and Heath Bedstraw. It was this type of grassland where we observed breeding Redshank and Curlew together with Oystercatcher, Snipe and Lapwing. The second excluded habitat, important for smaller birds, is scrub, which during our surveys occasionally included small areas of the NVC W23 European Gorse–Bramble community.

There are still many 1km squares we have not recorded in VC65, including Gilling West, Scotch Corner (SW), Marrick Moor, Reeth High Moor and Muker Moor. Another session has been arranged commencing on 1 July 2013 and finishing at Nosterfield LNR for the VC65 YNU Excursion meeting on 6 July 2013.

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Botanical Report for 2012

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First: corrections to last year's report. Mike Wilcox informs me that the record of *Juncus x diffusus* at Terrington Moor in VC62 is incorrect. Vince Jones sent the specimen to him and he redetermined the plant as *Juncus effusus*. I am advised that the record of "*Luzula x danica* – *Luzula multiflora* ssp. *multiflora* x *Luzula multiflora* ssp. *congesta*" found in VC65 should read: "*Luzula multiflora* ssp. *multiflora* x ssp. *congesta*, M. Wilcox, B.A.Tregale & L. Robinson, (det. M.Wilcox, 20/07/2011, pending further study)." The name *Luzula x danica* would be used if the taxon was treated at species level but, as we are treating plants at subspecies level, the name is incorrect and no other subspecies name has been published for the hybrid.

This year's weather has had dramatic effects on many of our plants. The trees and shrubs flowered prolifically in spring and were beautiful. Due to the very frequent rain many plants grew much taller than usual. A most impressive sight in August was the mass of literally hundreds of Autumn Gentians *Gentianella amarella* in the YWT reserve at Ledsham Bank, some of which were a foot tall instead of their usual three or four inches.

Uncommon plants continue to be found throughout the County. It is good to know that the Lizard Orchid *Himantoglossum hircinum*, found in 2011 near Doncaster, has flowered again in 2012. Sea Aster *Aster tripolium* has been seen well inland on a salted road verge at Lelley. Royal Fern *Osmunda regalis* is gracing a pond outflow area near Guisborough and has also been re-recorded on Thorne Moors. *Myosotis x bollandica* (*M. stolonifera* x *M. secunda*), which was only recently identified in the Forest of Bowland, has now been found on the edge of a beck at Beamsley and also in Widdale and East Stonesdale.

Many alien plants have been recorded in 2012, a considerable number of which have appeared in Yorkshire only in the last decade. More details of these and of the interesting native plants can be seen in the lists which follow.

VC61 South-east Yorkshire						
Taxon	Vernacular	Site	Grid ref	Recorder	Date	Notes
<i>Geranium columbinum</i>	Long-stalked Crane's-bill	Well Dale Plan-tation, Cowlam	SE9765	P.Nuttall	17.6.12	
<i>Oenanthe fluviatilis</i>	River Water-dropwort	Struncheon Hill	TA0750	R.Goulder	23.8.12	
<i>Rumex maritimus</i>	Golden Dock	Dry bed of Gipsy Race near Rudston	TA1067	P.J.Cook	18.7.12	
<i>Aster tripolium</i>	Sea Aster	Nuttles Lane, Lelley	TA2032	P.J.Cook	21.10.12	Road verge salt zone
<i>Eleogiton fluitans</i>	Floating Club-rush	Holderness Drain, Tickton Bridge	TA0742	R.Goulder	23.8.12	
<i>Eleocharis uniglumis</i>	Slender Spike-rush	Nunburnholme meadow	SE8447	P.J.Cook	15.6.12	
<i>Arrhenatherum elatius</i> var <i>bulbosum</i>	Onion Couch	Oxlands Dale, Huggate	SE8956	P.J.Cook	10.8.12	Unusual in CG4 grass-land
<i>Parapholis strigosa</i>	Hard-grass	A1033 Hedon bypass	TA1927	P.J.Cook	18.10.12	Road verge salt zone
VC62 North-east Yorkshire						
Taxon	Vernacular	Site	Grid ref	Recorder	Date	
<i>Actaea spicata</i>	Baneberry	Gilling, wood	SE6276	G.Smith	27.5.12	
<i>Cynoglossum officinale</i>	Houndstongue	Hutton Cor, pathside	SE7088	G.Smith	9.6.12	
<i>Dactylorhiza praetermissa</i>	Southern Marsh-orchid	Castle Howard arboretum	SE7069	G.Smith	6.6.12	
<i>Daphne laureola</i>	Spurge Laurel	Ashberry, wood edge	SE5784	G.Smith	16.3.12	
<i>Daucus carota</i>	Wild Carrot	Ampleforth, field edge	SE5877	G.Smith	19.8.12	
<i>Erigeron acer</i>	Blue Fleabane	Broughton, road edge	SE7771	G.Smith	8.9.12	
<i>Gagea lutea</i>	Yellow Star of Bethlehem	Nunnington riverbank	SE6794	G.Smith	31.3.12	
<i>Genista anglica</i>	Petty Whin	Hawnby Moor	SE5391	G.Smith	20.5.12	
<i>Helleborus viridis</i>	Green Hellebore	Ashberry, wood edge	SE5784	G.Smith	16.3.12	
<i>Lithospermum officinale</i>	Gromwell	Hinderley, wood edge	SE7570	G.Smith	8.9.12	
<i>Ophrys apifera</i>	Bee Orchid	Gilling, grass-land	SE6075	G.Smith	24.6.12	
<i>Ophrys insectifera</i>	Fly Orchid	Hutton Cor Woods	SE7088	G.Smith	9.6.12	
<i>Orchis ustulata</i>	Burnt Orchid	Yatts Farm Grassland	SE8088	G.Smith	4.6.12	
<i>Orobanche elatior</i>	Knapweed Broomrape	Broughton, verge	SE7672	G.Smith	22.7.12	
<i>Osmunda regalis</i>	Royal Fern	Guisborough Moor, pond outflow	NZ636135	L.Winter	26.8.12	

<i>Paris quadrifolia</i>	Herb Paris	Gilling, wood	SE6276	G.Smith	27.5.12	
<i>Saxifraga granulata</i>	Meadow Saxifrage	Ashberry, beck-side	SE5784	G.Smith	16.3.12	
<i>Saxifraga granulata</i>	Meadow Saxifrage	Helmsley grass bank	SE6282	G.Smith	20.5.12	
<i>Silene noctiflora</i>	Night-flowering Catchfly	Welburn, field edge	SE7167	G.Smith	16.10.12	
<i>Stellaria nemorum</i>	Wood Stitchwort	Helmsley river-side	SE6282	G.Smith	26.5.12	
<i>Trifolium striatum</i>	Knotted Clover	Hutton Cor pathside	SE7088	G.Smith	9.6.12	

