The University of Hull Herbarium

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ABSTRACT

The University of Hull Herbarium was transferred from the Botanic Gardens to the Geography Department in 1993 by which time almost all documentation, including the catalogues, had been lost. Over the following five years a computerised catalogue was created by transcribing the labels of over 18000 British vascular plants. The larger part of the collection was the teaching and research collection (**HLU**) created by Prof. Ronald Good in the period between his appointment in 1928 and retirement in 1959. An additional collection of 1262 specimens had been acquired by the University in 1983; this is now believed to be the Herbarium of the Hull Technical College (**HLL**), assembled by Thomas Stainforth. Although it was known that Good had acquired the herbarium of Dr John Fraser (1820–1909) of Wolverhampton, analysis of the new catalogue has revealed the presence of other substantial collections. Over 110 specimens from the herbarium of Rev. W. O. Newnham (1825–1893) have been located and almost 700 19th century specimens from the herbarium of the Barrow Naturalists' Field Club, recorded as having been destroyed in the 1930s. **HLU** also contains 676 plants from the undocumented herbarium created by Rev H. W. G. Kenrick (c.1863–1943). Geographical coverage of the material is wide but vice-counties **9**, **37**, **39**, **61** and **69** are particularly well represented. The catalogue has now been made public *via* the internet and positive feedback has enabled the correction of many transcription errors.

INTRODUCTION

The University of Hull Herbarium was established by Prof. Ronald Good shortly after his appointment as head of the Botany Department at the newly founded University College in 1928. The collection of British material, which seems to have been primarily intended as a teaching resource, was added to until Good's retirement in 1959 and then only sporadically into the 1960s. In 1993 the herbarium was moved from the University's Botanic Gardens in Cottingham, where it had been since about 1975, to its present home within the Department of Geography. In the Geography Department it is now housed along with an extensive collection of South-east Asian material collected by Dr John Flenley and others. Unfortunately most of the original catalogues and any documentation that may have once been associated with the material had been lost. This paper describes the re-creation of the catalogue of British and Irish vascular plants and establishes the origins of Good's original University Herbarium. It has not yet been possible to assess the many thousands of still largely un-mounted European specimens, that originally formed part of the Fraser collection, or the mosses, lichens and fungi.

In 1997 a start was made to build a new computerised catalogue of the British material. After examining the alternatives, it was decided that the most convenient format for the catalogue would be in the form of a Microsoft Access relational database. This provided a widely used and accepted standard with the option of exporting the data in many other formats, as required. Rather than using direct data entry, a Borland Delphi application was written to ensure that the nomenclature conformed to recognised standards (Kent 1992; Clement & Foster 1994; Ryves *et al.* 1996). This was particularly important as, although the collections were organised according to Dandy (1958), many taxa and hybrids did not fit well into his system. It also ensured the correct spelling of the taxon name field in the database. Several small grants enabled all of the British vascular plant material to be catalogued and some of the previously unmounted material to be mounted.

Much of the data presented here has been derived from analysis of this computerised index. The value of the complete catalogue has proved to be greater than the simple sum of its individual parts and by sorting the records by collector, collection date and locality it has been possible to extract information that was not apparent from the original taxonomic ordering. Many virtually illegible labels have been deciphered by comparison with others. At the present time there are over 18000 catalogued vascular plants in the collection. Of these, approximately 14000 plants can be assigned a collector, 16500 a locality and 17000 a collection date.

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DESCRIPTION OF THE BRITISH MATERIAL

The University Herbarium was established by Prof. R. Good soon after his appointment as Lecturer in Botany in 1928 and it is first mentioned in the Hull University College Calendar for 1931–1932. The most recent published synopsis of the material has been the report resulting from the Northern Universities' Collection Survey (Arnold-Foster 1993). The entry for the Hull herbarium is brief and mistakenly states that all of the material was collected between 1884 and 1971. In fact more than a third of the material is earlier than this. The draft report of a survey of a visit for this survey of collections, sent to the University in 1991, still survives and it is clear that the misapprehension went unnoticed and uncorrected. This draft report does indicate that at that time there were five handwritten catalogue volumes for the British plants and a further one for the European material. These appear to have been lost around the time of the transfer to the Geography Department.

The British vascular plants had been organised into two sections, the larger part consisting of over 16000 mounted specimens grouped into folders by species, the folders then being grouped into genera covers. The folders were ordered according to Dandy (1958) and stored in wooden cupboards. With this were several boxes of unmounted British material, largely willows, interleaved with late 19th century newspaper. The second section was simply labelled the "Wilson Collection", consisting of 1263 mounted specimens arranged into folders by genus and then grouped into conveniently sized bundles.

The larger collection is the core of Good's Herbarium and its primary purpose seems to have been a taxonomic resource for teaching and research within the Botany Department. As other collections were acquired, they were merged with this and consequently lost their integrity. The description of **HLU** given by Kent and Allen (1984) "*Formed by past and present members of staff and students*" is basically correct but it hides the presence of older material that was acquired by donations and possibly purchase.

