

## Conservation of Britain's biodiversity: *Hieracium neocoracinum* (Asteraceae), Craig Cerrig-gleisiad Hawkweed

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### ABSTRACT

*Hieracium neocoracinum* Pugsley (Asteraceae), Craig Cerrig-gleisiad Hawkweed, is a very rare, endemic plant, confined to Craig Cerrig-gleisiad National Nature Reserve in the Brecon Beacons (v.c. 42), Wales. It was first found in 1895 and has occurred in at least two places within Craig Cerrig-gleisiad. In 1975, its population was estimated to be 60 plants in one population. Field surveys in 2003 revealed 147 plants at the same place, and it was not refound in the second site. The population increase is probably due to colonisation of bare ground created by a landslip, and relaxation of grazing. Seed was collected for the Millennium Seedbank, and it is being cultivated at the National Botanic Garden of Wales.

KEYWORDS: Brecon Beacons, endemic, lectotype, rare species, Wales.

### INTRODUCTION

*Hieracium neocoracinum* Pugsley (Asteraceae), Craig Cerrig-gleisiad Hawkweed, is a very rare, endemic plant, as far as is known confined to cliffs of Craig Cerrig-gleisiad National Nature Reserve (N.N.R.) in the Brecon Beacons (v.c. 42 Brecon), Wales, where it was first found and collected in 1895 by Augustin Ley (Ley 1899). It has not been found anywhere else (Fig. 1).

*Hieracium neocoracinum* is one of 79 rare hawkweeds included in the Vascular Plant Red Data Book (Wigginton 1999). As there was no information on its current population size, a joint project was set up between the National Museums & Galleries of Wales, the National Botanic Garden of Wales and the Countryside Council for Wales to establish its current status, genetic variation and determine its needs for conservation. In this paper the information that is available about *H. neocoracinum* is summarised; full details can be found in Rich & Hill (2004). The genetic variation will be reported separately (Lledo & Rich, in prep.).

Craig Cerrig-gleisiad (historically also known as Craig Gledsiau) is a dramatic, ice-carved, north-east facing valley in the central Brecon Beacons, with cliffs to 150 m high, screes, moraines and terraces. The strata of the Old Red Sandstone, which form the underlying geology, vary in structure and composition with some hard, massive beds and some softer, thinner beds. These rocks give rise to a range of soils, some of which are relatively base-rich but most are fairly neutral in pH. Over time some soils can become quite acidic where leached or where organic matter builds up.

Over 500 higher and lower plant species have been recorded in Craig Cerrig-gleisiad N.N.R., including a number of arctic-alpines such as *Saxifraga oppositifolia* which are at about their southern limits in Britain, and at least 16 other *Hieracium* species. The vegetation history has been studied using pollen in the partial peat-cores extracted from the valley floor by Walker (1982). Following the cold period of the Loch Lomond advance about 8000 B.C. when tundra was present, *Juniperus* scrub became established which was followed by *Betula* with (probably) *Sorbus aucuparia* and subsequently *Corylus*. *Quercus*, *Betula* and *Pinus* then colonised, and by about 5000 B.C. the climate became wetter resulting in expansion of *Quercus* and *Alnus* and a decrease in *Ulmus*, *Pinus* and *Betula*. Unfortunately the peat records then end. Presumably most *Hieracium* species colonised the site before extensive woodland developed in the Brecon Beacons.

### TAXONOMY AND IDENTIFICATION

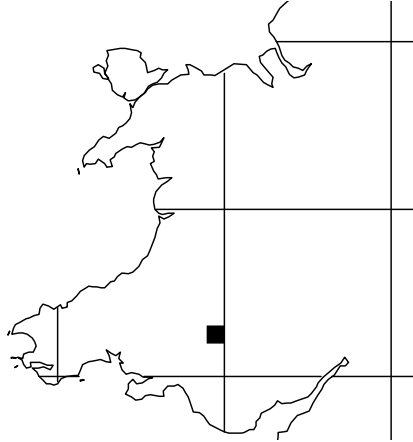


FIGURE 1. Distribution map of *Hieracium neocoracinum*, plotted using DMAPW by Alan Morton.