VC63 South-west Yorkshire

Taxon	Vernacular	Site	Grid ref	Recorder	Date	
<i>Calamagrostis canescens</i>	Purple Small-reed	Thorne Moors	SE71	D.R.Grant		
<i>Cladium mariscus</i>	Great Fen-sedge	Thorne Moors	SE724156	D.R.Grant		
<i>Myosoton aquaticum</i>	Water Chickweed	Old Moor RSPB Reserve, stream to east	SE4201	D.R.Grant		
<i>Hieracium cheriense</i>	Cher Hawkweed	Dearne Valley Country Park	SE353068	D.R.Grant		
<i>Hieracium fictum</i>	Lacerate-leaved Hawkweed	Thorne Moors	SE71	D.R.Grant		
<i>Osmunda regalis</i>	Royal Fern	Thorne Moors	SE71	D.R.Grant		
<i>Rubus anisacanthos</i>	bramble	Millhouse Green	SE2002	D.R.Grant		
<i>Rubus echinatus</i>	bramble	Dearne Valley Country Park	SE353068	D.R.Grant		
<i>Rubus incurvatiformis</i>	bramble	Scammonden Reservoir	SE0416	Y.N.U. (D.R.Grant)	11.8.12	
<i>Rubus lindebergii</i>	bramble	Scammonden Reservoir	SE0416	Y.N.U. (D.R.Grant)	11.8.12	
<i>Rubus scissus</i>	bramble	Scammonden Reservoir	SE0416	Y.N.U. (D.R.Grant)	11.8.12	
<i>Rubus lanaticaulis</i>	bramble	Scammonden Reservoir	SE0416	Y.N.U. (D.R.Grant)	11.8.12	
<i>Rubus rufescens</i>	bramble	Birdwell Wood LNR	SE3401	D.R.Grant		
<i>Ulex gallii</i>	Western Gorse	Scammonden Reservoir	SE0416	Y.N.U. (D.R.Grant)	11.8.12	
<i>Utricularia minor</i>	Lesser Bladderwort	Thorne Moors	SE720163	D.R.Grant		

VC64 Mid-west Yorkshire

Taxon	Vernacular	Site	Grid ref	Recorder	Date	
<i>Agrimonia procera</i>	Fragrant Agrimony	Sherburn-in-Elmet, laneside	SE484323	C.S.V.Yeates	15.7.12	
<i>Anthriscus caucalis</i>	Bur Chervil	Fairburn Ings RSPB Reserve, grassy bank	SE165473 1st record	P.P.Abbott	1.6.12	

<i>Carex ericetorum</i>	Rare Spring-sedge	Ledsham Bank YWT reserve	SE461301	K.Walker		
<i>Descurania sophia</i>	Flixweed	Esholt water treatment works	SE102399	D.Broughton	27.5.12	
<i>Descurania sophia</i>	Flixweed	Knostrop water treatment works	SE324303	D.Broughton	15.7.12	
<i>Diphasiastrum alpinum</i>	Alpine Clubmoss	Ingleborough	SD739748	B.Burrow		
<i>Dryopteris oreades</i>	Mountain Male-fern	Fallfoot Cliffs	SD737745	B.Burrow		
<i>Dryopteris submontana</i>	Rigid Buckler-fern	South House Pavement	SD776744	Craven Cons. Group	30.5.12	
<i>Epilobium x novae-civitatis</i>		Baildon, waste ground	SE151380	B.A.Tregale det. M.Wilcox	12.8.12	
<i>Festuca rubra</i> ssp. <i>megastachys</i>	Red Fescue	Baildon, waste ground	SE151380	B.A.Tregale M.Wilcox det. M.Wilcox	12.8.12	
<i>Fritillaria meleagris</i>	Fritillary	Swinsty Reservoir	SE197527	B.N.Brown	20.4.12	
<i>Geum macrophyllum</i> x <i>G. urbanum</i>		Shiple Glen, pathside	SE130388	M.Wilcox	18.6.12	
<i>Helleborus viridis</i>	Green Hellebore	Collingham, woodland	SE374457	M.Smith	12.4.12	
<i>Heracleum sphondylium</i> x <i>H.mantegazzianum</i>		Great Preston, lake shore	SE404278	D.Broughton	10.6.12	
<i>Hieracium lintonii</i>	Linton's Hawkweed	Kilnsey quarry	SD967672	D.R.Grant T.Schofield		
<i>Hieracium tricolorans</i>	Three-coloured Hawkweed	Wharfe, Long Scar	SD786698	D.R.Grant T.Schofield		
<i>Holcus x hybridus</i>		Baildon, old mill site	SE152381	M.Wilcox C.Stace det. M.Wilcox	29.8.12	
<i>Hypericum montanum</i>	Pale St. John's-wort	Linton, pasture	SE386469	P.P.Abbott, M.Smith, D.Smith	22.5.12	
<i>Myosotis stolonifera</i>	Pale Forget-me-not	Beamsley, beck-side	SE092521	B.N.Brown	1.8.12	
<i>Myosotis x bollandica</i>		Beamsley, beck-side	SE092521	B.N.Brown M.Wilcox det. M.Wilcox	4.8.12	
<i>Onopordum acanthium</i>	Cotton Thistle	Linton, pasture	SE385468	P.P.Abbott	12.7.12	
<i>Parentucellia viscosa</i>	Yellow Bartsia	Knostrop, site of old power station	SE341302	D.Broughton	15.7.12	
<i>Polystichum x bicknellii</i>		Hackfall Wood	SE234772	B.N.Brown	13.11.11	

<i>Potentilla crantzii</i>	Alpine Cinquefoil	South House Pavement	SD775740	Craven Conservation Group	30.5.12	
<i>Primula elatior</i>	Oxlip	Yeadon, Engine Fields Reserve	SE205410	D.Broughton	6.4.12	
<i>Ribes spicatum</i>	Downy Currant	Nidd Gorge, woodland	SE328580	M.Canaway	8.10.11	
<i>Thalictrum flavum</i>	Common Meadow-rue	Harewood, roadside	SE346450	M.Smith	6.6.12	
<i>Trifolium fragiferum</i>	Strawberry Clover	Cawood	SE599378	J.Payne	8.8.12	
<i>Trifolium fragiferum</i>	Strawberry Clover	Fairburn Ings RSPB Reserve, pasture	SE453274	P.P.Abbott	14.8.12	
<i>Vicia lutea</i>	Yellow Vetch	Bolton Abbey, roundabout	SE070528	N.Vernon		
VC65 North-west Yorkshire						
Taxon	Vernacular	Site	Grid ref	Recorder	Date	
<i>Gymnocarpium robertianum</i>	Limestone Fern	Combe Scar	SD6686	B.Burrow		
<i>Gymnocarpium robertianum</i>	Limestone Fern	wall, Cowgill Wold		M.Canaway	4.7.12	
<i>Helleborus foetidus</i>	Stinking Hellebore	Marfield Plantation	SE2082	L.Robinson M.Smith	8.3.12	
<i>Hieracium calcaricola</i>	Toothed Hawkweed	Cowgill Head	SD7888	B.Burrow		1st record
<i>Hieracium crebridentiforme</i>	Chapel-le-dale Hawkweed	Dodd Fell	SD8484	B.Burrow		1st record
<i>Hieracium tricolorans</i>	Three-coloured Hawkweed	Yorburgh Cliffs Burtersett	SD8888	B.Burrow		1st record
<i>Hordelymus europaeus</i>	Wood Barley	Deepdale Woods Barnard Castle	NZ0216	J.Durkin		
<i>Hymenophyllum wilsonii</i>	Wilson's Filmy Fern	Combe Scar	SD6686	B.Burrow		
<i>Juncus alpino-articulatus</i>	Alpine rush	Cronkley Pasture	NY8428	S.Hedley L.Robinson	1.9.12	
<i>Malva neglecta</i>	Dwarf Mallow	road verge near Cundall	SE4272	M.&E.Linney L.Robinson	29.7.12	
<i>Myosotis x bollandica</i>	<i>M.secunda</i> x <i>M.stolonifera</i>	Streamside, Widdale		M.Wilcox		1st record
<i>Myosotis x bollandica</i>	<i>M.secunda</i> x <i>M.stolonifera</i>	streamside, East Stonesdale		T.&E.Laurie L.Robinson		2nd record
<i>Neottia nidus-avis</i>	Bird's-nest Orchid	Deepdale Woods Barnard Castle	NZ0216	J.Durkin	1.7.12	
<i>Polypodium x mantoniae</i>	<i>P.vulgare</i> x <i>P.interjectum</i>	Cliffs, Wether Fell	SD8686	B.Burrow, D.Tennant det.B.Brown	12.8.12	
<i>Pseudorchis albida</i>	Small White Orchid	Leyburn quarry	SE1090	B.S.B.I.	14.7.12	