A card index to the East Yorkshire material has survived. This was created at some time in the later 1950s by Miss A. B. Mowatt (F. E. Crackles, pers. comm.), who worked in the herbarium for a while. It seems to represent preparations for an unpublished *Hand-list of the Flora of the East Riding of Yorkshire* prepared by Good and Crackles at this time (Crackles 1990). Surprisingly, this index provides evidence for the origin of the "Wilson Collection". Each taxon card carries a list of early v.c.**61** records, presumably taken from the literature, followed by two lists of localities, one labelled "HUH" and the other "Tech". After the former is a list of records taken from the University Herbarium and the latter corresponds to plants in the "Wilson Collection". "Tech" seems to refer to the Hull Technical College, the precursor of the Hull College of Higher Education. Kent and Allen (1984) record that A. K. Wilson's herbarium was held in the Hull Technical College Herbarium, **HLL**. The only reference to its acquisition is to be found in the draft report made in preparation for the Northern Universities' Collection Audit (Arnold-Foster 1991). This report records that E. K. Wilson's (*sic*) British and European Flora was acquired as a gift in 1983, although it is not recorded from where. It seems safe to conclude that the present University herbarium now incorporates both **HLU** and **HLL**.

The **HLL** material covers a much more restricted period than that in **HLU**. If the 80 sheets of Hull plants submitted for the 1864 British Botanical Competition, which clearly form a discrete collection, are excluded, only 60 specimens pre-date 1930 and none is later than May 1939. Most of the early specimens are attributable to exchange club material (Arsene, Melville, etc) or local amateurs (Boult, Robinson). This matches well the period that Thomas Stainforth was lecturer in Botany and Zoology at the Technical College and he may have established and developed the collection. Stainforth had strong links with the Hull Scientific and Field Naturalists' Club (HSFNC) which he served, at various times, as secretary, treasurer, editor and chairman (Walsh 1944). There is little duplication of specimens in **HLL** and it seems to represent a deliberate attempt to build a teaching collection.

CONTRIBUTORS

Over 300 collectors have contributed to the current herbarium at Hull University, those with the greatest number of specimens are listed in Table 1. Ronald Good has by far the most specimens with almost 20% of the collection being of his own material. A

TABLE 1.THE MAJOR CONTRIBUTORS TO THE HERBARIUM AT HULL UNIVERSITY

	HLU	**HLL**
Good, R. D'O.	3576	-
Wilson, A. K.	1237	784
Fraser, J.	1258+	-
Kenrick, H. W. G.	676	-
Wilkins, D. A.	297	-
Lewis, R.	277	-
Baynes, J. & T. C.	343	-
Fisher, J.*	257	-
Hardy, A. C.	231	-
Rob, C. M.	70	156
Ley, A.	173	-
Gardiner, W.	173	-
Worsdale, A. F.	140	-
Shoolbred, W. A.	137	-
Bennett, A.*	120	-
Baker, J. G.*	115	-
Newnham, W. O.	110+	-
Brotherston, A.	95	-
Baxter, T.	62	-
Smith, R. L.	53	52

* Indicates approximate numbers resulting from similarly named collectors
HLU = the original Hull University Herbarium
HLL = the former Technical College Herbarium

personal collection of over 800 specimens, collected prior to his appointment, may well have formed an early core. An interesting and unsuspected addition in the early years is a set of over 200 plants collected in the Harrogate area in 1914 and attributed to A. C. Hardy. These specimens were almost certainly collected by Sir Alister Hardy, who was appointed as head of the Zoology Department in 1948. Although Sir Alister Hardy later attained acclaim for his work on marine plankton, he had early botanical interests, entering Oxford University in 1914 to study forestry entomology.

Other collections were acquired, the most notable of which is the herbarium of John Fraser of Wolverhampton. Over 1000 specimens in the British collection can be assigned, with confidence, to Fraser. This includes a series of around 300 Staffordshire plants, collected in 1864 for the British Botanical Competition organised by the South Kensington Horticultural Society. Edees (1972) notes that Fraser won a silver medal with a collection of 530 species; clearly some of these must be elsewhere or lost.

There are other notable collections that once formed part of Fraser's herbarium. More than 110 specimens have been identified in **HLU** which may be assigned, with certainty, to Rev. William Orde Newnham (1825–1893). There is no doubt that these specimens at one time formed part of John Fraser's herbarium as there are examples where Fraser has altered his own printed labels to read "Ex Herbario Newnham". Most specimens, however, are identifiable only by the initials WON or even just N and there is even a note, in Fraser's hand, stating "Newnham specimens unlabelled", suggesting that some of the unattributed and unlocated specimens in his herbarium may also have originated with this collector. Although Desmond (1994) records the existence of material collected by Newnham in **CGE** (Cambridge University) and **MANCH** (Manchester Museum), none of his British material is catalogued in the former and only a few specimens (previously attributed to Newsham) are to be found in the latter. It would appear that **HLU** may hold the bulk of Newnham's surviving British material.

