

## Notes on the Hawkweeds (*Hieracium sensu lato*) of western Scotland

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### ABSTRACT

The distribution of species of *Hieracium sensu stricto* and the subspecies of *Pilosella officinarum* C. H. & F. W. Schultz in west and north-west Scotland is indicated for those areas and taxa of which the authors have personal knowledge. Corrections are included for the Distribution Maps of certain species as shown in the *Critical Supplement*. Ecological information is given for the species of *Hieracium* and their distribution is discussed in relation to the areas visited within each vice-county. A key to the genus *Pilosella* and an Index of Place Names are given as Appendices.

### INTRODUCTION

Our knowledge of the distribution of the genus *Hieracium* in Scotland owes much to the explorations of certain English botanists in the period between 1850 and 1918. Notable among these were J. Backhouse Jnr, E. F. and W. R. Linton, Henry Groves, F. J. Hanbury, E. S. Marshall, W. A. Shoolbred and G. C. Druce, all of whom collected in the central and north western Highlands.

After the first world war little attention was paid to this genus by British field botanists, due mainly to a lack of taxonomists competent to undertake determination of specimens. It was not until the commencement of the B.S.B.I. Distribution Maps Scheme in 1954 that they were encouraged by the intensive taxonomic study of the genus being undertaken by P. D. Sell and Dr C. West to resume the study of hawkweeds in the field on anything approaching the scale of fifty years earlier. Progress has been so great in recent years, both in taxonomic and field work, that sufficient information became available to make possible the publication in the *Critical Supplement* of distribution maps of all the hawkweed species then known to occur in the British Isles (Perring & Sell 1968).

During the years 1959-1968 the authors have made extensive field investigations into the hawkweed flora of western and northern Scotland, resulting in a very large number of determinations by Sell and West. We have thought it desirable to place the results of these researches on record in a form which supplements the information given on the distribution maps in a number of ways. We must emphasise that this account is in no sense a *Hieracium* Flora of western Scotland and we have not included records contributed by the earlier botanists referred to above. We have treated our records on a vice-county and district basis and appropriate topographical, geological and habitat data have been included. We have not included any records from the following vice-counties within our area: v.c. 97 Westernness (with the exception of that part which is in Argyll), v.c. 100 Clyde Isles and v.c. 110 Outer Hebrides. Many of the records are additional to those shown on the relevant maps in the *Critical Supplement*,

and the opportunity has also been taken to indicate certain alterations necessary to the published maps. It will be apparent that while certain areas are well recorded there are many other districts which are relatively underworked. Knowledge of the Scottish *Hieracia* is by no means complete, and an appreciable number of specimens remain undetermined, some of which may be undescribed species.

In the area under consideration there is no lack of the sort of rocky habitats favoured by most species of *Hieracium*. In such situations, particularly where basic conditions occur, a good varied hawkweed flora may be expected. Steep, rocky stream-sides and gullies usually afford particularly favourable conditions. It is seldom possible to be specific on the ecological requirements of individual species; where we have found it possible to draw conclusions on the basis of personal observation we have included these. In our experience at least some species do appear to be capable of colonising and persisting in a diversity of habitats. Good examples of this are *H. vulgatum*, *H. cravoniense* and *H. maritimum* (which occurs in a very wide range of habitats, including river shingle, a wall top, heathery grassland, montane rock ledges and a sandy loch shore).

The principal basiphilous groups are: certain of the Section Oreadea, and most species of the Sections Subalpina and Cerinthoidea. It would appear that species of the Section Alpina, though generally regarded as tending to be acidiphile, are not exclusively so, and that some at least may prefer neutral or even slightly basic conditions. They are, however, rarely to be found in the mountain gullies so much favoured by species of the Section Subalpina.

Altitude is a very important factor influencing the distribution of hawkweeds, but anomalies are occasionally encountered. For example, on Meall a' Bhuiridh in Glen Coe species of the Section Alpina have been noted below the highest recorded station for *H. subumbellatiforme* at 2,000 ft, while species of the same section occur near Loch Sloy, Dunbartonshire at around 1,800 ft.

The nomenclature used in these notes is that of Sell and West (Perring & Sell 1968), which differs significantly from that of Dandy (1958), and in accordance with current views the subgenus *Pilosella* is here recognised as of full generic rank.

#### REGIONAL ACCOUNTS

##### VICE-COUNTY 72, DUMFRIES

With the exception of the area of the Moffat hills, where in the past a number of interesting and very local species have been recorded, comparatively little is known of the hawkweed flora. Investigations of some areas in the west of the county during the summer of 1968 suggest that further search of suitable localities may yield interesting results.

The localities examined in 1968 included rocky outcrops and gullies by the Crawick Water and in the Dalveen Pass, both in the Lowther Hills area, and Glenwhargen Craig, a rocky hill in the valley of the Scar Water, a western tributary of the Nith. *H. caledonicum* was found to be not uncommon in the Lowther Hills localities, and a fair amount of *H. duriceps* was also noted. The most interesting plant from the Dalveen Pass is *H. pseudosarcophyllum*, a hawkweed previously known only from the vicinity of Moffat in the same county. *H. caestomurorum* was also noted. Glenwhargen Craig proved to have *H. leyi* in considerable quantity, hundreds of plants of this fairly distinct

species being scattered over a large area of otherwise floristically rather poor rock. *H. leyi* is a glaucous-leaved species of the Section Oreadea which had not previously been recorded for Dumfriesshire. This was accompanied in a few places by *H. rubiginosum*, a hawkweed of rather common occurrence in the south-west of Scotland.

A rather puzzling plant with close affinities to *H. subhirtum* was found in two places in the Menzies and Scar valleys.

#### VICE-COUNTY 73, KIRKCUDBRIGHT

One of us (A. McG. S.) was able, during the years 1959 to 1962, to examine the hawkweeds of this county with some interesting results, the more rewarding records being obtained in the lowland and coastal areas of the county. A large proportion of the north-western hill country is composed of acid granite rocks and is not conducive to the development of a good hawkweed flora, but the Silurian rocks, which predominate in the north-east, are rather more productive as basic conditions are not infrequent. Our limited examination of these hill areas has yielded only three species: *H. sparsifolium* was found near High Bridge of Ken, Dalry, and also near Lauriston, in the former locality being accompanied by *H. euprepes*, while *H. rubiginosum* was found by the Poldores Burn in an aberrant form, accompanied by a plant which awaits identification. Since *H. holosericeum* has been reported from one of the higher hills of the Kells range, it seems likely that if the area was more thoroughly searched a good selection of species, perhaps including some of the Section Subalpina, would prove to be present.