<i>Salix caprea</i> ssp. <i>sphacelata</i>	Goat Willow	Haw Bank near Carperby	SD9888	B.Burrow D.Tennant det.D.Meikle	3.5.12	
<i>Saxifraga aizoides</i>	Yellow Saxifrage	Cronkley Pasture	NY8412	S.Hedley L.Robinson	1.9.12	
<i>Saxifraga hirculus</i>	Marsh Saxifrage	tufa mound, Mud Beck, Arkengarthdale		E.&T.Laurie L.Robinson	3.8.12	
<i>X Dactylodenia evansii</i>	<i>Gymnadenia borealis</i> x <i>Dactylorhiza maculata</i>	Fotherinholme SSSI	NY9804	A.Gendle	5.7.12	1st record
Alien plants						
Taxon	Vernacular	Site	Grid ref	Recorder	Date	VC
<i>Acer tataricum</i>	Tartar Maple	Otley, riverside	SE200456	B.N.Brown	31.5.11	VC64
<i>Aconitum x stoerkianum</i>	<i>A.napellus</i> x <i>A.variegatum</i>	Settle, road verge	SD813622	M.Canaway	14.6.12	VC64
<i>Agrostis castellana</i>	Highland Bent	Fagley, Woodhall quarry	SE196354	B.A.Tregale M.Wilcox	18.8.12	VC63
<i>Agrostis castellana</i>	Highland Bent	Baildon, waste ground	SE151380	M.Wilcox	1.8.12	VC64
<i>Agrostis lachnantha</i>	African Bent	Baildon, Rockcliffe Ave.	SE153383	B.A.Tregale M.Wilcox	12.8.12	VC64
<i>Alcea rosea</i>	Hollyhock	Bradford, Queens Rd. pavement weed	SE167349	B.A.Tregale	24.6.12	VC63
<i>Anemone coronaria</i>	Crown Anemone	Burley-in-Wharfedale, riverbank	SE165473	D.A.Broughton	13.3.12	VC64
<i>Anisantha diandra</i>	Great Brome	Fagley, Woodhall quarry	SE196354	B.A.Tregale M.Wilcox	4.6.12	VC63
<i>Bidens ferulifolia</i>	Fern-leaved Beggarticks	Great Broughton, base of wall	NZ547063	V.Jones	30.8.12	VC62
<i>Brachyglottis x jubar</i> "Sunshine"	<i>B.laxifolia</i> x <i>B.compacta</i>	Bingley, canal bank	SE107395	Bradford Botany Group	11.7.12	VC64
<i>Brassica juncea</i>	Chinese Mustard	Fagley, Woodhall quarry	SE196354	B.A.Tregale M.Wilcox	10.6.12	VC63
<i>Buddleja globosa</i>	Orange-ball-tree	Coatham Marsh, rough grassland	NZ584246	V.Jones W.Thompson	25.5.12	VC62
<i>Calceolaria integrifolia</i>	Slipperwort	Bradford, Cater Street, courtyard	SE167331	M.Wilcox	7.8.12	VC63
<i>Campanula rapunculoides</i>	Creeping Bellflower	Grangetown, road verge	NZ577240	V.Jones M.Yates	3.8.12	VC62
<i>Carex comans</i>		Bingley, Bell Bank	SE103390	Yorkshire Fern Group	10.3.12	VC63
<i>Chaenomeles japonica</i>	Japanese Quince	Great Preston, Woodend	SE403278	D.A.Broughton	10.6.12	VC64
<i>Conyza floribunda</i>	Bilbao Fleabane	Esholt tip	SE178398	B.A.Tregale M.Wilcox	11.8.12	VC64

<i>Conyza floribunda</i>	Bilbao Fleabane	Bradford, Forster Court, waste ground	SE165332	M.Wilcox	4.9.12	VC63
<i>Conyza floribunda</i>	Bilbao Fleabane	Warrenby, road verge	NZ579250	V.Jones B.A.Tregale M.Wilcox	26.8.12	VC62
<i>Conyza floribunda</i>	Bilbao Fleabane	Knostrop sewage works	SE342303	D.A.Broughton	15.9.12	VC64
<i>Cosmos bipinnatus</i>	Mexican Aster	Coatham, Majuba Road, base of wall	NZ591250	V.Jones W.Thompson	25.6.12	VC62
<i>Cotoneaster conspicuus</i>	Tibetan Cotoneaster	Bradford, Church Bank, base of wall	SE169333	M.Wilcox	7.8.12	VC63
<i>Cotoneaster lacteus</i>	Late Cotoneaster	Baildon, waste ground	SE151380	M.Wilcox	12.7.12	VC64
<i>Cotula alpina</i>	Alpine Cotula	Roundhay, Park Lane, garden lawn	SE330390	J.Martin	1.7.12	VC64
<i>Crataegus rhipidophylla</i>	Large-sepal'd Hawthorn	Knostrop, site of old power station	SE345303	D.A.Broughton	15.7.12	VC64
<i>Cyrtomium fortunei</i>	Fortune's Holly-fern	Hull, Westminster Avenue	TA123310	R. Middleton	14.8.12	VC61
<i>Cyrtomium fortunei</i>	Fortune's Holly-fern	Hull, museum garden wall	TA102288	R. Middleton	16.8.12	VC61
<i>Dianthus barbatus</i>	Sweet-william	Staintondale, disused railway	SE994983	V.Jones	1.8.12	VC62
<i>Doronicum x excelsum</i>	Harpur-Crewe's Leopard's-bane	Weeton, road-side	SE285468	B.N.Brown	19.5.12	VC64
<i>Doronicum plantagineum</i>	Plantain-leaved Leopard's-bane	Leeds Ring-road (Moortown)	SE295386	P.P.Abbott	20.5.12	VC64
<i>Erysimum helveticum</i>		Greengates, pavement weed	SE192371	M.Wilcox	7.7.12	VC63
<i>Escholzia californica</i>	Californian Poppy	Melbourne	SE759449	Hull Natural History Society	18.8.12	VC61
<i>Euphorbia myrsinites</i>		above Marske Sands, base of wall	NZ635228	V.Jones	10.9.12	VC62
<i>Ficus carica</i>	Fig	Hull, Humber Street	TA099283	R. Middleton	20.9.12	VC61
<i>Galanthus plicatus</i>	Pleated Snowdrop	Dean Grange Farm, track	SE236407	D.A.Broughton	8.4.12	VC64
<i>Galanthus plicatus x G. elwesii</i>		Eston Cemetery	NZ546197	J.Cox T.Millions D.Sills conf. V.Jones	6.3.12	VC62
<i>Galinisoga parviflora</i>	Gallant Soldier	Hull, Old Town area	TA 1028	R.Middleton	16.8.12	VC61
<i>Geranium x cantabrigiense</i>	<i>G.macrorrhizum x G.dalmaticum</i>	Horsforth	SE234387	D.A.Broughton	12.4.12	VC64
<i>Geranium dalmaticum</i>		Bingley, Charles Street	SE109343	B.A.Tregale M.Wilcox	7.7.12	VC64

