Taxonomy and conservation status of *Hieracium vinifolium* (including *H. kintyricum*), Claret-leaved Hawkweed (Asteraceae)

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ABSTRACT

The taxonomy and conservation statuses of the South-west Scottish endemics *H. vinifolium* and *H. kintyricum* have been assessed from herbarium and field studies. The species generally differ in coloration and size, but have many overlapping characters and cannot be separated in the field; *H. kintyricum* should be included within *H. vinifolium*. *Hieracium vinifolium* was found in five of the six of its historic sites visited, but has probably gone from one site where it could not be refound; one historic site was not visited. 86 plants were recorded in the five sites visited, indicating that overall its IUCN conservation status is 'Endangered'.

KEYWORDS: endemic, Endangered, *Hieracium kintyricum*, IUCN threat criteria, Kintyre, Kintyre hawkweed, Scotland.

INTRODUCTION

In his recent revision of British and Irish *Hieracium* L. (Asteraceae), P. D. Sell described two new endemic species from Kintyre in South-west Scotland, *H. kintyricum* P. D. Sell, Kintyre Hawkweed and *H. vinifolium* P. D. Sell, Claret-leaved Hawkweed (Sell & Murrell, 2006). Both species are members of *Hieracium* section *Vulgata* (Griseb.) Willk. and Lange, and both were first collected as *H. rubiginosum* F. Hanb. by the great Kintyre botanist A. G. Kenneth during his explorations of the vice-county for his Flora (Cunningham & Kenneth 1979). Historically, *H. rubiginosum* was a very variable species (Pugsley 1948; Sell & West 1968), and taxa formerly included in it are now rightly split into at least six taxa. Cunningham & Kenneth (1979) noted that in Kintyre *H. rubiginosum* was a "most variable plant which can be puzzling" and that "it produces extreme variants in the Mull of Kintyre area". It was these 'extreme variants' that were named as *H. vinifolium* and *H. kintyricum*.

Sell & Murrell (2006) listed *H. kintyricum* from only one ravine at Largybaan, but *H. vinifolium* was more widespread on and near the Mull of Kintyre and at Barrahormid in the same vice-county. Both species are listed in the latest JNCC species status assessment as IUCN (2001) threat category 'Vulnerable' (http://www.jncc.gov.uk/page-3408, accessed April 2009) yet neither species had been recorded since the 1960s and there was no population information available. During the course of field work on Kintyre hawkweeds in 2006, 2007 and 2008, we visited the sites *H. kintyricum* and *H. vinifolium* with a view to collect data to enable proper conservation assessments to be carried out, but following difficulties in distinguishing the two species, T. Rich began to question their taxonomy and whether they were part of the variation in one species. In this paper, the taxonomy and conservation status of this pair of species is discussed and reviewed.

METHODS

All available herbarium material of *H. kintyricum* and *H. vinifolium* in **BM**, **CGE**, **MANCH** and **NMW** was examined and a list of sites was compiled. These data were then used to direct field surveys in 2006, 2007 and 2008. Photocopies of material were taken into the field.

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Population sizes were counted as far as practicable in the field (most of the sites are on steep sea cliffs), and notes made on associated species. The only site not visited were the cliffs of Rubha Dùin Bhàin due to strong winds, but the populations in the adjacent Largybaan ravine, an excellent *Hieracium* site (cf. Cunningham & Kenneth 1979), were examined in detail. A Garmin Etrex GPS unit was used to record locations. Voucher specimens have been placed in **BM** and **NMW**.

Soil pH was measured on air-dried soil samples collected from around the roots with a pHep2 Hanna pocket-sized pH meter in a 50:50 mixture with distilled water.

RESULTS

TAXONOMY

Hieracium kintyricum and *H. vinifolium* were described from very little material – only two specimens of *H. kintyricum* and 11 specimens of *H. vinifolium*, though P. D. Sell had seen the latter species in the field in 1968, and had collected a series of specimens from Rubha Dùin Bhàin to show the variation (**CGE**).