One of our earliest finds in the county is of considerable interest. A plant obtained on rocks by the River Dee near Tongland Bridge, Kirkcudbright, in 1959 was found to be *H. vagense*, a very distinct species previously known only from limestone areas in Wales. In the same year a hawkweed found on sea-cliffs at Douglas Hall, Colvend, was identified as *H. subplanifolium*, this being the first Scottish record for the species. The Kirkcudbrightshire coast from Colvend in the east to the county boundary in the west is for the most part rocky, with massive cliffs occurring in many places. The rock is mainly of Silurian age, its rather basic nature and sunny southern exposure producing a varied and interesting flora including a number of hawkweed species. In addition to *H. subplanifolium* already mentioned, *H. subrude* and *H. orimeles* have been found on shore rocks near Kirkcudbright, while *H. schmidtii* and *H. cravoniense* have been identified from shore rocks near Gatehouse-of-Fleet.

In the landward area of the county, *H. diaphanoides* occurs on the bank of the River Urr near Corsock, and *H. diaphanum* on the railway bank near Gatehouse-of-Fleet station. The latter species also occurs by the Grey Mare's Tail, Newton Stewart. Of the aphyllipodous species, *H. umbellatum* has been recorded from two sites, one a railway bank near Kirkcudbright, the other an area of waste ground near Dalbeattie. *H. perpropinquum* appears to be not uncommon, having been detected in at least three widely separated localities.

#### VICE-COUNTY 74, WIGTOWNSHIRE

Practically nothing is known of the hawkweed flora of the county, but our impression is that it is likely to be poor in comparison with that of its neighbours, mainly due to a lack of exposed rocky habitats in the landward area. However,

the coastal cliffs, if examined at the right season, might prove to harbour a few species, as they are similar in character to those of the Kirkcudbright coast.

#### VICE-COUNTY 75, AYRSHIRE

Like Dumfriesshire, Ayrshire, though possessing much hill country with rocky habitats suitable for hawkweeds, has been little explored for these plants. One of us (A. McG. S.) has examined rocky sites in the neighbourhood of Dalmellington and Straiton with moderate results, and a few species have been noted on coastal rocks in the south-west of the county. The Dalmellington district has yielded *H. ampliatum*, *H. duriceps* and *H. rubiginosum*, the latter species also occurring on Craig Hill, Straiton, where it appeared to be the only species present, though *H. duriceps* is on riverside rocks nearby. *H. lissolepium*, a species of the Section Tridentata rather rare in Scotland, was recorded at Stinchar Bridge. Hill country with apparently suitable ground near Rowantree Hill, Barr proved to be disappointing, the only species present being *H. duriceps*.

In the south-west of the county *H. schmidtii* grows on rocky banks at Kennedy's Pass near Girvan, and *H. caledonicum* occurs in an old quarry close to the county boundary near Cairnryan. In the north near Largs *H. subrude* grows on basalt rocks. The aphyllipodous species *H. umbellatum* and *H. perpropinquum* have been noted in some quantity on sandy waste ground near Kilwinning.

#### VICE-COUNTY 76, RENFREW

This county has not been the subject of particularly intensive investigation so far as the hawkweed flora is concerned. Although a good deal of high ground with rocky outcrops occurs within its boundaries, the rocks, which are mainly basalt lavas, seem not to be so productive of *Hieracium* species as the same formation just across the Clyde in Dunbartonshire; however, where limited exposures of more basic rock occur, as in Shielhill Glen, Inverkip (Calcareous Sandstone Series), good results may be expected. In the locality just mentioned a good colony of *H. dipteroides* was found in 1967. Another find of some interest was made in 1964 by Mr D. McClintock, who noted *H. chloranthum* growing on a wall near Lochwinnoch—a most unusual habitat for a species which normally favours rocky sites, and which grows in such habitats by the River Calder nearby. *H. latobrigorum* has been noted at Lochwinnoch, and also near Neilston.

#### VICE-COUNTY 86, STIRLING

Suitable hawkweed ground is plentiful in the county, which in this respect is very similar to Dunbartonshire. In the south, extensive exposures of basalt crags occur on the Campsie and Fintry hills, while to the east of Loch Lomond the higher hills, composed mainly of schists, calcareous in places, provide good rocky habitats, both on the exposed crags at the higher levels and on the sides of the numerous streams. However, our knowledge of the hawkweeds of the highland area of Stirlingshire is very limited, and Ben Lomond, the county's highest summit, and other neighbouring hills should produce excellent results with further investigation.

It is on the basalts of the Campsie and Fintry hills that the greatest display of *Hieracium* species is to be found, and certain particularly favourable areas have been rather carefully examined. The best localities have a warm, southern

exposure. *H. caledonicum* is common on the craggy basalt overlooking Lennox-town, and other species occurring are *H. rubiginosum*, *H. euprepes*, *H. duriceps*, *H. subhirtum* and the very rare *H. britanniciforme*, for which the only other known Scottish station is in Kintyre. In the nearby Campsie Glen the Section Tridentata is represented by a colony of *H. stewartii*, and *H. lissolepium*, which belongs to the same section, has been recorded from the Gonachan Burn, where *H. rubiginosum* and *H. pictorum* also occur. In both localities the rare *H. rhomboides* has been noted. The best ground in the Fintry hills has proved to be a range of basalt cliff known as the Double Craigs. Here the interesting feature of the hawkweed flora is the occurrence, apparently to the virtual exclusion of other species, of three species belonging to the Section Oreadea, all of which are distinctly local in Scotland. These are *H. lasiophyllum*, *H. jovimontis* and *H. dicella*. The last-named species also occurs in Ballagan Glen in the Campsies, where *H. petrocharis*, a member of the Section Subalpina, also grows at the surprisingly low altitude of 700 ft. *H. duriceps* appears to be generally distributed over the area just described.

#### VICE-COUNTY 97, (ARGYLL)

Our knowledge of the hawkweeds of this portion of the vice-county of Westerness is not extensive. Of the few hills we have visited, perhaps the most rewarding is Garbh Bheinn in Ardgour where the following varied assortment of species has been recorded: *H. holosericeum*, *H. alpinum*, *H. senescens*, *H. marshallii*, *H. pseudanglicum*, *H. shoobredii*, *H. sommerfeltii*, *H. chloranthum*, *H. argenteum*, *H. vulgatum* and *H. sparsifolium*. Of these, perhaps the most interesting are *H. alpinum*, which is rather rare in the western Highlands, and *H. sommerfeltii*, a local plant usually growing at high altitudes. On the low ground in Ardgour, *H. latobrigorum* and *H. subcrocatum* of the Section Foliosa and *H. perpropinquum* of the Section Sabauda occur at Gearradh.