All dated Newnham specimens cover the period 1843–1846, when he would have been a Cambridge undergraduate, and most are from the vicinity of Chesham, Bucks. There are at least another 20 Buckinghamshire records from

this period that will almost certainly have been collected by Newnham. Although the records show that both William Orde Newnham and John Fraser were members of the Botanical Society (Desmond 1994), there is no other known link between the two men which might explain the transfer of large numbers of plants. However, examination of census records reveals that by 1861 W. O. Newnham's brother, Christopher Atkinson Newnham, was a doctor in Wolverhampton. As a fellow medical practitioner, C. A. Newnham would certainly have been well known to John Fraser as both men resided in the town for the following thirty years. It seems likely that W. O. Newnham's specimens arrived in Fraser's herbarium via his brother.

The 62 plants of T Baxter of Worcester may also have once been part of Fraser's collection. Fraser's extensive collection of European plants is also housed within the Herbarium but remains un-catalogued (much of it still being un-mounted).

A significant component of the **HLU** material is that derived from the Botanical Exchange Clubs. The **HLU** section has around 760 such specimens ranging in date from Baker's 1860 specimen to Druce's 1931 contribution. This is significant as although Fraser was a member of the Botanical Exchange Club and such specimens would be expected, he died in 1909 and seventy specimens post-date this. There must be specimens from another herbarium that were incorporated after 1930.

There is significant material from the Furness district of Cumbria. This was largely collected by Mr T. C. & Mrs J. Baynes and Mrs J. Fisher during the period 1876–1880. Examination of the *Transactions of the Barrow Naturalists' Field Club* for this period reveals that these collectors formed a nucleus of an active botanical section. Many of the specimens now in **HLU** were collected on the Club's organised field excursions. In 1878 Mrs. Joseph Fisher is recorded as obtaining a prize for "*… the best herbarium of flowering plants, representing not less than 150 species…*" (Anon 1878). How this material came to be in Hull was unclear until a note was found on an unattributed specimen of *Cephalanthera rubra* stating that it "*… came with the Ferguson plants from Barrow …*". Dr J M Ferguson was an Assistant Lecturer in the Hull Botany Department from 1930 to 1932 and of the four specimens she left in the herbarium one is from Walney, collected in 1931. Further examination of the Barrow Naturalists' Field Club Proceedings has revealed that the Club's collections were moved from their premises at Cambridge Hall around 1932 where they had suffered seriously from damp and dirt. The botanical collection had fared particularly badly and was

"*…in such a condition, that the committee decided to destroy it, but on the advice of Dr Judith Philip, M.Sc. Sheffield, daughter of Mr. T. J. Ferguson, the whole collection was sent just as it stood to the Hull University College. Dr. Ronald D'O Good, M.A., Cambridge, Professor of Botany at the College, in acknowledgement, said that although the specimens had perished, the labels still remaining, were of great value …*"

(Christian & Richardson 1933)

It seems that the material was not in such a poor state as suggested by this, and that a significant number of specimens were re-mounted and added to the embryonic **HLU**. This misconception is propagated further when later proceedings report again that the specimens had "*mouldered into dust*" (Christian 1935) but that the record cards had been sent to Hull University.

Although there is no specific record of the size of the Barrow herbarium, it is possible to estimate it at around 800 specimens. The Barrow Club's Botanical Report for 1877–1878 states that Mrs Baynes had donated 356 specimens and that over 200 had been contributed by other members. **HLU** contains about 340 specimens attributed to J. or T. C. Baynes, for this period, and about 240 for Mrs J. Fisher. A later report (Anon 1902) notes that Mr John Hosking, a long-standing member, had donated over 200 specimens to the Club's herbarium in 1896. **HLU** only holds 59 specimens that can be attributed to J. Hosking but it is of interest that of the 49 plants specifically mentioned in the report, 43 can be positively identified in **HLU**. The best estimate that can be made of the surviving Barrow material is around 680 re-mounted specimens. This would suggest that, despite pessimistic reports, over 80% of the material may have survived.

The 676 specimens collected by H. W. G. Kenrick between 1889 and 1939 are of unknown origin. Little is known of this collector as a botanist but it is possible to

deduce from the labels that he was Rev. Henry William Gordon Kenrick (c.1863–1943), an Anglican Priest, who spent much of his ministry in London. Confirmation of this is provided by a 1903 Dandelion specimen from St John's vicarage, Hammersmith. He was born in Bangalore, India and completed an MA at Cambridge (Venn 1954). Coincidentally, between 1888 and 1890 he was attached to Holy Trinity Church, Hull, and his earliest specimen was collected at Bridlington, East Yorkshire during this time. He appears to have maintained a botanical interest through most of his life and his final specimens were collected in Dawlish in September 1939. It is noteworthy that there are no grasses in the collection and only a single rush. It seems likely that part of the collection was lost or is elsewhere.