<i>Helleborus argutifolius</i>	Corsican Hellebore	Marske, The Headlands, base of wall	NZ636225	V.Jones	7.3.12	VC62
<i>Hordeum jubatum</i>	Foxtail Barley	Kelleythorpe Industrial Estate	TA008569	R.Middleton	17.9.12	VC61
<i>Jasminum nudiflorum</i>	Winter Jasmine	Seamer, on stone wall	TA015838	V.Jones W.Thompson	8.8.12	VC62
<i>Lamprocapnos spectabilis</i>		Yeadon, old railway line	SE202408	D.A.Broughton	20.5.12	VC64
<i>Lathraea clandestina</i>	Purple Toothwort	Westlock, bank of R.Ure	SE355669	B.Morland	10.4.12	VC64
<i>Lepidium virginicum</i>	Least Pepperwort	Great Ayton, pavement	NZ561106	V.Jones	27.6.12	VC62
<i>Ligustrum x vicaryi</i>	<i>L.vulgare x L.ovalifolium</i>	Rawdon	SE220384	D.A.Broughton	11.3.12	VC64
<i>Narcissus x dichromus</i>	<i>N.moschatus x N.cyclamineus</i>	Rawdon	SE234387	D.A.Broughton	12.4.12	VC64
<i>Nonea lutea</i>		Helmsley, Emslac Road, base of wall	SE612840	V.Jones	12.4.12	VC62
<i>Nymphaea marliacea</i>		South of Kirklevington, brickworks pool	NZ425081	V.Jones W.Thompson	2.8.12	VC62
<i>Nymphaea marliacea</i>		Kippax, lagoon by cycle path	SE406293	D.A.Broughton	8.7.12	VC64
<i>Osteospermum jucundum</i>	Cape Daisy	South Gare, edge of breakwater	NZ556275	A.Bunn V.Jones	24.6.12	VC62
<i>Petasites albus</i>	White Butterbur	Normanby, roadside	NZ541180	A.Bunn	6.3.12	VC62
<i>Phuopsis stylosa</i>	Caucasian Crosswort	High Hawkser, rough grassland	NZ927074	W.English V.Jones A.Ritson	17.5.12	VC62
<i>Physalis peruviana</i>	Cape Gooseberry	Knostrop, site of old power station	SE342303	D.A.Broughton	15.7.12	VC64
<i>Pilosella x stolonifera</i>	<i>P.officinatum x P.aurantiaca</i>	Saltaire, wall of canal lock	SE131382	M.Wilcox	29.6.11	VC63
<i>Pratia angulata</i>	Lawn Lobelia	Bingley, church-yard	SE105394	B.A.Tregale	11.7.12	VC64
<i>Primula x pruhonicensis</i>	<i>P.vulgaris x P.juliae</i>	Yeadon, Engine Fields Urban NR	SE205409	D.A.Broughton	6.4.12	VC64
<i>Pulmonaria rubra</i>	Red Lungwort	Ben Rhydding	SE137476	D.A.Broughton	7.5.12	VC64
<i>Saxifraga cymbalaria</i>	Celandine Saxifrage	Northallerton, road verge	SE363930	V.Jones	3.5.12	VC62
<i>Scilla sardensis</i>	Lesser Glory-of-the-snow	Eston Cemetary	NZ546183	A.Bunn	11.3.12	VC62
<i>Sedum kamtschaticum</i> var. <i>ellacombeanum</i>	Kamchatka Stonecrop	Cookridge, Moseley Bottom, steps into wood	SE244400	D.A.Broughton	14.6.12	VC64
<i>Senecio inaequidens</i>	Narrow-leaved Ragwort	Kelleythorpe Industrial Estate	TA009570	R.Middleton	17.9.12	VC61

<i>Stranvaesia davidiana</i>	Stranvaesia	Adel, Leeds	SE279402	D.A.Broughton	5.4.12	VC64
<i>Sutera cordata</i>	Bacopa	Addingham, in grating	SE079497	N.Vernon	21.10.11	VC64
<i>Sutera cordata</i>	Bacopa	Osmotherley, Clack Lane, base of wall	SE455972	V.Jones	19.7.12	VC62
<i>Symphytum asperum</i>	Rough Comfrey	North Lees, roadside	SE298742	P.P.Abbott	25.6.12	VC64
<i>Tanacetum macrophyllum</i>	Rayed Tansy	Husthwaite, The Nookin, base of wall	SE518750	V.Jones W.Thompson	20.8.12	VC62
<i>Viburnum rhytidophyllum</i>	Wrinkled Viburnum	Bradford, Valley Road, wall	SE161344	M.Wilcox	10.3.12	VC63
<i>Viburnum tinus</i>	Laurustinus	Rawdon, wood-land	SE220380	D.A.Broughton	6.5.12	VC64

YNU Excursions 2013

Circular No. 880

Divisional Secretary VC63: Joyce Simmons, 16 Springfield Crescent, Kirk Smeaton, Pontefract, WF8 3LE Tel: 01977 620725 E-mail: joyce@gentian.plus.com

The VC63 excursion will be on **Saturday 18 May to Cromwell Bottom, near Brighouse.**

Maps: 1:50000 Landranger sheet 104. 1:25000 Explorer sheet 288 Bradford and Huddersfield.

Meeting Place: Meet at 10.30 at Cromwell Bottom Local Nature Reserve car park (SE125224). From the M62 take exit 25 and follow the A644 to Brighouse and then the A6025 to Elland. About 1½ miles along this road look out for a blue and yellow sign 'Oils Well' outside Cromwell House on the left. Turn down the lane just before the sign. The car park is on the left in 100 yds. Turn in under a height barrier.

Indoor Meeting: This will be in 'The Link' in Central Methodist Hall, Brighouse, + at 16.00. This is next to the bus station and there is parking in a pay and display car park nearby: there is very little space at the hall. Enter 'The Link' through a glass door to the right of the main building. Tea and coffee will be available. There will be a small charge to cover the cost of hiring the hall.

The area: The Calder valley is steep-sided, with glacial deposits of gravels on its floor. Sand and gravel extraction continued here until the 1970s, leaving pools where osiers were grown for baskets, etc. Fly ash was dumped there, some of which was used in the construction of the M62. Part of the site was used for landfill, which ended in the 1990s, but methane vents are still in use.

Since then the area has been landscaped into meadow, woodland and particularly interesting wet areas, some of which are alkaline as a result of the fly ash residues. This has resulted in a variety of habitats which are being actively managed to increase their biodiversity. Calderdale Council and Cromwell Bottom Wildlife Group look after the site.

There are several bodies of water here. The Calder and Hebble Navigation runs along the northern boundary, the River Calder meanders through, an old canal (now just a stream) runs to the south of the meadow and there are numerous ponds in the old gravel extraction area. Despite its history of industrial abuse, this area is developing diverse habitats which support a wide variety of species. There are notable plants here, such as Broad-leaved Helleborine *Epipactis helleborine*, Yellow Bird's-nest *Monotropa hypopitys*, Round-leaved Wintergreen *Pyrola rotundifolia* and Needle Spike-rush *Elocharis acicularis*. Breeding animals include Little Ringed Plover, Sedge Warbler, Kingfisher, Smooth and Palmate Newts and many dragonflies.

If time allows, members may wish to visit Elland Park Wood which clothes the south-facing steep valley side to the north of the A6025. It is mainly oak woodland, some of which is being managed as an oak coppice. Pendulous Sedge is found here and the abundant Bluebells *Hyacinthoides non-scripta* should be in flower for our visit.