*Hieracium neocoracinum* was first described as a distinct taxon by Ley (1899), who named it *Hieracium caesium* Fries var. *coracinum* Ley. Pugsley (1941) raised it to species status using the epithet 'neocoracinum' as the combination *H. coracinum* Dahlst. was already in use for a European species. He included it in Section *Vulgata* (Griseb.) Willk. & Lange, Subsection *Bifida* Pugsl., Series *Eu-Bifida* Pugsl. (Pugsley 1948). A lectotype has been selected and hereby designated by P. D. Sell for *Hieracium caesium* var. *coracinum* A. Ley, for which *H. neocoracinum* Pugsley is a *nom. nov.*, as the sheet from Craig Gledsiau, Brecon Beacons, 9 July 1895, A. Ley in **herb. Ley** (currently in **CGE**) with Ley's original description attached.

In the field at Craig Cerrig-gleisiad *H. neocoracinum* is a quite distinct species, almost instantly recognisable from the other *Hieracium* species with which it grows (Fig. 2). The basal rosette leaves have long petioles with strong decurrent teeth, are quite bright yellowish-green, and hairy only on the petioles and midribs. There are no stem leaves (other than the very reduced bracts at the bases of the inflorescence branches), and the inflorescence is clustered at the top of the stem. The involucral bracts have frequent long, simple hairs with blackish bases, a few black glandular hairs, and many white, appressed, cobwebby, stellate hairs. The styles are darker than the ligules.

#### DISTRIBUTION AND ECOLOGY

Historical records of *H. neocoracinum* were traced from the literature and herbaria, and are summarised in Table 1. It has only ever been recorded from Craig Cerrig-gleisiad, and being such a distinct species is unlikely to have been over-looked elsewhere in the Brecon Beacons. The records indicate it has been recorded in at least two places within Craig Cerrig-gleisiad. Ley noted it occurred in 'certain parts' and at 'altitudes' of 460–550 m (note the plurals), B. A. Miles and M. Porter have recorded it from the 'main gully', and P. D. Sell *et al.* recorded it from a low cliff to the north of the main gully.

The historical records were used to direct field surveys on 16 June and 10 July 2003. At least 147 plants occurred in Sell's site, highly concentrated in two areas of adjacent open soil caused by landslips at SN/961219, altitude c. 550 m. A few plants occurred on the cliffs and ledges above. About 2/3 of the population were flowering, and there was abundant regeneration with rosettes of varying sizes. The vegetation ranged from good examples of the CG10a *Festuca ovina*-*Agrostis capillaris*-*Thymus praecox* grassland, *Trifolium repens*-*Luzula campestris* sub-community to a poor example of the U5e *Festuca ovina*-*Agrostis capillaris*-*Galium saxatile* grassland *Vaccinium myrtillus*-*Deschampsia flexuosa* sub-community (*sensu* Rodwell 1992). Six other *Hieracium* species grew with the *H. neocoracinum*, all clearly being rapid colonists of the open ground caused by the landslip. The soil was an immature reddish, stony, granular, moist ranker, pH 6.2 (measured with a pHep2 Hanna pocket-sized pH meter in a 50:50 mixture with distilled water) derived from the Old Red Sandstone.