As is to be expected in a provincial collection, many of the collectors do not figure in standard botanical directories (Britten & Boulger 1931; Desmond 1994). Both sections of the herbarium contain significant amounts of material collected by local amateurs. During the 1930s, when both the University and Technical College collections were being actively built, local and Yorkshire naturalists including A. K. Wilson, C. M. Rob and A. E. Wray contributed to both collections. The minute books of the HSFNC for this period show that Stainforth was the president of the Club in 1929, the year that Good applied for membership, and that A. K. Wilson became their Botanical recorder in 1931. During this period Ronald Good gave regular lectures to HSFNC and their meetings were often held in the University. The major exceptions to this pattern are the 168 specimens collected by G. A. Glister and the 300 or so specimens collected by Good himself in this decade, which are found only in **HLU**. Although the Diatomaceae recorder for HSFNC, Glister obviously had close association with the University College as the Botany Department is given as his address in Club records. Even Stainforth, more an entomologist by inclination, has 8 specimens in **HLU**. Considering that only 25 of Stainforth's plants are in **HLL**, the flow of material seems to have been a little one sided. The almost equal distribution of Royston L. Smith's Cardiff alien specimens between the two herbaria is undoubtedly a result of donations from A. K. Wilson. Wilson was extremely interested in dock aliens (Wilson 1938) and it is known that the two collectors exchanged material.

After 1940 Good's connection with the HSFNC seems to have been a little more distant, although he was eventually made an Honorary Life Member of the Club. Approaching 70% of the Wilson specimens in **HLU** date from 1939 or later. It is not clear whether there was a constant trickle of donations or whether the post-war part of Wilson's collection was donated to the University at some time. The latter may be more likely as an undated (1950s) letter from Mr Foster, HSFNC's secretary at the time, in response to a request from Good concerning the whereabouts of Charles Waterfall's herbarium, suggests that Wilson might know (**DX/14/4**). The tone of the letter makes it clear that Wilson was not now an active member of the club and that Foster was unaware that Good and Wilson may be acquainted.

Robert Lewis provided a link between Good and Wilson in the early 1950s. Lewis was an active member of the HSFNC and donated almost 300 specimens to **HLU** between 1949 and 1955, after which he moved from the area. There are 18 specimens in **HLU** attributed jointly to Wilson and Lewis, the majority resulting from a visit to Westmorland in June of 1954. Lewis also botanised with D. A. Wilkins, Good's assistant at the time. Wilkins' 297 specimens were all collected during 1952 and all, bar one, are from v.c.61. Angus Worsdale, another HSFNC member also made a significant contribution of local specimens during this period. Dr Eva Crackles, HSFNC member, student of Good and graduate of Hull University, is also well represented in **HLU**. Almost fifty specimens, the majority of which are local, were contributed during the 1950s. A further 40 specimens, mainly from 1981, which formed a separate collection, have recently been integrated with the main body of specimens. Crackles made extensive use of the university herbarium in the preparation of her Flora of the East Riding of Yorkshire (1990).

Unsurprisingly, there are many specimens contributed by students and staff of the University. Usually there are only a few per collector but an exception to this is the material collected by the student Andrew Caldicott, mainly in 1967. These 73 specimens, mainly from Essex, form the last substantial addition to the herbarium.