In Kingairloch we have looked over Creach Bheinn and Maol Odhar. These two hills are contiguous and they produce *H. marshallii*, *H. ampliatum*, *H. shoobredii*, *H. sommerfeltii*, *H. chloranthum*, *H. pictorum* and *H. vulgatum*. Meall nan Each has *H. anglicum* and *H. shoobredii*.

The district of Morvern offers a good deal of interesting ground, much of the country rock being basalt of Tertiary age supporting a good flora. On Beinn na Beathrach *H. chloranthum*, *H. senescens*, *H. ampliatum*, *H. pictorum* and *H. strictiforme* have been noted—a disappointing list, while Sithean na Raplaich and the vicinity of Loch Dur na Marst have *H. anglicum* and *H. subhirtum*. Sithean na Raplaich would probably produce better results with more careful searching as it is a particularly promising area. Beinn na h-Uamha near the head of Loch Teacuis has produced *H. pseudanglicum*, *H. anglicum*, and *H. duriceps*, while on the low ground *H. shoobredii* has been found near Killundine.

The district as a whole may be compared topographically with the neighbouring Isle of Mull, but though the number of species of *Hieracium* so far found there is similar to that of its neighbour, in their composition there is a marked difference. For instance, no species of the Section Alpina has so far been detected on Mull, and only one named species of the Section Subalpina has been noted there, yet in Ben More the Mull hills attain as great an altitude as those of the adjacent mainland. The eighteen species recorded probably represent only a small proportion of the total.

## VICE-COUNTY 98, ARGYLL (MAIN)

This large vice-county contains a great diversity of habitats suited to *Hieracia*, and probably supports a larger number of species than does any other. Although we have investigated several areas in considerable detail, these only represent a small proportion of the potentially good hawkweed ground, and this particularly applies to the higher hills. Nevertheless we have assembled a considerable mass of data concerning the genus in Argyll, and we propose to deal with this at some length.

It is convenient to consider the hawkweeds of Argyll under two main headings: first, the species of the low hills and coastal rocks between Crinan Canal and Connel Ferry, including the islands of Seil, Luing and Kerrera, and bounded on the east by Loch Awe, and secondly the various mountain areas which we have examined.

*The lower hills and islands*

Commencing in the south of this area, the first locality to be considered from which hawkweeds have been determined in quantity is Creag nam Fitheach near the head of Loch Craignish. This hill is almost entirely composed of limestone and, together with the Bealach Mor, which should be considered as essentially the same locality, it produces a most unusual assortment of *Hieracia*. The impressive list from this hill consists of: *H. petrocharis*, *H. dasythrix*, *H. ampliata*, *H. shoobredii*, *H. sarcophylloides*, *H. dicella*, *H. jovimontis*, *H. caledonicum*, *H. angustisquamum*, *H. chloranthum*, *H. duriceps*, *H. subhirtum*, *H. vennicontium*, *H. euprepes*, *H. rubiginosum*, *H. vulgatum*, *H. cravoniense* and *H. ebudicum*. At the Bealach Mor the somewhat undistinguished-looking rarities *H. rhomboides* and *H. triviale* occur. *H. ebudicum* is the prevailing hawkweed of the limestone cliffs; previous to its discovery here and in v.c. 101 it had been known only from the Outer Hebrides. It appears to be capable of attaining a greater size than that indicated in the description by Pugsley (1948).

Extensive exposures of basic andesite rocks occur in the area to the north of Kilmelford, and these produce an interesting hawkweed flora. The sites particularly examined are the Pass of Melfort, Creag an Sturra and Cruach an Nidd. In the first of these localities the species noted are *H. dasythrix*, *H. petrocharis*, *H. dicella*, *H. chloranthum*, *H. sanguineum*, *H. pseudostenstroemii*, *H. rubiginosum*, *H. subhirtum*, *H. pictorum*, *H. vulgatum*, *H. cravoniense* and *H. rhomboides*. *H. uisticola* and *H. sanguineum* occur on rock faces to the west of Kilmelford, while Creag an Sturra in the same area has *H. dicella* and *H. petrocharis*. Cruach an Nidd, in addition to some of the commoner plants mentioned above, has *H. uiginskyense*, *H. caledonicum*, and *H. strictiforme*. These localities for *H. sanguineum* represent its only Scottish station, the species being previously known only from limestone areas in north-west England, south Wales and the west of Ireland. *H. jovimontis*, which appears to be a rather scarce species in Argyll, has been noted on cliffs by Loch Tralaig, to the east of Kilmelford.

The andesite offers similar rewarding hawkweed ground on the islands of Seil and Luing and on the adjacent mainland, the sites in this case being close to the sea. On Seil, the coastal rocks between Cuan Ferry and Dun Nucaig produce *H. hebridense*, *H. ampliata*, *H. shoobredii*, *H. dasythrix*, *H. argenteum*, *H. sarcophylloides*, *H. caledonicum*, *H. vulgatum* and *H. caesiomurorum*. The area about Dun Mor, Ellenabeich, has *H. hebridense*, *H. anglicum*,

*H. pseudanglicum*, *H. ampliatum*, *H. shoobredii*, *H. dicella* and *H. caledonicum*, also the form of *H. vulgatum* with floccose leaves which is treated as a species by some continental botanists under the name of *H. coniops*. Near Balvicar, on Seil, *H. subcrocatum* has been found. This species has also been noted on the mainland north of Seil Sound. On Luing only *H. argenteum* and *H. vulgatum* have been noted, the latter occurring in the form referable to *H. coniops* as well as in its typical form.