There has been only one previous VC63 excursion to this 10km square, SE12; to Elland in 1984.

Hazards of the area: There are various water bodies – river, canal, lakes and ponds, and their banks vary in their solidity. Some paths have short steep sections.

Circular No. 881

Divisional secretary VC64: Terry Whitaker; 4 Crowtrees, Low Bentham Via Lancaster LA27EE
Tel: 015242 62269 E-mail: t.whitaker1@btinternet.com

The VC64 meeting will be to **Grassington, Grass and Bastow Woods, SD9865 & SD9965, on Saturday 8 June.**

The YNU Moth Group is invited to trap on the Friday night - generators/batteries will be required because there is no power source on site.

Maps: 1:50,000 Outdoor Leisure 10 Yorkshire Dales
1:25,000. Explorer OL 002 (Yorkshire Dales - Southern and Western areas)

Meeting place: Park in the Grassington village car park or limited parking along Grass Wood Lane towards Conistone. Meet at 10:30 at the gate into the SE corner of the wood near SD988649.

Indoor meeting: 16: 00 Grassington (to be arranged).

The Area: Grass Wood is a botanically rich Ash woodland occupying an area of Carboniferous Limestone in Wharfedale, one mile west of Grassington. The wood measures 88ha. Whilst the natural woodland of the lower slopes is Ash-Hazel this does naturally gradually give way to birch higher up.

The site is notified as a SSSI due to its floral assemblage associated with limestone pavements, screes and grasslands. This includes Angular Solomon's-seal *Polygonatum odoratum*, Blue Moor-grass *Sesleria caerulea*, and Bloody Crane's-bill *Geranium sanguineum*, Spring Sandwort *Minuartia verna*, Common Rock-rose *Helianthemum nummularium* and Limestone Bedstraw *Galium sternerii*. Other rare plants, such as Spring Cinquefoil *Potentilla tabernaemontani*, Alpine Cinquefoil *P. crantzii*, Moonwort *Botrychium lunaria* and Dwarf Milkwort *Polygala amarella*, are present in calcareous areas and there are extensive areas with Common Rock-rose, Primrose *Primula vulgaris* and Bird's-eye Primrose *P. farinosa*, while the nationally declining Mountain Pansy *Viola lutea* does well at present in Bastow Wood, particularly in the open area near the dewpond. Moonwort, which was known in the same area, has not been seen there since 1987. Bastow is very close to the open calcareous grassland of Lea Green and Conistone Dib meadows and good for Autumn Gentian *Gentianella amarella* and Field Gentian *G. campestris*.

The woodland is believed to be ancient in origin and its original composition is thought to have been Ash *Fraxinus excelsior*, Wych Elm *Ulmus glabra* and oak with an understorey of Hazel *Corylus avellana*. The ground flora beneath the woodland canopy is rich and varied and includes many ancient woodland indicator plants such as Dog's Mercury *Mercurialis perennis*, Bluebell *Hyacinthoides non-scripta*, Herb Paris *Paris quadrifolia*, Barren Strawberry *Potentilla sterilis*, Goldilocks Buttercup *Ranunculus auricomus* and Hairy St John's-wort *Hypericum hirsutum*.

The wood is also a noted location for its fauna. There are notable records of invertebrate findings including Northern Brown Argus butterfly and other Lepidoptera such as Cistus Forester, Barred Tooth-striped Moth and Least Minor. There are similar amounts of interest for all amateur naturalists whatever their preference: flora, fauna or fungi.

As well as natural history, there is also a wealth of cultural history within the woods. There are two scheduled ancient monuments and other archaeological remains.

A key to driving past and current management has been the lack of regeneration within the woodland element of the site, itself probably the scarcest major habitat in the Dales. The area has three main notified interests, broad-leaved woodland, limestone pavement and calcareous grassland and, whilst these have all been given notional units, the site is effectively a single management block which results in difficulty in management regimes and potential conflicts in objectives. The planting of conifers and hardwoods has taken place throughout the wood from 1815 to 1969 and these trees are gradually being removed. The main management aim is to return the wood to a predominantly Ash woodland by the removal of the introduced Beech, Sycamore and conifers (larches and spruces). This is planned to occur over a period of years and some species are now notable landscape features, especially the mature Beech. Agri-environment schemes have sought to augment this management with a view to restoring grazing once woodland regeneration is underway. As a result, management over the last several years has led to small exclosures followed by total stock removal. However, even that failed to result in the establishment of new saplings, probably caused by Rabbit and Roe Deer grazing. The small areas of pavement which generally benefit from light are becoming scrubbed up with birch; Bracken *Pteridium aquilinum* is also spreading. It is also suggested that the sward of the more open areas higher up has become rank and is reducing the botanical interests.

The wood is owned by the Yorkshire Wildlife Trust but largely managed by a dedicated band

of local volunteers, with YWT staff only stepping in where necessary. These volunteers carry out the laborious tasks such as coppicing and clearing up after timber contractors have felled or removed conifers. They also carry out vital wardening and recording on site at various times during the week or year as necessary.

The wood is well loved by locals and visitors alike. It is one of the larger woodlands within the YDNP. Access for the YNU meeting will essentially cover the whole Grass Woods reserve including Bastow Wood to the north and east. For those members with restricted mobility the footpath through Lower Grass Wood above the River Wharfe is less challenging but still offers plenty to see.

Hazards of the area: This site is as accessible as such a rocky woodland can be. There is always risk from tripping and falling, especially on steep slopes. Please take reasonable care at all times and wear appropriate clothing. Any children in the party must be supervised by a parent or guardian at all times.

Circular No. 882

Divisional secretary VC65: Terry Whitaker; 4 Crowtrees, Low Bentham Via Lancaster LA27EE
Tel: 015242 62269 E-mail: t.whitaker1@btinternet.com

The VC65 meeting will be to **Nosterfield NR on Saturday 6 July**

The YNU Moth Group is invited to trap on the Friday night; generators/batteries will be required because there is no power source on site.

Maps: 1:50000 Landranger sheets 299 and 302; 1:25000 Explorer sheets for SE27 and SE28

Meeting place: Meet at 10.30 and park in the reserve car park, off Moor Lane (SE278795).

Indoor meeting: At the reserve interpretation building at 16.00. A contribution to tea and cakes will be requested.

The Area: Nosterfield Nature Reserve lies close to the River Ure and is a former sand and gravel (fluvio-glacial) quarry, over Magnesian Limestone. It is predominantly wet grassland, managed mainly for breeding and wintering waders and waterfowl; with particular focus on breeding Redshank and Shoveler.

Quarrying has taken place in the area since the Neolithic, principally for sand, gravel and Magnesian Limestone; however, excavation of sand and gravel started over the reserve area in the mid-1950s, with a sufficient area of standing water created to attract enough birds to make the area well watched by the mid/late 1970s. Mineral extraction ceased in 1996/97, leaving behind mainly grassland, two large lakes and former silt lagoons.

In total the reserve is a little over 150 acres (60ha); it is predominantly grazed grassland adjoining two significant permanent water bodies and two smaller former silt lagoons. However, water levels over the bulk of the site fluctuate in line with groundwater and surface water influences, ranging by up to three metres or more in a year; therefore permanent water is approximately seven hectares but can exceed well over 25ha in a wet year. As a result there are extensive drawdown zones, in which seasonally flooded scrapes have been created

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to a regularly changing water edge. At the northern end (SE28) of the reserve >1,000m of seasonally flooded 'foot-drains' and 15 ponds were formed in autumn 2010; these are establishing well but have currently not been surveyed.