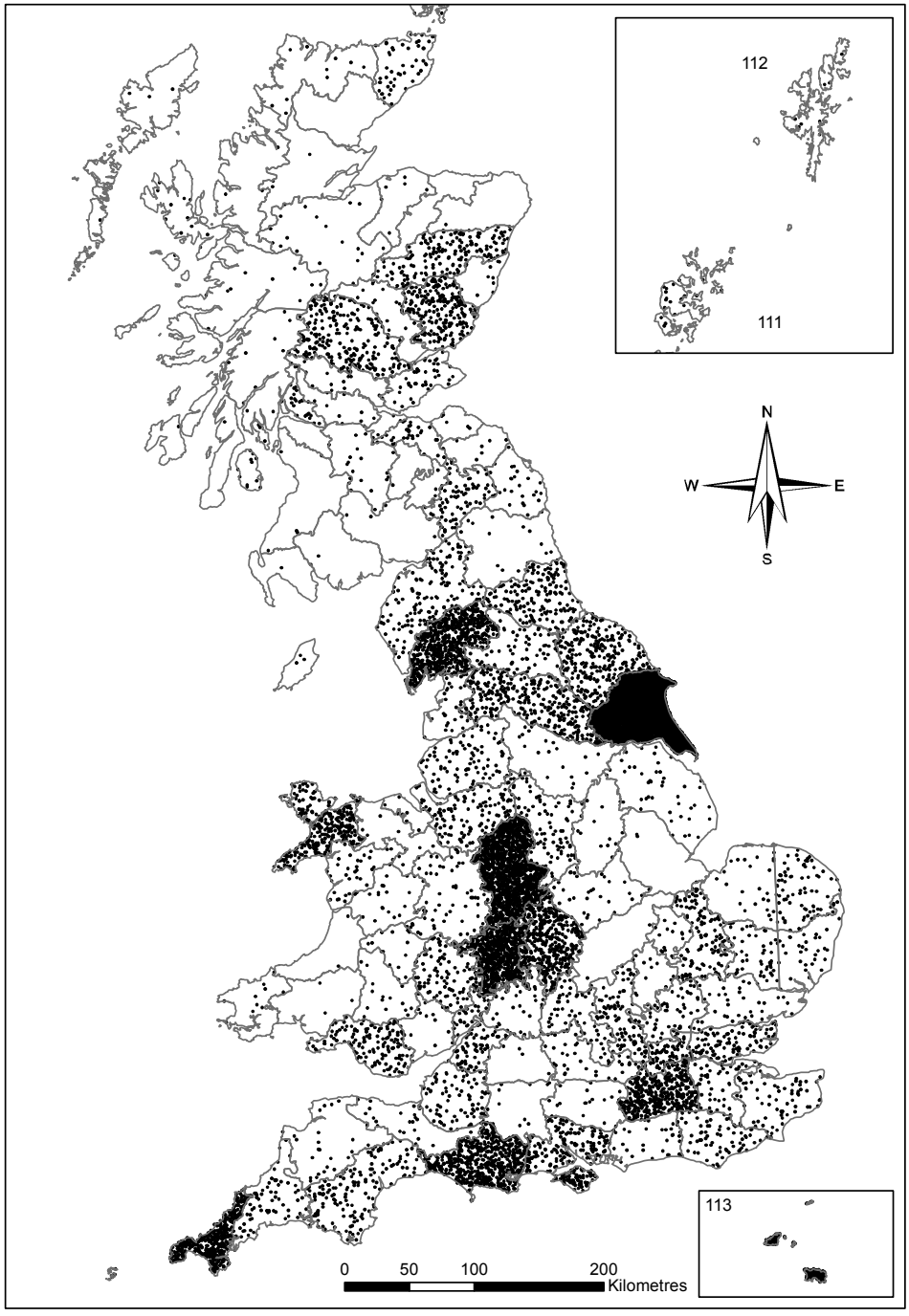

FIGURE 1. Geographical distribution of specimens in the herbarium (**HLU** and **HLL**) from within Great Britain. Each dot represents one specimen but is located randomly within the vice-county.

GEOGRAPHICAL DISTRIBUTION OF SPECIMENS

Figure 1 illustrates the spatial distribution of the specimens which can be assigned to the vice-counties of Great Britain. It is clear that there is a very uneven spatial distribution, a function of the dominance of certain collectors.

As to be expected, South-east York (v.c. **61**) is extremely well represented with almost a third of all specimens originating within the vice-county. Over 2500 of these specimens were collected by Prof. Good with 87% being added in the 1950s. A. K. Wilson made the next largest contribution, almost 1800 specimens, all but 30% of which were collected before 1950.

Staffordshire (v.c. **39**) is the next best-represented county. Although only 258 of these specimens are undoubtedly John Fraser's, the great bulk of the 1059 bearing no collector's name are almost certainly from his herbarium. The actual number of Staffordshire specimens will be greater than indicated as many of Fraser's labels are illegible. The adjacent vice-counties are also reasonably represented, particularly Worcester (v.c. **37**). Almost 100 of the 760 specimens are known to have been collected by, or are from the herbarium of John Fraser. Although these plants are supplemented by 36 specimens collected by T. Baxter of Worcester, the great majority of those without a known collector are probably Fraser's.

Numerically the collections of plants from Westmorland (v.c. **69**) are worthy of mention. They are dominated by the Baynes, Fisher and Hosking material of the 1870s described earlier, but there are significant contributions from H. W. G. Kenrick, who appears to have made several summer visits to the area. The Dorset specimens (v.c. **9**) are also of significance. Around 80% of the Dorset material was collected by Prof Good, the bulk from the period 1914–1939. These will be part of the collection made for his Dorset Flora (Good 1948). Some manuscript maps and draft material for this work are among the little surviving herbarium documentation. The 260 specimens for Mid Perth (v.c. **88**) are unsurprising and they comprise the contributions of over 25 individuals, most of whom were visiting Ben Lawers.

TAXONOMIC COVERAGE

As is to be expected of a university departmental collection, coupled with Ronald Good's own interests, which were often closer to biogeography than to taxonomic botany, **HLU** covers the British flora reasonably comprehensively with representatives of 2001 taxa. The extensive incorporation of earlier herbaria into **HLU** has, however, resulted in better representation in groups which were of particular interest to their original owners. Until 2002 Fraser's *Salix* collection remained un-mounted and still interleaved with 19th century newspaper sheets. Of the 524 Willows in **HLU**, probably a third result from Fraser's own collectings. Andrew Brotherston is also strongly represented and an interleaved letter shows that Fraser had requested specimens from him. Other notes show that Fraser was also corresponding with W. H. Beeby and E. F. Linton about Willows. Both *Rubus* and *Rosa* are well represented in **HLU**, with 269 and 264 specimens respectively. Much of this material appears to have originated from Fraser's herbarium where Bloxam, Bagnall and other 19th century collectors feature strongly.