To the north of the area just mentioned there are extensive stretches of rather basic rock about Gallanach, south of Oban. These produce *H. anglicum*, *H. ampliatum*, *H. shoobredii*, *H. fratrum*, *H. sarcophylloides*, *H. argenteum*, *H. caledonicum*, *H. uisticola*, *H. vulgatum* and *H. strictiforme*. Of these, *H. fratrum* is the most interesting species, its only other stations being in the Moffat hills in Dumfriesshire and in the north-east Highlands. Nearer Oban, on the mainland, there is some good ground about the Kerrera Ferry where the species so far noted are: *H. dasythrix*, *H. ampliatum*, *H. shoobredii*, *H. langwellense*, *H. hebridense*, *H. argenteum*, *H. chloranthum*, *H. sarcophylloides*, *H. dicella*, *H. caledonicum*, *H. scoticum* and *H. euprepes*. Although not extensive, these cliffs have an interesting flora. The island of Kerrera lies opposite, and while not particularly good for hawkweeds it has produced *H. anglicum*, *H. langwellense*, *H. caledonicum*, *H. chloranthum*, *H. subhirtum*, *H. vulgatum*, *H. latobrigorum* and *H. strictiforme*. Some of the plants referred to *H. vulgatum* from Kerrera are decidedly odd. They may be similar to the floccose-leaved *H. coniops*, but this taxon seems to be of doubtful status owing to the existence of intermediate forms. In our experience it appears, unlike *H. vulgatum sensu stricto*, to be limited to natural habitats.

To the north of Oban there is an area of coastal cliff at Ganavan which has produced *H. ampliatum*, *H. hebridense*, *H. rubiginosum* and *H. vulgatum*. Of the other coastal areas in the vice-county to the north of Loch Etive, these are virtually *terra incognita*, but mention should be made of the limestone island of Lismore at the mouth of Loch Linnhe, which has a considerable extent of exposed rock and from which *H. cymbifolium* and *H. hebridense* have been recorded. The former also grows on the same limestone formation on the adjacent island of Bernera, where *H. petrocharis* is another species of some interest. *H. cymbifolium* is otherwise known only from the Carboniferous limestone of central and northern England and from Raasay. Another hawkweed from Bernera has yet to be determined.

The frequency of *H. dicella* over the whole of this low ground area is remarkable; there are two further localities for it in the vicinity of Ford, at the south end of Loch Awe. In this area, near Kirnan, *H. cheriense* formerly grew on a bridge where it was probably an introduction.

The following species of the Sections Tridentata and Foliosa have been noted in localities other than those already dealt with: *H. uiginskijense* (Glen Gallain and Lag na Cille), *H. strictiforme* (Crinan Ferry, north side), *H. latobrigorum* (frequent about the River Add and near Kilmartin), *H. subcrocatum* (canal bank near Lochgilphead; Creag an Tairbh, Ford), *H. drummondii* (Ford-Kilmartin road junction), *H. maritimum* (River Euchar, near Raera).

#### *The higher hills*

Many of the Argyllshire hill areas have been examined and a number have proved particularly rewarding, especially for species of the Sections Alpina and

Subalpina, Ben Cruachan at the head of Loch Awe has produced *H. lingulatum*, *H. senescens*, *H. gracilifolium*, *H. sinuans*, *H. callistophyllum*, *H. dasythrix*, *H. pseudanglicum*, *H. pseudanglicoides*, *H. nigrisquamum*, *H. centripetale*, *H. anfractiforme*, *H. lintonianum*, *H. subhirtum*, *H. euprepes*, *H. rubiginosum*, *H. dewarii*, *H. sparsifolium* and *H. strictiforme*. The area searched is in the vicinity of the Hydro-Electric Board's new loch, and most of the plants recorded grow in an extensive ravine running east from this. The total absence of species of the Section Alpina in the area examined was rather surprising, but the occurrence of no less than eleven of the Section Subalpina must make this one of the best areas for this group. As usual they are to be found about stream sides and on rock ledges of the better rock. The presence of *H. lintonianum* here is noteworthy as its previously known localities are in the east central Highlands.

Beinn Buidhe, north-east of Inverary has much good rock, and we found the Brannie Burn particularly rewarding. Again no species of the Section Alpina was noted, the species recorded being: *H. lingulatum*, *H. senescens*, *H. pseudanglicum*, *H. langwellense*, *H. uistense*, *H. chloranthum*, *H. subhirtum*, *H. dipteroides*, *H. oxyodus* and *H. dewarii*. Here *H. dipteroides* and *H. oxyodus* are the most unusual species. The hills between Arrochar and Cairndow have been searched, in some cases systematically, and we are treating them here as a single group, though indicating on which hills the more interesting species occur. The rock is schist, calcareous in places, which accounts for the comparative wealth of species, particularly on Beinn an t'Seilich and Stob an Eas, where there are some very attractive basic gullies. The following species have been detected on these hills: *H. lingulatum*, *H. senescens*, *H. petrocharis*, *H. dasythrix*, *H. anglicum*, *H. ampliatum*, *H. shoobredii*, *H. chloranthum*, *H. pictorum*, *H. subhirtum*, *H. piligerum*, *H. caesiomurorum*, *H. vulgatum*, *H. sparsifolium*, *H. dewarii* and *H. strictiforme*. Of more particular interest are *H. holosericeum* (Beinn Luibhean and Binnean an Fhìdhleir), *H. eximium* (Beinn Narnain), *H. cuspidens*, *H. gracilifolium*, *H. vennicontium* and *H. dipteroides* (Stob an Eas), *H. anfractiforme* (Beinn an t'Seilich), *H. glandulidens* (Beinn Ime), *H. marshallii* (Binnean an Fhìdhleir), *H. aggregatum* (Ben Chorrnach), and *H. nigrisquamum* (Ben Donich).

The Glen Coe district has long been noted for a prolific hawkweed flora. Many of the records of the earlier specialists are localised by the use of a place-name which might apply to several hills over a wide area. In particular it has been interesting to compare the species found during an investigation of Meall a Bhuiridh and Sroin na Creise with the records cited in Pugsley's *Prodromus* (1948) for 'Kingshouse'. Our list for this hill area is: Section Alpina—*H. eximium*, *H. calenduliflorum*, *H. memorabile*, *H. tenuifrons* and a distinct-looking undescribed species which has also been collected by Dr West near Glenfinnan (v.c. 97); Section Subalpina—*H. lingulatum*, *H. dasythrix*, *H. senescens*, *H. anfractiforme*, *H. callistophyllum*, *H. petrocharis*, *H. vennicontium* and an interesting apparently undescribed species from high on Sroin na Creise. Other species in this area include *H. shoobredii*, *H. nitidum*, *H. dewarii* and *H. subumbellatiforme*. Despite the attentions of the earlier collectors, species of the Section Alpina grow in fine profusion over a wide area. *H. tenuifrons* occurs in two well-marked forms differing in shape of head and indumentum of the phyllaries.