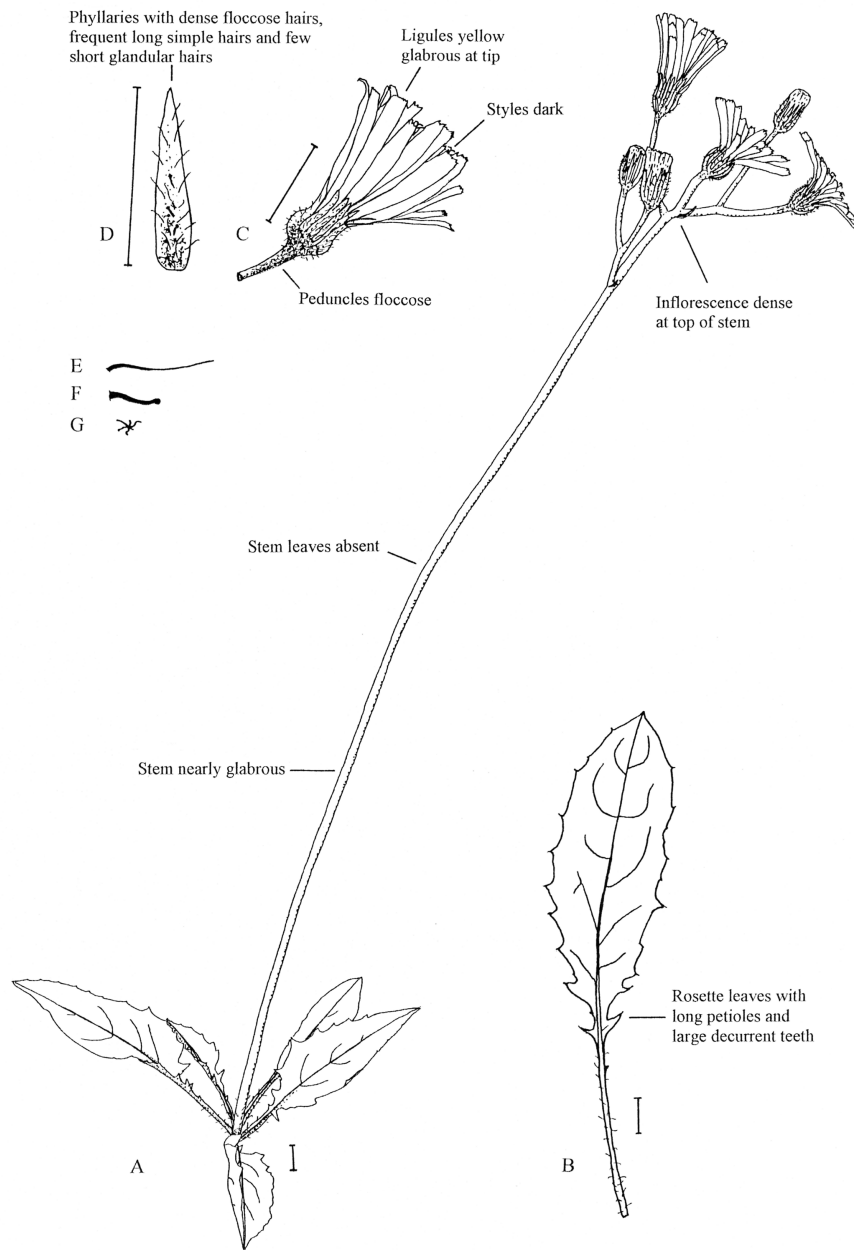


FIGURE 2. Illustration of *Hieracium neocoracinum* showing main identification features. A. Whole plant. B. Basal rosette leaf (younger leaves are often more acuminate towards the apex). C. Capitulum. D. Involucral bract. E. Long simple hair. F. Short glandular hair. G. Floccose hair. Scale bars A–D, 1 cm. E–G not to scale.

No *H. neocoracinum* was found in the main gully or other adjacent gullies (three searches), though it is difficult to search the site thoroughly due to the high cliffs and loose rocks; M. Porter considers that his recent site may have been lost due to another landslip (pers. comm. 2004).

TABLE 1. HERBARIUM AND LITERATURE RECORDS OF  
*HIERACIUM NEOCORACINUM*.

Date	Collector	Site	Source and notes*
24 July 1893 (?)	A. Ley	Craig Gledsiau	<b>CGE</b> ; date unclear
9 July 1895	A. Ley	Craig Gledsiau, on old red sandstone	<b>BM, CGE</b>
7 July 1896	F. J. Hanbury	Gledsiau	<b>BM</b>
9 & 10 July 1896	A. Ley	Craig Gledsiau	<b>BM</b>
28 June 1898	A. Ley	Craig Gledsiau	<b>BIRM, CGE</b>
24 July 1899	A. Ley	Craig Gledsiau	<b>BIRM, LIV</b> (Corrie <i>et al.</i> 2000)
27 July 1900	A. Ley	Craig Gledsiau	<b>LIV</b>
2 August 1900	A. Ley	Craig Gledsiau	<b>CGE</b>
July 1902	A. Ley	Craig Gledsiau	<b>NMW</b>
July 1902	H. J. Riddelsdell	Craig Gleisiad	<b>BM, CGE, E</b>
3 Jul 1905	A. Ley	Craig Gledsiau, fairly abundant on certain parts of this precipice	<b>BM, CGE, NMW</b>
8 July 1951	J. E. Lousley	Craig Cerrig-gleisiad	<b>CGE</b>
22 June 1953	P. D. Sell	Craig Cerrig-gleisiad, cliffs	<b>CGE</b>
5 July 1958	B. A. Miles	Craig Cerrig-gleisiad, main gully	<b>CGE</b>
4 July 1964	J. N. Mills	Craig Cerrig-gleisiad, rock ledge in gully, SN962218	<b>MANCH</b>
27 June 1975	P. D. Sell, M. Massey & L. Farrell	Craig Cerrig-gleisiad (original grid reference incorrect), grassy rock crevices, SN961219	60 plants; Rare species form held by CCW. <b>CGE</b> , photograph in <b>NMW</b> .
11 July 1975	M. Porter	Craig Cerrig-gleisiad, cliffs, SN961219	<b>herb. M. Porter</b> , det. P. D. Sell
11 July 1999	M. Porter	Craig Cerrig-gleisiad, cliffs	field record