The silt lagoons are largely isolated from the groundwater, being 'sealed' by the finer sediments from the silting process; they therefore have much more stable water-levels and quite different flora and fauna, compared with the water bodies over the limestone.

Whilst much of the area was 'restored' to improved grassland during the 1980s, the final stages were largely left for vegetation to naturally regenerate and stand as an interesting example of that process on a post-mineral extraction site. The grazed areas are principally managed with breeding Redshank in mind; as this bird dislikes the presence of livestock, the area is largely ungrazed until after a hay crop is removed in mid-July. The taking of haylage for over ten years has assisted in nutrient reduction; extensive stands of Yellow Rattle *Rhinanthus minor*, together with increasing botanical diversity including numerous Bee Orchids *Ophrys apifera*, bear witness to this.

The site is particularly well known for birds, with around 150 species per annum being recorded. It is something of an inland migration 'hot spot', with generally over 20 wader species being recorded each year, including breeding ones, from Lapwing to Avocet. The site also supports good populations of common farmland birds, as well as some conservation priority species such as Corn Bunting. In total over 225 full bird species (excluding escapes, etc.) have been recorded.

Entomologically, the site has been fairly well recorded in certain orders, with over 20 species of butterflies (including Wall and White-letter Hairstreak) recorded in most years. Over 450 moths and a total of over 1,500 insects has been recorded to date. However, there are still significant gaps in our knowledge; notably groups and orders such as arachnids.

Botanically the site is probably most notable for its draw-down zone plants such as Mudwort *Limosella aquatica* and those thriving on thinner gravelly soils such as Blue Fleabane *Erigeron acris*; however, the wider species-rich grasslands are re-establishing well, with impressive drifts of plants such as eyebrights *Euphrasia* spp. and Bird's-foot-trefoil *Lotus corniculatus* becoming increasingly apparent. The site now also supports seven species of orchid.

The reserve is fully owned and managed by the Lower Ure Conservation Trust (formed in 1997); however, members of the Trust oversaw the quarry's final 'restoration' process in the mid-1990s, having known the site well since the mid-1970s and early 1980s. Access for the YNU meeting will essentially cover the whole reserve; however, there may be some zoning and time constraints, principally to minimise disturbance to birds.

Hazards of the area: There is always risk from tripping and falling. Please take reasonable care at all times, and wear appropriate clothing. Any children in the party must be supervised by a parent or guardian at all times and take care especially near to areas of open water. There will also be some specific safety restrictions, such as adjoining the silt lagoon ponds (quicksand).

Previous YNU visits to the area: May 1935 Tanfield (Excursion 293) Reports: *The Naturalist* Suppl. (1935) 60: 189-191.

Circular No. 883

Divisional secretary VC61: Sarah White, Yonder Cottage, Ashford Hill, Thatcham, Berkshire, RG19 8AX. Tel: 01635 268442 Email: sarahpriest656@btinternet.com

The VC61 Meeting will be held on **Saturday 20 July at Danes Dyke.**

Maps: 1:50 000 Landranger Sheet: 101 Scarborough
1:25 000 Explorer Sheet: 301 Scarborough, Bridlington and Flamborough Head.

Meeting Place: We will meet at 10.30 in the car park of the Danes Dyke Local Nature Reserve, TA215694. The reserve and car park are signposted from the B1255 Bridlington to Flamborough road.

There is a good car park (for which there is a charge), a small café and toilets.

The Marine and Coastal Section will be meeting at 8.30 for a morning shore survey before joining the main excursion for the rest of the day.

Tea and Meeting: This will be at 16.30 in the covered area adjacent to the café. The café has kindly agreed to stay open to enable us to buy refreshments for the meeting, so please do patronise them.

The Area: Our visit is to the Danes Dyke Local Nature Reserve, which lies on the Flamborough headland. This reserve, which is managed by East Riding Council, is the southern portion of an ancient ditch and bank earthwork which runs north to south across the headland, about 4km from its easterly tip, between Cat Nab on Bempton Cliffs in the north and Danes Dyke in the south.

The reserve is a deep wooded ravine with a stream running through it and comprises the most extensive area of woodland on the headland. There is a good network of short circular woodland paths (some quite steep), a cliff top path and an access track to the dramatic rocky beach. The extent of woodland, sheltered, damp and steep-sided, in an area with little woodland habitat, together with the importance of the adjacent rocky intertidal area and cliffs, makes the site of considerable local wildlife interest.

Flamborough Head as a whole is designated Heritage Coast and includes several Sites of Special Scientific Interest (SSSIs) and a European Marine Site. It is part of a 'No-take Zone', the first such designation on the east coast, in which methods of fishing and extraction of natural materials are prohibited in order to protect marine wildlife and safeguard local fish stocks. It is also a geological SSSI for its spectacular chalk cliffs, a Special Protection Area (SPA) for its breeding coastal birds and a Special Area of Conservation (SAC) for chalk reef and caves.

Danes Dyke Local Nature Reserve acquires its name from the ancient ditch and bank earthwork, which runs through the reserve. It consists of two constructed features, a flat-topped bank and a west-facing ditch. The bank was constructed from earth, stacked turfs and chalk rubble, much of which would have come from the ditch. Undoubtedly constructed as a defensive feature, it would have posed a formidable barrier, topped with a wooden palisade

fence. Although no exact date has been given to its construction, comparisons with other post Roman earthworks of a similar size have been made, in particular with Aberford Dykes in the West Riding, which has been dated back to the Dark Ages. Danes Dyke is a Scheduled Ancient Monument of national importance.

In recent years adjacent agricultural land has been included in a Countryside Stewardship Scheme resulting in wider field margins at the edges of the fields and many new hedges have been planted all over the Headland.

Hazards of the Area:

1. Paths in the woodland are steep in places and may be slippery if wet.
2. Care needs to be taken on the foreshore as it is rough and rocky.
3. Low Water is at 9.00: HIGH WATER IS AT 3.20pm. WE MUST BE OFF THE SHORE WELL BEFORE THIS AS THE SEA COMES RIGHT UP TO THE BOTTOM OF THE CLIFFS.

Reference: A useful introduction to the Reserve, and a map, is at www.danesdyke.com/

Circular No. 884

Divisional secretary VC62: Mick Carroll, 10 Crofts Avenue, Pickering, North Yorkshire, YO18 7HP. Tel: 01751 476550 Email: mickcarroll47@btinternet.com

The VC62 Meeting will be held on **Saturday 10 August at May Moss & Langdale Forest.**

Maps: 1:50 000 Landranger Sheet: 94
1:25 000 Explorer Sheet: OL27

Meeting Place: Meet promptly at 10.00 at the entrance to RAF Fylingdales and May Moss (SE856969) in the vehicle compound by the gate. If coming from Scarborough, use the west side road and head up the Blakey Rigg road to the Grey Stones area. Please note that I have permission to take YNU and associated members through a security area, so please be on time to take advantage of this concession.

Tea and Meeting: This will start between 16.00 and 16.30 in Langdale Village Hall, opposite Howden Farm (SE939912), where the ladies of Langdale Valley (who are renowned for their cakes!) will provide refreshments.

The Area: Part of the area is within the North Yorkshire Moors SSSI, designated for its heather moorland, mire and associated upland bird communities. Some of the heather moorland has been unmanaged since the early 1960s. As well as the disused Fylingdales site, where there will be an opportunity to look at some of the species returning, a variety of forestry plantation habitats, including clear-felled and regenerating areas, is present. For those interested Brian Walker, formerly the Forestry Commission's Wildlife Officer in North Yorkshire and the Tees Valley, will be with us to explain about the hydrology monitoring on May Moss and the restoration work. In addition, the adjacent old 'Radhaz' site gives added interest to the area.