A day on Bidean nam Bian, the highest mountain in Argyll, produced *H.*

*pseudanglicum*, *H. senescens*, *H. shoobredii*, *H. subhirtum* and an 'unknown' species of Section Subalpina. The only species of Section Alpina noted was *H. eximium*, and the hill is clearly much less productive of this section than some of its neighbours, notably Meall a Bhuiridh. In Glen Etive, *H. shoobredii* has been noted near Dalness, while *H. sparsifolium* occurs on a roadside bank. *H. marshallii* grows at a moderate altitude at the entrance to Fionn Glen, and it has also been noted on Buchaille Etive Mor. On Aonach Dubh nearby the rare *H. aggregatum* has been recorded, and on rocks by the roadside near the Meeting of the Waters *H. reticulatum* grows in fair quantity. Also in the vicinity *H. pseudanglicoides* occurs on Stob nan Cabar.

All the hills of the Glen Coe district mentioned so far are composed of rocks of volcanic origin, mainly andesites and rhyolites. In contrast to this, the limestone hill Creag Bhan, near Ballachullish, may be cited as an example of a very basic hill with a rich flora of hawkweeds as well as other flowering plants. The species noted here include *H. senescens*, *H. clovense*, *H. pseudanglicum*, *H. sommerfeltii*, *H. pictorum*, *H. euprepes*, *H. piligerum* and *H. subhirtum*. With the exception of *H. clovense*, which is a rare species, and perhaps *H. sommerfeltii*, these are all typical of the Argyll hills. The most remarkable fact about their occurrence on Creag Bhan is their comparative abundance, providing ample proof of the fact that most *Hieracia*, though not strict calcicoles, undoubtedly flourish best in basic conditions.

The hills about Bridge of Orchy were known to the earlier botanists as good hawkweed ground, and Raven (Raven & Walters 1956) has described their hawkweed flora. Our own investigations in recent years have included Beinn a' Chaisteal and Beinn Dothaidh to the east of the Tyndrum—Glen Coe road, Coire Chailein on Beinn Bheag northwest of Tyndrum, and Beinn Udlaidh in Glen Orchy. The first has produced *H. gracilifolium*, *H. dasythrix*, *H. langwellense* and *H. anglicum*, but undoubtedly further search would produce better results. Beinn Dothaidh has proved rather disappointing, only *H. eximium* and *H. ampliatum* being noted. Coire Chailein has the following: *H. cuspidens*, *H. dasythrix*, *H. pseudanglicum*, *H. pseudanglicoides* and *H. rubiginosum*. Of these *H. cuspidens* is a rare plant which has also been recorded in the Glen Kinglas area, and *H. pseudanglicoides* is another uncommon species of very limited distribution. A fine north-facing corrie on Beinn Udlaidh has a good selection of species including *H. senescens*, *H. dasythrix*, *H. lingulatum*, *H. pseudanglicum*, *H. nigrisquamum*, *H. chloranthum*, *H. anglicum*, *H. shoobredii* and *H. pictorum*. On Beinn a' Cleibh, just to the west of Beinn Laoigh, *H. senescens*, *H. gracilifolium*, *H. hastiforme*, *H. oxyodus*, *H. lintonianum* and *H. subhirtum* have been noted. Of these *H. hastiforme* is particularly noteworthy as it has not been observed for many years. No doubt this hill would provide a large number of species if systematically searched. Meall Garbh, a hill near the head of Loch Creran, has produced *H. tenuifrons*, *H. vennicontium* and *H. callistophyllum*.

Various species, mainly belonging to the aphyllopodous sections of the genus, occur in more or less isolated localities in the county. *H. cravoniense* grows near Dalvaie, Benderloch. It is widespread in the Crinan—Connel area and usually stylose-flowered. Further south, in v.c. 101, it has fully developed ligules. *H. grandidens* occurs as an introduction on walls at Tighnabruaich. Of the Section Foliosa, *H. strictiforme* occurs occasionally on roadsides, as near St Catherines, Loch Fyne, and between Inverary and Dalmally, *H.*

*maritimum* grows on stabilised shingle at the head of Loch Etive, probably washed down from some higher site in the surrounding hills, and *H. latobrigorum* occurs as the forma *angustifolium* Pugsl. at the north end of Loch Awe. The status of this latter plant is unknown and the locality has now probably been destroyed by road alterations. The typical plant is widespread.

Two alterations are now necessary to the maps published in the *Critical Supplement*. The material on which the record for *H. oxyodus* in square 17/80 was based has now been redetermined as a form of *H. subhirtum*, a species frequent in the area. The record of *H. schmidtii* from the same square is also an error, the plant so named from Creag nam Fitheach having since been referred to *H. ebudicum*.

To date we have detected 70 species in the vice-county, made up as follows: Section Alpina 6, Subalpina 18, Cerinthoidea 6, Oreadea 9, Vulgata 20, Alpestris 1, Tridentata 2, Foliosa 7, Sabauda 1.

#### VICE-COUNTY 99, DUNBARTON

In Dunbartonshire two geological formations provide exposed rock with a good variety of hawkweed species. These are (1) the basaltic lavas of Carboniferous age which give rise to the prominent craggy escarpments of the Kilpatrick Hills, and which are similar in character, though not in hawkweed species, to those of the Stirlingshire hills, and (2) the schistose rocks which occur over most of the county north of the Highland Boundary. Between these two formations lies a smaller tract of Old Red Sandstone rocks, but although there are good exposures of these in places we have not so far recorded any *Hieracia* from them.

The Kilpatrick Hills area has several exposures of basalt which are considerably more basic and consequently richer as to flora than neighbouring outcrops. These sites have yielded *H. caledonicum*, *H. duriceps*, *H. vulgatum*, *H. chloranthum*, *H. rubiginosum*, *H. caesiomurorum* and *H. cravoniense*, but perhaps their most interesting and attractive hawkweed is *H. saxorum*, a handsome species with glaucous, blotched leaves and quite large flowers which adorns the basalt crags above Glenarbuck and near Cochno Loch reservoir. This appears to be its only locality in the west of Scotland, though recorded as not uncommon in the northeast.

The schistose rocks of the area between Loch Lomond and Loch Long produce a varied hawkweed flora, mainly in the numerous rocky gullies formed by the mountain streams. Such sites are frequently quite basic, and among the commonest species occurring are *H. dasythrix*, *H. subhirtum*, *H. duriceps* and *H. venniconium*, while on the bank of the Auchengaich Burn, Glen Fruin, the very local *H. breadalbanense* was discovered in 1967. This last species was previously known only from a few central Highland localities.