HLL, despite containing less than a tenth of the specimens, contains representatives of almost half as many taxa as **HLU**. This is consistent with the hypothesis that it was established as a teaching rather than research collection. Alien species are particularly well represented in **HLL** with 55 specimens collected by R. L. Smith, mainly from Cardiff, supplementing Wilson's material from the Hull docks. Table 2 lists the specimens from **HLU** and **HLL** which appear on the Red Data List as being either *extinct in the wild* or *critically endangered*. In addition **HLU** holds specimens of 56 taxa classified as *endangered* and 16 are to be found in **HLL**.

DISSEMINATION OF INFORMATION

It was the intention, from the start of this project, to make the catalogue freely available to as wide an audience as possible. A pilot internet service was established in early 2000 using a provisional version of the catalogue. As no commercial software suitable for the task was available at the time, a dedicated program was written in Borland Delphi. This program, which could be called from a standard web page, permitted interrogation of the catalogue by taxon, collector, locality or v.c. number, together with several options for the sorting of results. The results were returned as a web page, requiring no special software on the user's part. The software was upgraded several times over the following two years and now

TABLE 2. SPECIMENS OF TAXA APPEARING ON THE RED DATA LIST AS EITHER EXTINCT IN THE WILD OR CRITICALLY ENDANGERED

	v.c.	Locality	Collector	Year
HLU taxa now extinct in the wild				
Euphorbia peplis	3	Slapton Sands	Curnow, W.	1878
Euphorbia peplis	3	Dartmouth	Ralfs, J.	1878
Euphorbia peplis	3	Slapton Sands	Ralfs, J.	1878
Euphorbia peplis	3	Beesands	Waterfall, W. B.	1878
Euphorbia peplis	3	Torcross	Waterfall, W. B.	1878
Euphorbia peplis	3	Beesands	Marshall, E. S.	1898
Galeopsis segetum	49	Bangor	Ley, A.	1888
Arnoseris minima	9	Verwood	Good, R. D'O.	1938
Arnoseris minima	17	Wrecclesham		1851
Arnoseris minima	61	Crosswood, Allerthorpe	Nelson, G. A.	1927
Crepis foetida	15	Kingsdown, Deal	Bennett, A.	1875
Crepis foetida	16	Dartford to Greenhithe	Linton, W. R.	1885
Filago gallica	19	Berechurch	Tempere, J.	1877
Filago gallica	19	Berechurch	Dufrey, J. ?	1882
Filago gallica	19	Colchester	Linton, W. R.	1886
Filago gallica	20	Bayford	Groves, H.	1875
Otanthus maritimus	113	St Ouen's Bay, Jersey	Blow, T. B.	1873
Otanthus maritimus	113	St Ouen's Bay, Jersey	Mathews, W.	1874
Otanthus maritimus	113	St Ouen's Bay, Jersey	Lomax, A. E.	1882
Otanthus maritimus	113	St Ouen's Bay, Jersey	Lind, J.	1883
Otanthus maritimus	H12	Wexford	Hurst ?	1901
Tephroseris palustris	27	East Norfolk	Hanbury, F. J.	1884
Spiranthes aestivalis	11	Lyndhurst	Teesdale, M. J.	1878
Spiranthes aestivalis	11	Lyndhurst	Goss, H.	1884
Spiranthes aestivalis	113	St Ouen's Pond, Jersey	Fraser, J.	1870
Spiranthes aestivalis	113	St Ouen's Pond, Jersey	Fraser, J.	1876
HLU critically endangered taxa				
Dryopteris cristata	**39**	Kingston Pool	Fraser, J.	1885
Dryopteris cristata	**58**	Wybunbury Bog		1874
Ranunculus arvensis	**9**	Ruddipole, Weymouth	Good, R. D'O.	1914
Ranunculus arvensis	**17**	Thames Ditton	Preston, A. W.	1877
Ranunculus arvensis	**20**	Berkhamstead	Good, R. D'O.	1916
Ranunculus arvensis	**22**	Maidenhead	Good, R. D'O.	1923
Ranunculus arvensis	**39**	Lower Penn	[Fraser, J.]	1864
Ranunculus arvensis	**61**	Waudby	Wilson, A. K.	1939
Ranunculus arvensis	**61**	Cottingham	Good, R. D'O.	1946
Ranunculus arvensis	**61**	Kilnsea	Good, R. D'O.	1947
Ranunculus arvensis	**61**	Bewholme	Allison, J. H.	1951
Ranunculus arvensis	**61**	Burstwick	Worsdale, A. F.	1953
Ranunculus arvensis	**61**	Fitling	Good, R. D'O.	1954
Ranunculus arvensis	**62**	Easingwold	Good, R. D'O.	1955
Chenopodium urbicum	**17**	Kew Bridge		1863
Chenopodium urbicum	**17**	Chobham		1872
Chenopodium urbicum	**17**	Waddon, nr. Croydon	Bennett, A.	1875
Chenopodium urbicum	**18**	Epping Forest	Crespigny, E. de	1878
Chenopodium urbicum	**18**	Epping Forest	Crespigny, E. de	1881
Chenopodium urbicum	**61**	Cottingham	Good, R. D'O.	1957