\*Material in **BM, E** and **NMW** mainly determined by D. McCosh, material in **BIRM** and **CGE** determined by P. D. Sell, material in **MANCH** and **LIV** determined by J. N. Mills.

## CONSERVATION

The historical records indicate at least two sites within Craig Cerrig-gleisiad, but it was not refound in the main gully so there is now only one population. Given the large expanse of potentially suitable habitat at Craig Cerrig-gleisiad this restricted distribution was quite surprising.

It is difficult to estimate population trends from the fragmentary historical data. It was described as 'scattered over the cliff, but not abundant' by Ley (1899), 'fairly abundant on certain parts...' by Ley in 1905, and 'in fair quantity' by Ley (1909). The only detailed estimate of its population size was of 60 mature/flowering plants in one population by P. D. Sell *et al.* in 1975. In 2003, this population was larger with c. 100 flowering plants and many vegetative rosettes. This increase may be a temporary situation due to the colonisation of suitable habitat created by the landslide. The second population in the main gully may have been lost (perhaps temporarily) to a different landslide.

Colonisation of landslips by *Hieracium* species was also noted elsewhere on the site, where different assemblages occurred depending on the colonisation from immediately adjacent populations, and is clearly a key feature of the biology of some *Hieracium* species in the N.N.R. and presumably throughout the post-glacial forest maxima. The landslips cover areas of up to c. 10 m × 5 m and provide open, if somewhat unstable, ground amongst the dense, closed *Vaccinium myrtillus* heath. It is not clear if the landslips are the result of softer rock strata eroding and causing small scale slips, heavy winter snowfall and frost-heave causing small avalanches which strip the ground of the vegetation cover, or heavy rain-wash and surface water.

Relaxation of grazing in recent years may also have helped increase the population size of *H. neocoracinum*. Most *Hieracium* species are intolerant of grazing, and in sheep-grazed areas are usually confined to ungrazed ledges and rocks, but at Craig Cerrig-gleisiad they are spreading onto accessible open ground. Craig Cerrig-gleisiad was exclusively sheep-grazed for many years, though not heavily, and was changed to low intensity cattle-grazing with no sheep in the early 1990s (R. Preece, pers. comm. 2003). The cattle do not appear to graze the steep slopes (or do so only very occasionally), and the *Hieracium* species are spreading onto the ungrazed open ground. In the longer term the low level of grazing may result in development of scrub, but this does not currently seem to be a threat.

Under the 1994 IUCN Threat Criteria used by Wigginton (1999) *H. neocoracinum* qualifies as 'Endangered' (total population less than 250 individuals). The site is well-protected, being designated as a National Nature Reserve within the Brecon Beacons S.S.S.I. in the Brecon Beacons National Park. *H. neocoracinum* should be added to the S.S.S.I./N.N.R. schedule as a reason for designation of the site at the next revision, but the site is also important for at least six other Red Data Book or very local endemic *Hieracium* species (*H. angustatiforme*, *H. eustomon*, *H. repandulare*, *H. rubiginosum*, etc.). The biggest threats to *H. neocoracinum* are either from a major rock-fall smothering the remaining population, or stabilisation of the landslip and colonisation by competitive species which might then restrict it to a few plants on the cliffs. As the landslips are somewhat unstable, trampling by hikers or stock may result in movement of the soil with consequent damage to some plants, though the population is well off the heavily-used walking routes elsewhere on the site.

Seed was collected from 14 plants for the Millennium Seed Bank on 10 July 2003, and material is being cultivated at the National Botanic Garden of Wales (N.B.G.W. accession no. 20021482).

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