Dunbarton has only three hills of any appreciable altitude providing suitable habitats for the more montane species, Ben Vorlich (3,092ft), Ben Vane (3,004ft) and Beinn Dubh (2,509ft), all situated in the northern extremity of the county. The ubiquitous *H. lingulatum* is common, and we have also recorded the following other members of the Section Subalpina on one or more of these three hills: *H. senescens*, *H. dasythrix*, *H. gracilifolium*, *H. callistophyllum*, *H. anfractiforme*, *H. nigrisquamum* and *H. pseudanglicum*. Of these *H. dasythrix* is exceedingly common, *H. pseudanglicum* frequent, and the others much less so. Of the Section Cerinthoidea, *H. anglicum* is quite common, and *H. ampliatum*

much less so, while, surprisingly, *H. shoobredii* has not yet been detected in the county, though frequent in the west of Scotland generally. Three species of the Section Alpina have so far been found—a very creditable list for an area so close to the southern limit of the Highlands. *H. holosericeum* occurs, apparently in small quantity, on Ben Vorlich, and *H. eximium* and *H. alpinum* have been found in the Ben Vane—Beinn Dubh area at the unusually low altitude of 1,800 ft. The Section Oreadea is very poorly represented on the Dunbartonshire hills, the only species so far noted being *H. chloranthum*. The otherwise widespread *H. argenteum*, which might reasonably have been expected, has not so far been noted. A number of species of the Section Vulgata occur on the schist hills. Of these *H. pictorum* and *H. subhirtum* are probably the most frequent species, and in addition to *H. breadalbanense* already mentioned, *H. duriceps*, *H. piligerum* and *H. caesiomurorum* occur.

Only two of the aphyllopodous species are known to occur in the county, and these have been recorded from the low ground only. *H. latobrigorum* grows near the mouth of the Glenmallan Burn on Loch Long-side, while *H. perpropinquum* is quite common on some of the islands in Loch Lomond and on the adjacent shores, usually in rocky places and accompanied by *H. vulgatum*. Another 'leafy-stemmed' species, *H. dewarii*, is found locally in the northern part of the county, occurring typically in rocky gullies on the lower slopes of the hills, as by the Stuckgowan Burn, Tarbet. It is interesting to note that although *H. dewarii* was originally described from specimens obtained near Dollar, Clackmannanshire, the earliest collection of this plant was probably from a Dunbartonshire locality (Arrochar) by Prof. J. H. Balfour and a student party in 1842. Prof. Balfour again collected this species in the county in 1847, near Inverarnan.

This account of the Dunbartonshire hawkweeds can now be concluded with the mention of two species occurring locally on old walls at Rhu, near Helensburgh. These are *H. diaphanoides* and the introduced species *H. grandidens*.

#### VICE-COUNTY 101, KINTYRE

This vice-county may conveniently be divided into two distinct topographical areas: Knapdale, lying between the Crinan Canal in the north and West Loch Tarbert in the south, and Kintyre proper comprising all the country situated to the south of West Loch Tarbert. Knapdale consists largely of hilly ground rising to 1,840 ft with numerous rocky exposures, whereas in Kintyre the best hawkweed ground occurs on the sea cliffs.

While most of the rock in Knapdale is base-poor schist, there are areas of better rock, and it is on such areas that the majority of our collections have been made. No species of the Section Alpina has been noted, which is not surprising in view of the moderate elevation of the hills. On this hill ground we have examined several distinct areas, of which the best is Cruach Lusach and the valley of the Lussa, near Achnamara. Here the following species have been recorded: *H. glandulidens*, *H. dasythrix*, *H. shoobredii*, *H. iricum* (stylose-flowered), *H. argenteum*, *H. caledonicum*, *H. orimeles*, *H. chloranthum*, *H. uistense*, *H. duriceps*, *H. pictorum*, *H. piligerum*, *H. rivale*, *H. ebudicum*, *H. subhirtum*, *H. rubiginosum*, *H. vulgatum*, *H. solum*, *H. reticulatum* and *H. maritimum*. This lengthy list includes an unusually large number of species of rare occurrence in the vice-county, and indeed, in the country as a whole. *H. solum* calls for special mention. First found in this area in 1962 it proved

to be an undescribed species of the Section *Alpestris*, its closest allies growing in the Shetlands. It favours dry rock ledges and apparently does not require basic conditions.

To the south of Cruach Lusach there are some lower hills composed of rather poor rock where several interesting *Hieracia* occur. This range, Meall Ruadh, stretches from west of Loch an Dughail to Loch an Dobhain, and *H. subrude*, *H. dissimile*, *H. duriceps*, *H. uistense*, *H. cravoniense*, *H. vulgatum*, *H. chloranthum* and *H. solum* have been recorded there. This is the original locality for *H. solum*, and *H. dissimile* has here its only known British station. Although belonging to the Section *Subalpina*, *H. dissimile* has a superficial resemblance to forms of *H. vulgatum*, but its heads are quite different. Still further south our next principal area comprises Sliabh Gaoil, the highest hill in Knapdale, and the Artilligan Ravine which drains from it to the northeast. In this area have been observed *H. dasythrix*, *H. hebridense*, *H. langwellense*, *H. chloranthum*, *H. rivale*, *H. duriceps*, *H. piligerum*, *H. rubiginosum*, *H. caesiumurorum*, *H. subhirtum*, *H. uistense*, *H. vulgatum*, *H. cravoniense*, *H. latobrigorum* and *H. strictiforme*. The only known stations for *H. langwellense* and *H. hebridense* in the vice-county are here, and an interesting undetermined species of the Section *Subalpina* has also been found.

Some hawkweeds have been noted in Knapdale from localities other than those already mentioned. Cnoc na Seamraig, an isolated outcrop of limestone at about 700 ft, produces *H. subplanifolium* in some quantity. Rather surprisingly, no other species of interest is present. There are outcrops of epidiorite north of Tayvallich, and these produce *H. dicella* and *H. petrocharis*, while shore rocks near Stronefield have yielded *H. vennicontium* at a remarkably low altitude. *H. ebudicum* grows on hill ground near Scotnish, having only recently been detected on the mainland of Scotland. *H. cravoniense*, usually stylose-flowered, has quite normal flowers in its Knapdale localities. Of the aphyllipodous species, *H. maritimum* in addition to its Cruach Lusach station, has been recorded from the Wishing Ledge, near Carse, and from the Isle of Danna, while the rarer *H. drummondii* grows in some quantity in rocky woodland and on walls at Crinan. *H. umbellatum* occurs in rocky woodland near Carse, not far from where its close ally *H. maritimum* is found at the Wishing Ledge, and *H. reticulatum* occurs at Ormsary.