TABLE 2 CONTINUED

	v.c.	Locality	Collector	Year
Corrigiola litoralis	**1**	Looe Pool, Helston	Beeby, W. H.	1873
Corrigiola litoralis	**1**	Looe Pool, Helston	Curnow, W.	1875
Corrigiola litoralis	**1**	Looe Pool, Helston		1876
Corrigiola litoralis	**1**	Helston	Fraser, J.	1878
Corrigiola litoralis	**3**	Slapton	Fooks, K.	1949
Corrigiola litoralis	**69**	Walney	Baynes, J.	1877
Sorbus domestica	**17**	Kew (cult.)	Baker, J. G.	1874
Sorbus domestica	**17**	Kew (cult.)	Nicholson, G.	1878
Sorbus domestica	**37**	Wyre Forest, Bewdley	Jordan	1849
Sorbus domestica	**37**	Wyre Forest		1853
Sorbus domestica	**39**	Arley Castle		1865
Sorbus domestica	**39**	Arley Castle grounds	Fraser, J.	1878
Sorbus domestica	**39**	Arley Castle		1887
Cotoneaster cambricus	**49**	Great Orme's Head	G. Seeb.. truncated	-
Cotoneaster cambricus	**49**	Llandudno		1853
Cotoneaster cambricus	**49**	Great Orme's Head	Baxter, T.	1855
Cotoneaster cambricus	**49**	Great Orme's Head	Woodward, J.	1856
Cotoneaster cambricus	**49**	Ormeshead		1863
Cotoneaster cambricus	**49**	Great Orme's Head	Griffith, J. E.	1884
Cotoneaster cambricus	**49**	Great Orme's Head	Griffith, J. E.	1889
Eryngium campestre	**3**	Devil's Point	Goulding, F. H.	1846
Eryngium campestre	**3**	Devil's Point	Hayward, W. R.	1873
Eryngium campestre	**3**	Devil's Point	Briggs, T. R. A.	1876
Scandix pecten-veneris	**9**	Sydling St. Nicholas	Good, R. D'O.	1914
Scandix pecten-veneris	**22**	Holyport, Maidenhead	Good, R. D'O.	1923
Scandix pecten-veneris	**37**	Cowleigh Park ?	Fraser, J.	1877
Scandix pecten-veneris	**39**	Trysull	Fraser, J.	1864
Scandix pecten-veneris	**61**	King George Dock, Hull	Wilson, A. K.	1937
Scandix pecten-veneris	**54**	Goxhill	Glister, G. A.	1938
Scandix pecten-veneris	**61**	Pocklington	Nelson, G. A.	1939
Scandix pecten-veneris	**61**	Welwick	Sledge, W. A.	1946
Scandix pecten-veneris	**61**	Kilnsea Warren	Wilson, A. K.	1952
Scandix pecten-veneris	**61**	Skidby	Good, R. D'O.	1952
Scandix pecten-veneris	**61**	Fitling	Good, R. D'O.	1954
Scandix pecten-veneris	**69**	Roosebeck	Fisher, J.	1877
Bupleurum rotundifolium	**37**	Bredicot		-
Bupleurum rotundifolium	**37**	Cracombe Hill	Baxter, T.	1860
Bupleurum rotundifolium	**38**	Harbury	Fraser, J.	1877
Cynoglossum germanicum	**17**	Norbury Park	Groves, H.	1875
Cynoglossum germanicum	**17**	Norbury	Goss, H.	1886
Cynoglossum germanicum	**17**	Norbury	Goss, H.	1888
Cynoglossum germanicum	**33**	Tewkesbury		1854
Galeopsis angustifolia	**17**	Dorking	Morgan, J. H.	1896
Galeopsis angustifolia	**61**	Wauldby	Good, R. D'O.	1951
Galeopsis angustifolia	**61**	Millington Grange	Lewis, R.	1952
Galeopsis angustifolia	**61**	Huggate Dikes	Good, R. D'O.	1953
Galeopsis angustifolia	**61**	South Dalton	Good, R. D'O.	1956
Galeopsis angustifolia	**61**	Brantingham	Good, R. D'O.	1956