When describing his new species, Sell gave a full Latin description and direct English translation, but no further taxonomic notes indicating how they might differ from each other or other species. His descriptions are compared below, with identical characters excluded and indicated by ellipses, and significant differences underlined:

Hieracium kintyricum … *Stem* 30–60 cm, pale yellowish-green, suffused brownish-purple in the lower half, slender to more or less robust … with numerous … simple eglandular hairs … or absent, with few to numerous stellate hairs in the upper part. *Leaves* medium glaucous-green on upper surface, paler beneath, basal few, the lamina 4–10 × 2·0–4·5 cm, broadly ovate, broadly elliptical or elliptical, narrowed above but rounded-obtuse at apex, subentire, remotely denticulate or with a few small teeth, and abruptly contracted or cuneate at the base, the petioles up to 4 cm; cauline 3–5, the lowest and often the first 2, like the basal but sometimes with more numerous teeth and petiolate, the upper with lamina smaller, linear-lanceolate, long acute ... *Inflorescence* with 2–7 capitula, paniculate-corymbose, peduncles rather slender, with … numerous short to medium, pale simple eglandular hairs and a very occasional, short, dark glandular hair. *Involucral bracts* 4–11 × 1·0–1·.5 mm, mostly pale green with little darkening in the centre … obtuse at apex, with … pale simple eglandular hairs, few to fairly numerous … dark glandular hairs obscured by the simple hairs and few stellate hairs towards the base. *Ligules* yellow.

Hieracium vinifolium… *Stem* 20–60 cm, pale green often suffused with purplish-red, usually slender, rarely robust … with numerous … wavy simple eglandular hairs … and with few stellate hairs in the upper part. *Leaves* bluish-grey on upper surface, paler beneath and often tinted reddish-purple beneath, whole leaf sometimes suffused reddish-purple; basal few to numerous, with the lamina 2–10(–14) × 2–5 (–6) cm, elliptical, ovate or lanceolate, rounded-obtuse to subacute at apex, subentire, denticulate to dentate, the upper third sometimes entire, most cuneate, sometimes attenuate or subtruncate at base, the petioles up to 5 cm; cauline 2–8, the lower and median like the basal, shortly petiolate or sessile, the upper with lamina lanceolate, acute … *Inflorescence* with 2–16 capitula, corymbose, sometimes with a long lower branch; peduncles short, sometimes very short and often curved, with … numerous short to medium, pale, dark-based, simple eglandular hairs and numerous short, dark glandular hairs. *Involucral bracts* 3–11 × 0·8–1·0 mm, dark olive green, the inner with paler margins … gradually tapered to an obtuse or subacute apex, with …pale, dark-base simple eglandular hairs, with few … dark glandular hairs and an occasional stellate hair. *Ligules* deep yellow.

These descriptions indicate the species generally differ in coloration and size but have many overlapping characters. There are few discrete characters, such as the inflorescence structure, hair types on the peduncles, involucral bract width and colour and ligule colour. In the key (Sell & Murrell, 2006, page 233), the two species are split at lead 319 as follows:

319. Peduncles with numerous glandular hairs; involucral bracts 0·8–1·0 mm wide … *H. vinifolium*

319. Peduncles with few or no glandular hairs; involucral bracts 1·0–1·7 mm wide … *H. kintyricum* and three other taxa.

In the field, great difficulty was found separating the species. *Hieracium vinifolium* was seen in four of the six recorded localities

FIGURE 1. Variation in *Hieracium vinifolium*. A, B, *H. vinifolium*, Port na h-Olainn. C, *H. kintyricum*-like plants, Largybaan. Scale bars 10 cm.

and seemed distinctive from other *Hieracium* species it was growing with. It varied in size within and between sites, largely depending on exposure on the west-facing cliffs (P. D. Sell's four sheets from Rubha Dùin Bhàin also show this). However, the only group of plants found which resembled *H. kintyricum* at all was found on very sheltered rocks at the upper, east end of the Largybaan ravine, several hundred metres upstream from typical *H. vinifolium* growing on more open exposed rocks. The ligule and involucral bract coloration was virtually identical (photographs in **NMW**). It was suggested in the field that the less intense coloration and more lax growth form and paniculate-corymbose inflorescence of these *H. kintyricum*-like plants was due to habitat, though this should ideally be tested by cultivation experiments. Plants from the Largybaan area are illustrated in Figure 1.