In Kintyre there is good hawkweed ground on the rocky coastline between Machrihanish and Southend, the best localities here being the fairly massive outcrop of a cornstone of the Old Red Sandstone known as 'The Gauldrings', near Ballygroggan, and the extensive limestone cliffs on the coast west of Largybaan. At Ballygroggan the outstanding species of interest is *H. britanniciforme*, known from only one other Scottish locality. Other species occurring here are *H. anglicum*, *H. flocculosum*, *H. caledonicum* and a plant whose identity at present remains obscure. The hawkweed flora of the Largybaan cliffs includes four species of the Section *Cerinthoidea*—*H. anglicum*, *H. flocculosum*, *H. ampliatum* and *H. shoobredii*. In addition, *H. subrude*, *H. rubiginosum*, *H. dicella* and *H. sarcophylloides* occur, the latter in its only Kintyre locality. Previous to its discovery here it had been known only from the extreme north of Scotland. Apart from these two outstanding areas, a good colony of *H. subrude* is found on the rocks at Keil, Southend, and also on high ground near the Mull lighthouse where it grows with *H. argenteum*, *H. euprepes* and *H. rubiginosum*. Between Ballygroggan and Largybaan the cliffs have produced

*H. rubiginosum*, *H. caledonicum* and *H. uisticola*. The last-named is a rare species, and this is its only known station in v.c. 101.

Considerable exposures of Old Red Sandstone occur in the southern half of Kintyre. However these areas do not appear to be particularly productive for hawkweeds, although on cliffs near Achinloan Head south of Campbeltown we have noted *H. rubiginosum*, *H. vulgatum* and *H. euprepes*, and on similar rocks in the Bellochantuy—Westport area *H. rubiginosum*, *H. caledonicum* and the apparently rare *H. angustisquamum*, which has only two other Scottish localities.

Of the aphyllopodous species, *H. drummondii* grows near Muasdale and in Barr Glen, *H. perpropinquum* near Ballochroy, and *H. umbellatum* at Peninver.

Since the publication of the *Critical Supplement* further material has been collected which has led to a reassessment of the identity of certain plants. The relevant maps should be amended as follows: delete *H. scoticum* in square 16/60. The material on which this record was based is now considered to be a form of *H. rubiginosum*; delete *H. senescens* in 16/60, the plant concerned being *H. subrude*. *H. senescens* should also be deleted from square 16/78, as should *H. saxorum* from the same square. Other deletions are: *H. ampliatum* from 16/60, *H. caesiomurorum* from 16/64, and *H. subplanifolium* from 16/78.

In all, 43 species have so far been recorded from Knappedale and Kintyre.

#### VICE-COUNTY 102, SOUTH EBUDES

The island of Islay and the Garvelloch Isles are the only parts of this vice-county where we have examined hawkweeds, and our investigations have only been of a limited nature.

There is an extensive exposure of dolomitic limestone on the northeast coast of Islay between Rudha Bholsa and Rudha Mhail, but it has so far proved to be disappointing. We have seen *H. caledonicum* in quantity, and *H. scoticum* in a single locality. There is also a species of Section Tridentata which may be *H. gothicoides*, but sufficiently mature plants have not yet been obtained. In the south of Islay, on the Mull of Oa near Lower Killeyan, the following occur: *H. iricum*, *H. caledonicum*, *H. orimeles*, and *H. subcrocatum*. *H. vulgatum* has been observed in many Islay localities, including the small isle of Texa. Our impression is that the hawkweed flora of Islay is surprisingly poor considering the extent of suitable ground on the island.

The Garvelloch Isles botanically speaking belong to v.c. 102, and since they are largely composed of limestone might be expected to have a good hawkweed flora. However, in the course of a brief visit in August 1966 the only species detected was *H. shoobredii*.

#### VICE-COUNTY 103, MID EBUDES

Apart from *H. shoobredii* recorded from Sorisdale, Isle of Coll, all our hawkweed records from this vice-county have been made in the Isle of Mull. Despite some fairly extensive areas of basic rock, the hawkweed flora of Mull, so far as we have been able to judge, is remarkably poor. No species of the Section Alpina has been found, and only one named species of the Section Subalpina.

S-Airde Bheinn in the north of the island has extensive outcrops of a rather poor igneous rock. *H. sommerfeltii* is the most interesting of its hawkweeds, and *H. shoobredii*, *H. chloranthum*, *H. rubiginosum* and *H. subhirtum* also occur. The Ben More area, including Beinn Fhada and Choinn Bheinn, produces

*H. anfractiforme*, *H. shoobredii*, *H. orimeles*, *H. chloranthum*, *H. caledonicum*, *H. subhirtum*, *H. rubiginosum* and *H. maritimum*. In addition there is an 'unknown' species of the Section Subalpina on Beinn Fhada which is closely allied to *H. marshallii*. The rock is mostly poor, but this is a large area and there must be a number of other species present. The most interesting of those mentioned are *H. anfractiforme* from Beinn Fhada and *H. maritimum* from Choirc Bheinn. Fine basic cliffs about Creag a' Ghaill, south of Gribun, have *H. iricum*, and this also occurs on shore rocks nearby. Allt na Teangaidh has *H. subhirtum* and *H. ampliatum*; the latter also grows on Beinn na h-Iolaire. On Creach Bheinn, a rather poor hill in the south of the island, we have noted *H. shoobredii* and *H. chloranthum*.

*H. shoobredii* is fairly generally distributed, and some forms have more or less glabrous leaves (as on s-Airde Bheinn) which lack the usual stellate hairs on the undersurface. There are numerous localities throughout the island for *H. chloranthum*, and *H. vulgatum* is, as usual, widely distributed. One of the few rarities, *H. sarcophylloides*, was noted on basalt cliffs near the mouth of Loch Spelve in the southeast of Mull where it has been observed in flower in the last week in May, an early date for any hawkweed in the western highlands.

Of the aphyllopodous species, *H. latobrigorum* grows at Aros Bridge, also at Knock. *H. strictiforme* of the same section has been noted only on Iona.

The total number of species recorded by us in Mull to date is only 15, which compares unfavourably with apparently very similar mainland areas.

#### VICE-COUNTY 104, NORTH EBUDES

Our observations in this vice-county have been limited to the Isle of Skye and Raasay. In the course of a number of short visits to the Isle of Skye several species have been noted, mainly from the lower slopes of the basalt hills or from rocky ground and cliffs around the coast. Outcrops of limestone, both Jurassic and Cambrian, occur in some areas, and these have also provided a few records.