Book review

The Three-Legged Society by Ian D. Hodgkinson and Allan Steward. Pp. 110 (+ 26 pp. with 67 colour & b/w photographs). Centre for North-West Regional Studies, Lancaster University. 2012. £14.95, paperback. Available from: Christine Wilkinson, CNWRS, Fylde College, Lancaster University LA1 4YF or e-mail: wilkinson@lancaster.ac.uk

This well produced and illuminating book traces the lives of the Westmorland naturalists George Stabler (1839-1910), James Martindale Barnes (1814-1890) and Joseph Anthony Martindale (1837-1914), three close friends who constituted 'The Three-Legged Society'. Although stalwarts of Lake District natural history, particularly botany, they extended their studies to Yorkshire. Those interested in the early issues of *The Naturalist* will no doubt be familiar with the extensive published work of Stabler and Martindale in 1879-1902 and 1868-1902 respectively.

These three remarkable naturalists not only spent a considerable time in the field, their excursions being meticulously planned ahead and reviewed on completion, but there is a voluminous correspondence between them. A field excursion may well involve them in a 30 km walk or an overnight stay. In the words of the authors these "three naturalists collectively provide a fascinating study of the developing role of the gifted and committed 'amateur' in the development of Natural History during the Victorian era...making highly significant and often uniquely original contributions to several rapidly developing areas of the Natural Sciences". However, these naturalists did not work in isolation and were instrumental in reviving the waning natural history section of the Kendal Literary and Scientific Institution by establishing in 1868, under the auspices of the parent society, the Kendal and District Microscopical and Natural History Association; although the latter wound down in 1880, the Kendal Natural History Society was established in 1885, Stabler and Martindale taking a very active role in its success, the latter for example taking over the editorship of *The Westmorland Natural History Record*. A further indication of their involvement and the esteem in which they were held beyond the county boundaries can be gained from their many correspondents, such as Richard Spruce and Alfred Russel Wallace, and their attendance at field meetings, the YNU recorder for the one held at Sedbergh noting "...the spirit of fellowship in science was fostered by the presence of the Kendal naturalists...with their cryptogamic specialists, Messrs Martindale and Stabler, famous for their painstaking, original labours amid the Bryophytes and Lichens, which added not a little open-air instruction to the other pleasures of the day".

Despite its relatively slim size, this book is packed with biographical detail; it reads like a *Who's Who* of late 19th Century British cryptogamic botanists, the wealth of information ably supported by an extensive bibliography, but unfortunately not by the index – for although the latter is a fair reflection of the book's contents, it is far from exhaustive and many personalities and localities, for example, mentioned in the text are inadequately cross-referenced. Despite this shortcoming, there is so much to be admired in this work: not only will YNU members be, at least, interested in the Yorkshire connections, but a much wider audience will be enthralled by the contents. The authors and publishers are to be congratulated on this biographical record which provides a fitting testimony to these naturalists.

NB. The large and valuable collections of these three naturalists, housed in Kendal Museum, have been catalogued and the resulting databases are accessible via a free CD which complements the above-reviewed book; this can be ordered from Kendal Museum, Station Road, Kendal LA9 6BT or e-mail: info@kendalmuseum.org.uk or downloaded from the website: <http://www.kendalmuseum.org.uk>

MRDS

Participate in two Yorkshire-wide Projects

The Yorkshire Flat Hedgehog Survey: Is Yorkshire 'bristling' with Hedgehogs, or are they getting 'thin on the ground' ?

Introduction – During 1990 and 1991 the Yorkshire Naturalists' Union and its affiliated societies undertook a survey of Hedgehogs throughout Yorkshire. The results were quite a revelation.

The prickly subject - Although this is one of the best recorded Yorkshire mammals with most records coming from road casualties, the number and distribution of records tended to reflect the concentrations and enthusiasm of recorders. Dr Pat Morris of the Mammal Society devised a standardised transect method in which car passengers recorded Hedgehog road casualties from July to September in measured transects. These were of at least 20 miles on A, B or C roads in daylight and in dry conditions (the transects were not to be repeated in less than 30 days). Expressing the results as Hedgehogs per 100 miles, this showed pronounced regional differences with fewer in the south-west and greatest numbers in the north-east.

The prickly results – In the 1990-91 survey Yorkshire naturalists undertook 145 transect journeys of at least 20 miles, travelling 4,915 miles and encountering 342 Hedgehog casualties. This gave a mean density of 6.9 Hedgehogs per 100 miles.

Regional differences - Splitting Yorkshire into distinct geographical regions showed smaller numbers in the south and west (.06 in the Southern Pennines, 3.8 in lowland South Yorkshire), larger numbers in central areas (10.8 in the Vale of York) and greatest numbers in the east (12.58 on the Wolds).

The deadly school holidays - By only surveying through the mid-summer period when Hedgehogs are most numerous and most active, major seasonal differences are avoided. However, within this three month period, peaks in casualty rates coincided with a) the commencement of school holidays, b) a fortnight later the mid-holiday turnover and then c) the August Bank Holiday weekend). All these events generate nocturnal journeys by people travelling to and from holiday venues.

Monitoring the changes - Recently, various national surveys have indicated a catastrophic crash in Hedgehog numbers to the extent that the Hedgehog is categorised under the NERC Act 2006 as a 'Species of Principal Importance' for biodiversity ... So 20+ years on, let's repeat the Yorkshire survey and look at the changes in Hedgehog populations within the Yorkshire landscapes ... Are Hedgehog road casualties getting thinner on the ground?

Please download the survey form and accompanying instructions from the Mammals Section of the YNU Website and join in with the project during July, August and September.

WARNING: For reasons of safety, this project is **for passengers only** and **not** for drivers.

Colin Howes (YNU Mammal Recorder)
Email: colinhowes@blueyonder.co.uk

Parasitism of *Coleophora serratella*

Coleophora serratella is a widespread insect in Yorkshire and is most easily found, as a late-instar case-bearing larva, on birch leaves in early summer (see Plate IX, centre pages). The larvae are heavily predated by parasitic hymenoptera and I will be collecting cases during June and July 2013 to measure the extent of the parasitism and the species involved.

I would be grateful if YNU members would send me any cases that they find on their local birch trees. Samples should be sent to the address below. The little mint tins sold by Costa Coffee are ideal containers for posting the specimens. The exact location and date of collection should be included. All emerging moths will be released into birch woodland but the parasitoids will be kept for identification and confirmation by experts. I hope to publish the results and will credit everyone who sends specimens. Please email me immediately if you think you can help.

Derek Parkinson, 11 Crow Tree Close, Baildon, Shipley, West Yorkshire, BD17 6JH.
Email: derekparkinson@blueyonder.co.uk

YNU Notices

The Yorkshire Dales Environment Network

The Yorkshire Dales Environment Network (YDEN) comprises more than 25 organisations involved in the care and management of the Yorkshire Dales. YDEN's mission is to increase the strength and breadth of communication and collaboration between its members, leading to more effective use of a diverse range of skills and resources. The network includes research scientists at the University of Leeds (Biology, Geography, Earth and Environment), bodies responsible for the Yorkshire Dales environment (e.g. the Yorkshire Dales National Park Authority, the Environment Agency, Natural England and the National Trust) and a range of stakeholders from wildlife conservation to agricultural interests. The establishment of YDEN is now supported by a National Environment Research Council Knowledge Exchange grant which funds its coordinator, Dr. Anita Glover (University of Leeds), with match in-kind funding from member organisations. For more information, please contact Anita via a.m.glover@leeds.ac.uk

Correction from *The Naturalist* 1081

The photographer of the Broad-leaved Helleborine in Doncaster (Plate V) was Michael Snow.