TABLE 1. MEASUREMENTS OF BRACT WIDTHS AND FREQUENCY OF GLANDULAR HAIRS ON THE PEDUNCLES FOR MATERIAL OF *H. VINIFOLIUM* AND *H. KINTYRICUM*

Species	Bract widths (mm)	Frequency of dark glands on peduncles
Hieracium kintyricum		
Largybaan, Kenneth no. 56/69 (Holotype, **CGE**)	1·5	Sparse to frequent
Largybaan, Kenneth no. 52/69 (**CGE**)	(1·3)1·4–1·8(–2·0)	Sparse to frequent, some pale glands present
Largybaan (herb. McCosh)	1·4–1·5	Numerous below head, sparser lower down
Hieracium vinifolium		
Rubha Dùin Bhàin, Sell no. 68/202 (Holotype, **CGE**)	1·2–1·3	Frequent to numerous
Rubha Dùin Bhàin, Sell no. 68/202 (**CGE**)	1·3–1·7	Few to sparse
Largybaan (herb. McCosh)	1·2–1·4	Frequent
Port na h-Olainn (herb. McCosh)	1·3–1·5	Numerous
Port na h-Olainn (V.2007.1.65, **NMW**)	1·5–1·7	Frequent
Port na h-Olainn (V.2007.1.66, **NMW**)	1·3–1·5	Occasional
Beinn a' Theine (V.2008.1.911, **NMW**)	1·2–1·5(–1·7)	Sparse to frequent

Subsequent re-examination of herbarium material failed to indicate any clear differences between the taxa, and the bracts widths and frequency of dark glandular hairs on the peduncles showed more variation than given in the original descriptions or the key (Table 1). We are unable to find any consistent differences between *Hieracium kintyricum* and *H. vinifolium*, and it seemed that the *H. kintyricum*-like plants were simply part of the variation in *H. vinifolium*.

DISTRIBUTION AND ASSOCIATED SPECIES

1. BARRAHORMID (V.C. 98 ARGYLL)

A. G. Kenneth collected *H. vinifolium* at Barrahormid at NR710825 in 1968 (**CGE**, Kenneth no. 368).

The site was visited twice on 15 July 2006 and 17 July 2008 by T. Rich but *H. vinifolium* was not refound. However, on 16 June 2008 B. Burrow found five weak plants with *H. vulgatum* on low rocks in a small roadside quarry at NR712828 several hundred metres to the north of the original grid reference (herb. B. Burrow; pers. comm. 2010); it is possible that this was Kenneth's original site.

2. LIGHTHOUSE BURN, MULL OF KINTYRE (V.C. 101 KINTYRE)

Hieracium vinifolium was collected from the Lighthouse Burn, Mull of Kintyre by A. G. Kenneth in 1965 at NR589082 (**CGE**).

On 15 July 2008, T. Rich and I. Teesdale found two plants and two possible plants (all inaccessible) on the north side of the burn below the waterfall immediately below the path to the foghorn at NR58980819. Associated species were *Agrostis stolonifera* L., *Alchemilla glabra* Neygenf., *Brachypodium sylvaticum* (Huds.) P. Beauv., *Calluna vulgaris* (L.) Hull, *Centaurea nigra* L., *Crepis paludosa* (L.) Moench, *Filipendula ulmaria* (L.) Maxin., *Hypericum androsaemum* L., *Hypericum pulchrum* L., *Hypochaeris radicata* L., *Lotus corniculatus* L., *Plantago maritima* L., *Prunella vulgaris* L. and *Taraxacum* sp.

3. SOUTH POINT, MULL OF KINTYRE (V.C. 101 KINTYRE)

On 26 June 1968, P. D. Sell, A. G. Kenneth and A. C. Jermy collected *H. vinifolium* on cliff ledges by the coast at South Point, NR588076 (**CGE**).

The site was searched extensively above and below the footpath on 14 July 2006 by D. McCosh and T. Rich. Only *H. vulgatum* Fr. was found on a cliff below the footpath at NR58940772. Other cliffs around the area were also searched with no success, and it is likely that this population has gone.

4. PORT NA H-OLAINN (V.C. 101 KINTYRE)

Hieracium vinifolium was collected at Port na h-Olainn at NR593133 by J. N. Mills on 25 June 1969 (**MANCH**).

The cliffs were searched on 20 June 2007 by D. McCosh, T. Rich *et al.*, and two sub-populations were found. The first sub-population of *c*. 20 plants occurred scattered on a steep, west facing, rocky cliff at

NR59461325 (*c.* 150 m altitude) with *Anthoxanthum odoratum* L., *Calluna vulgaris, Erica cinerea* L., *Hedera helix* L. sensu lato, *Hypochaeris radicata, Jasione montana* L., *Rosa canina* L. and *Teucrium scorodonia* L. The soil was a blackish sandy grit, pH 6·4.