TABLE 2 CONTINUED

	v.c.	Locality	Collector	Year
Galeopsis angustifolia	**61**	West Heslerton Brow	Good, R. D'O.	1956
Galeopsis angustifolia	**62**	Ellerburn	Worsdale, A. F.	1952
Clinopodium menthifolium	**10**	Apesdown	Stratton, F.	1872
Clinopodium menthifolium	**10**		Tucker, R.	1875
Clinopodium menthifolium	**10**	Apesdown	Melvill, J. C.	1882
Galium tricornutum	**9**	Portland	Good, R. D'O.	1919
Galium tricornutum	**19**	Saffron Walden	Groves, J.	1875
Galium tricornutum	**37**	Craycombe Hill	Baxter, T.	1860
Galium tricornutum	**37**	Upper Howsell, Malvern	Baxter, T.	1860
Galium tricornutum	**38**	Whitnash		1879
Centaurea calcitrapa	**13**	Brighton		1872
Centaurea calcitrapa	**15**	Shoreham		1881
Centaurea calcitrapa	**17**	Barnes	Groves, J.	1874
Centaurea calcitrapa	**113**	Jersey	Piquet, W.	1878
Hieracium pseudocurvatum	**88**	Killin	Linton, W. R.	1883
Hieracium pseudocurvatum	**92**	Ben na Mac Duhi		1846
Hieracium pseudocurvatum	**92**	Corrie Etachen	Linton, E. F.	1884
Hieracium pseudocurvatum	**92**	L. Kander		1885
Hieracium pseudocurvatum	**108**	Ben Loaghal	Shoolbred, W. A. and Marshall, E. S.	1897
Pulicaria vulgaris	**9**	Portland Island		-
Pulicaria vulgaris	**37**	Malvern	Baxter, T.	1857
Damasonium alisma	**17**	Thames Ditton		1874
Damasonium alisma	**17**	Mitcham Common	Bennett, A.	1881
Potamogeton acutifolius	**14**	Pevensey Levels	Wilson, A. K.	1934
Schoenoplectus triqueter	**17**	Bank of Thames	Newnham, W. O.	1846
Schoenoplectus triqueter	**17**	Putney, by the Thames	Bennett, A.	1874
Schoenoplectus triqueter	**17**	Mortlake	Groves, H. and J.	1875
Schoenoplectus triqueter	**17**	Kew - Richmond	Morgan, J. H.	1893
Lolium temulentum	**1**	Penzance		1878
Lolium temulentum	**3**	Plympton	Briggs, T. R. A.	1878
Lolium temulentum	**59**	Liverpool, north of	Lewis, J. H.	1872
Cypripedium calceolus	**64**	Grassington	H I for F A L [Lees]	1878
HLL critically endangered taxa				
Ranunculus arvensis	**61**	King George Dock, Hull	Wilson, A. K.	1932
Scandix pecten-veneris	**61**	Cottingham		1864
Scandix pecten-veneris	**61**	King George Dock, Hull	Wilson, A. K.	1932
Galeopsis angustifolia	**63**	Kirk Smeaton	Rob, C. M.	1937
Galium tricornutum	**61**	King George Dock, Hull	Wilson, A. K.	1937
Centaurea calcitrapa	**41**	Splott, Cardiff	Smith, R. L.	1937
Potamogeton acutifolius	**14**	Pevensey Levels	Wallace, E. C.	1934
Lolium temulentum	**41**	Cardiff	Smith, R. L.	1938

runs, with little attention, on a PC running the Microsoft Internet Information Server (IIS) software. Although this system may not be suitable for servicing a large number of requests, it is more than adequate for the level of use experienced and expected.

The response to the pilot launch was both exhilarating and disheartening. It was clear that there were many specimens in the herbarium that were of interest to others and that a valuable service could be provided by putting the catalogue into the public domain. Feedback

from users did, however, reveal the shortcomings of the index. Many data entry errors were identified, mainly involving the spelling of localities and assignment of v.c. numbers. Subsequent programmes of checking have considerably reduced these errors. More importantly, feedback has enabled corrections and additions to be made on the basis of information provided by others and not available when the catalogue was compiled. In addition to the internet implementation of the catalogue, a stand-alone version has also been produced on compact disc (CD). This consists of a dedicated program and a specially formatted dataset. With this version it is possible to perform more sophisticated searches, there is no need for an internet link and it has been possible to integrate scanned documents into the database. The major disadvantage is that the program is platform specific (PC only) and the database is fossilised. Corrections and updates can easily be applied to the internet version but require a new version of the CD. Despite the drawbacks it is considered that the CD version will probably be the most convenient for persistent users and the internet version better for casual use.

The system of dissemination described here is flexible and easy to implement. Although unsuitable for large herbaria, it would certainly be adequate for collections of up to 100,000 specimens. The most time-consuming element of the process has been the data entry and validation and any herbarium already having a computerised catalogue could implement a similar system with a relatively small investment. The ready availability and low cost of modern computers now opens up even more radical prospects. It would be a relatively simple matter to scan the sheets and make the collection available as a virtual herbarium. Although this would not obviate the examination of the specimens for some purposes, most users would probably not need to use the originals. In addition to saving wear and tear on fragile specimens it would open up access to the herbarium by making it universally available.

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