Derek Yalden

Following the untimely death of Derek Yalden earlier this year, there will be a memorial event to celebrate his life and achievements on the afternoon of Saturday 13 July at the University of Manchester.

If you would like to attend or contribute a brief written tribute to Derek, or for further details of the event, please contact: p.morris5@btinternet.com

YNU Calendar April-August 2013

Apr	28	Marine and Coastal Section Shore Thing Survey. Robin Hood's Bay NZ953048 10.30 – 13:30.
May	1	Training Day - University of Leeds Students - Basic Field Skills for University of Leeds students. St Chad's Parish Centre from 9:30. If you are willing to tutor a small group please contact Terry Crawford on 01904 780849.
	4	Bryology Section Field Meeting Meet at 10.00 in Cronkley, on the A6277 at NY867298.
	11	Conchological and Freshwater Ecology Field Meeting Meet at 10.30 in the small car park near the bridge, Ings Lane, Low Bradley. Grid reference: SE001483.
	18	VC63 Excursion Cromwell Bottom , near Elland. Car park SE125224. 10.30.
	25	Botanical Field Meeting VC63 Austerfield, nr Doncaster. Meet at the roadside at SK660953 at 10.30 Note: This date is shown incorrectly in the Member's Card and in <i>The Naturalist</i> 1081.
Jun	1	Freshwater Ecology Section Meeting VC64 - Malham Tarn. Meet at 10.30 (SD 894658).
	8	VC64 Excursion Grassington , Grass & Bastow Woods, SD9865 and SD9965. 10.30.
	14	YNU Festival of Ecology - Scarborough Spa. Ecological activities and displays from 10.00-16.00 on Friday and Saturday in Scarborough Spa and the surrounding area. See http://ynu.org.uk/festivalofecology for details.
	14	Botanical Field Meeting VC61 Fordon. Meet at the roadside at TA055751. 10.30 – 13.00.
	15	YNU Festival of Ecology Scarborough Spa. 10.00 – 16:00 as above.
	21	24 hour Bioblitz in Whitby organised by OPAL. Contact Sarah West via sarah.west@york.ac.uk or see http://whitbynaturalists.co.uk/WNBioblitz/index.htm
	21	Marine and Coastal Section shore survey: Saltwick Bay (Whitby Bioblitz) 19.00 – 21.00.
	22	24 hour Bioblitz in Whitby organised by OPAL - see above.
	22	Marine and Coastal Section shore survey: East Pier Whitby (Whitby Bioblitz) 20.30 – 22.30.
	29	Botanical Field Meeting VC64 Winskill. Meet at the roadside at SD836661. 10.30.
Jul	6	VC65 Excursion West Tanfield/Nosterfield , Nosterfield Nature Reserve SE2779. 10.30.
	6	Brimham BioBlitz - see http://www.bnhc.org.uk/home.html and follow the links.
	12	Historical Section Meeting York Museum: refreshments and work in progress at 11.00.
	13	Botanical Field Meeting VC62 Sinnington. Meet in the village at SE744857.
	20	VC61 Excursion Danes Dyke , Flamborough. 10.30 – 11.30.
	20	Marine and Coastal Section Field Meeting - Danes Dyke, Flamborough. 10.30.
Aug	10	VC62 Excursion May Moss and Langdale Forest , North Yorkshire Moors. 10.00 – 15.00.
	24	Botanical Field Meeting VC65 Leyburn area. Meet on the roadside at SE105910.



Plate I. Yorkshire canals and their vegetation (see pp4-16).

Clockwise from above:

a). Barnsley Canal at Royston; a near monoculture of Reed Sweet-grass occupying the whole width.

b). Leeds & Liverpool Canal between Gargrave and Skipton; a lock bypass channel provided a refuge for aquatic plants; Flowering-rush, in foreground, is rooted in joints between masonry blocks.

c). Dewsbury Branch of the Calder & Hebble Navigation; marginal vegetation included Water-plantain, Reed Sweet-grass and Bulrush.

d). Leeds & Liverpool Canal between Gargrave and Skipton; sheer sides and high turbidity apparently produced a habitat that was inimical to aquatic plants.

R. Goulder



Plant galls



Plate II. *Left: Gall on Gorse Ulex Europaeus caused by the seed weevil Stenopterapion scutellare.*

Right: The larva of the causal insect. See p16.

D.Parkinson



Plate III (see pp17-18).

Above left: Andricus gemmeus gall on oak at Carlton Country Park.

Above right: Subanguina graminophila nematode on Creeping Bent Agrostis stolonifera.

Left: Ram's Horn Gall Andricus aries on oak at Alton Water.

T.Higginbottom

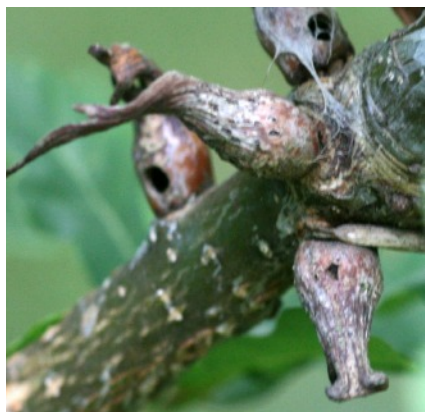


Plate IV (see p58).

Eriosoma patchiae gall on Wych Elm *Ulmus glabra*, recorded in VC65 and VC69.

J.Newbould





Plate V. Black-headed gull plumage changes (see p35):

Adult in summer plumage (June).

Adult in winter plumage (December).

Adult commencing moult to summer plumage (January).

First year with juvenile wing coverts (February).

First year assuming partial summer plumage (March).

A. Mettam



Plate VI. Seals at Teesmouth (see pp42-49).

Above: Harbour (Common) Seal *Phoca vitulina*.

northeastwildlife.co.uk

Left: Grey Seal *Halichoerus grypus*. Note the pointed face characteristic of this species. Ken Smith



Plate VII. Recording in VC65 (see pp52-62).
 Above left: Great Fen Sedge *Cladium mariscus* at Hell Kettles.
 Above right: Species rich verge at High Oxnop (p61).
 Left: The River Swale at Grinton.

J.Newbould



Plate VIII (see p70). Cromwell Bottom near Brighthouse, site of May's VC63 meeting.
J.Simmons

Plate IX (see p79).
Coleophora serratella, seen as a late-instar case-bearing larva, on a birch leaf. *D.Parkinson*

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Original articles should be submitted electronically as an MS Word document to Dr A. Millard at a.millard@leedsmet.ac.uk.

Please see *The Naturalist Guide to Consistency* on p77 of *The Naturalist* 1079 and please **avoid** the following:

- using tabs to tabulate information (please use MS Word table format or separate the column entries in a single row with commas and enter a paragraph mark at the end of the row).
- inserting any figures, graphs or plates into the text; indicate their proposed locations in the text and send as separate files.

Good quality, high resolution images are very welcome and should be sent as .jpg files, with a separate MS Word file containing the caption and name of the person to whom the image should be attributed.

If electronic submission is not possible, contributions should be sent to Dr. A. Millard, Woodland Villas, 86 Bachelor Lane, Horsforth, Leeds LS18 5NF (Tel. 0113 258 2482)

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