The second sub-population occurred c. 150 m to the north at NR59391336 on smaller but more calcareous sandstone with *Agrostis stolonifera, Campanula rotundifolia* L., *Hedera helix, Hypochaeris radicata, Plantago maritima, Potentilla erecta* (L.) Raeusch., *Thymus polytrichus* A. Kern ex Borbás and *Viola riviniana* Rchb. Seven plants occurred on an accessible ledge, and another three plants *c.* 30 m up the cliff.

5. RUBHA DÙIN BHÀIN (V.C. 101 KINTYRE)

Hieracium vinifolium was first collected from the cliffs between Rubha Dùin Bhàin and Uamh Ropa on a B.S.B.I. Excursion on 26 June 1968 led by A. G. Kenneth (**CGE**). The site was not revisited in 2007 due to strong winds.

6. LARGYBAAN (V.C. 101 KINTYRE)

Cunningham & Kenneth (1979) recorded *H. rubiginosum* from Largybaan, a record which presumably refers to *H. vinifolium* (this record could also refer to the Rubha Dùin Bhàin).

On 20 June 2007, D. McCosh, T. Rich *et al.* found *H. vinifolium* scattered along the south-facing cliffs on the north side of the Largybaan stream, with a very occasional plant on rocks on the south side. Populations were noted at NR59511444 (3 plants), NR59631437 (3 plants), NR59631430 (7 plants), NR59781433 (6 plants) and NR59831430 (4 plants). They typically occurred on the edges of rocks with *Calluna vulgaris, Centaurea nigra, Daucus carota* L., *Hypochaeris radicata, Jasione montana, Lonicera periclymenum* L., *Lotus corniculatus, Solidago virgaurea* L., *Teucrium scorodonia* and *Viola riviniana,* and other *Hieracium* species such as *H. anglicum* Fr., *H. flocculosum* Backh. fil. ex Bab. and *H. rubicundiforme* (Zahn) Roffey. The *H. kintyricum*-like plants were found at NR59981422 (6 plants and 8 seedlings, soil pH 6·8) in a more sheltered location on a southern branch of the Largybaan stream.

7. BEINN A' THEINE, MULL OF KINTYRE (V.C. 101 KINTYRE)

A. G. Kenneth collected *H. vinifolium* from a cliff face about 2 miles SE of the lighthouse, Mull of Kintyre at NR603068 in 1965 (**CGE**).

Figure 2. Distribution map of *Hieracium vinifolium* (including *H. kintyricum*). ●2006–2008.

On 17 July 2008, T. Rich and I. Teesdale visited the site and found a good population of plants associated with a small stream/waterfall dropping SW down the cliffs at NR60310695, in a relatively sheltered situation. About 20 plants were counted on the south-facing side, with *Carex flacca* Schreb., *Festuca rubra* L., *Potentilla erecta* and *Thymus polytrichus* and other *Hieracium* species including *H. subrubicundum* Dahlst. on a gentle slope of 15%. Some plants occurred in nearly pure *Calluna vulgaris* on the steep slopes of about 80°.

DISCUSSION

We were unable to distinguish *H. kintyricum* from *H. vinifolium* in the field or herbarium. The descriptions of either species could apply equally well to the other, and there are no clear-cut differences between them, and *H. kintyricum* looks like an environmentally-induced variant of *H. vinifolium*. In light of the additional material seen and re-examination of the original specimens, we suggest that the two taxa should be merged. As both species were described at the same time the names have equal priority under the St Louis Code (Greuter *et al.* 2000), so a decision needs to be made whether to include *H. kintyricum* within *H. vinifolium* or vice versa: *H. vinifolium* is the more widespread of the two and more

representative of the merged species as a whole, and only minor amendments are needed to its description; so the name *H. vinifolium* P. D. Sell is accepted in preference to *H. kintyricum* P. D. Sell which is rejected as a synonym.

Thus *H. vinifolium* was refound in five of the six sites visited, and is very likely still to be present at the Rubha Dùin Bhàin site which was not revisited. It has probably gone from one site where it could not be refound. A total of 86 plants were recorded in the five sites, indicating that overall its conservation status is likely to be 'Endangered' under the IUCN (2001) threat criteria. The distribution is mapped in Figure 2. A small amount of seed has been deposited in the millennium Seed Bank.

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