The basalt hills have yielded *H. anglicum*, *H. chloranthum*, *H. shoobredii* and *H. orimeles*, while *H. rubiginosum* has been found in basalt boulder scree below sea-cliffs near Duntulm on the north coast. On the Jurassic strata *H. piligerum* and *H. pictorum* have been recorded from the lower slopes of Blaven, and near Elgol *H. shoobredii* occurs. The areas of Cambrian (Durness) limestone near Broadford and elsewhere have proved rather disappointing in the number of species noted, though one comparatively rare species, *H. rhomboides*, has been noted near Loch Cill Chriosd. Other species recorded from the Cambrian are *H. duriceps*, *H. vulgatum*, *H. langwellense* and *H. reticulatum*.

Of the Section Subalpina the only species yet encountered has been *H. lingulatum*, the most frequently occurring member of the section. This was found on Blaven. In spite of the altitude reached by the Cuillins these hills appear to be almost destitute of hawkweeds, the rock being gabbro which supports a very poor phanerogamic flora. No species of the Section Alpina has been found on the island.

During the course of a week's visit to Raasay at the end of June 1969 a number of hawkweeds were recorded. These were observed mainly on limestone and other associated rocks of the Jurassic series which provide the richest habitats on the island. The species observed were *H. ampliatum*, *H. langwellense*, *H. shoobredii*, *H. cymbifolium*, *H. duriceps*, *H. pictorum*, *H. caesiomurorum*,

*H. pollinarioides*, *H. diaphanoides*, *H. cravoniense*, *H. rubiginosum*, and *H. vulgatum*. The occurrence of *H. cymbifolium* represents a considerable northward extension of range, while that of *H. pollinarioides* adds a third vice-county to the distribution of this interesting north-west Scottish endemic.

The Isle of Scalpay, neighbour to Raasay and Skye, proved in the course of a brief visit to be rather poor in *Hieracium*, only *H. shoobredii* and *H. vulgatum* being noted. This island is composed mainly of Torridonian Sandstone.

#### VICE-COUNTY 105, WEST ROSS

This is an extensive vice-county with much good hawkweed ground. Our investigations have been mainly concentrated on some of the hills. In the north, Cul Beag and Ben More Coigach have been systematically searched. Much of the rock (Torridonian Sandstone) is poor, and hawkweeds are largely confined to the better areas. However the lists for both hills are interesting. On Cul Beag the following species occur: *H. holosericeum* (an unusual form with dark heads), *H. alpinum*, *H. lingulatum*, *H. gracilifolium*, *H. anglicum*, *H. senescens*, *H. nitidum*, *H. sarcophylloides*, *H. caledonicum*, *H. subhirtum*, *H. piligerum* and *H. pictorum*. There is also at least one undescribed plant from this hill. On Ben More Coigach and Beinn an Eoin there is a formidable assembly consisting of: *H. marginatum*, *H. globosiflorum*, *H. hanburyi*, *H. eximium*, *H. lingulatum*, *H. centripetale*, *H. pseudanglicum*, *H. glandulidens*, *H. hebridense*, *H. ampliatus*, *H. shoobredii*, *H. argenteum*, *H. uistense*, *H. euprepes*, *H. rivale*, *H. subtenue*, *H. duriceps*, *H. camptopetalum*, *H. pictorum*, *H. piligerum*, *H. rubiginosum*, *H. caesiomurorum*, *H. caledonicum* and *H. subhirtum*. This must be one of the best localities in the north-west for hawkweeds, and, like Cul Beag, it too has at least one distinct-looking plant not referable to any of the described species.

Opposite Ullapool on the Scoraig peninsula, Beinn Gobhlach produces *H. hanburyi*, *H. lingulatum*, *H. nitidum*, *H. subtenue*, *H. subhirtum*, *H. euprepes*, and *H. dipteroides*. This last is a rare plant and quite new to this area. Much further south, in Glen Shiel, Sgurr an Lochain has *H. globosiflorum* with very dark heads and styles, *H. piligerum*, *H. subtenue*, and the scarce *H. oxyodus*, while a little further east from this hill, Coire an t' Slugain yielded a good selection including *H. anfractiforme*, *H. sinuans*, *H. lingulatum*, *H. nigrisquamum*, *H. euprepes*, *H. subtenue* and *H. vulgatum*. Near Inverewe the hills of the Coulin Forest have *H. holosericeum*, *H. hanburyi*, *H. globosifolium* and *H. lingulatum*.

The extensive area of Cambrian limestone near Kishorn has been fairly well worked, the following species occurring: *H. lingulatum*, *H. ampliatus*, *H. hebridense*, *H. shoobredii*, *H. chloranthum*, *H. caledonicum*, *H. piligerum*, *H. duriceps* and *H. vulgatum*. This area has an extremely interesting general flora (Slack & Stirling 1963), and it is therefore surprising that the hawkweeds there include none of the very local and interesting species known from the same geological formation in the Durness area of Sutherland. Also in the Kishorn area the epidiorite rocks of An Sgurr and Bad a' Chreamha have yielded a rather similar list, although *H. lingulatum*, *H. piligerum* and *H. duriceps* appear to be absent. On the rocks of Sgurr a' Gharaidh, just above the upper limit of the limestone, *H. dasythrix* was found, but this hill was not closely examined, nor were the Applecross hills to the west, *H. nitidum* and a few of the commoner species being all we have noted there.

The aphyllopodous species *H. latobrigorum* and *H. perpropinquum* occur on

rock outcrops by roadsides near Dornie. This is the most northerly station yet recorded for the latter species.

Some of the West Ross plants call for special comment. The colony of *H. alpinum* on Cul Beag appears to be the most northerly at present known, while the record of *H. eximium* from Ben More Coigach represents a great extension of range, being the first from north of the Great Glen. All populations of *H. globosiflorum* seen in v.c. 105 have been dark-styled, and this is in fact the only form we have seen in the western Highlands. *H. camptopetalum*, which we have noted from Blarnaleych, near Ullapool, as well as from the Ben More Coigach area already mentioned, appears to be a typical hawkweed of alpine or montane streamsides, and may be more widespread than at present supposed. The number of species noted by us in West Ross is 36.

#### VICE-COUNTY 108, WEST SUTHERLAND

This large and interesting vice-county deserves a much fuller investigation than we have been able to make. The limestone areas of Inchnadamph and Durness have been thoroughly covered by others, as has much of the northern coast, and we have not spent much time in these areas. Our researches have been concentrated on the hills which, apart from Ben Hope and Ben Loyal, have been rather neglected.

On the hills of the Parphe, the district south of Cape Wrath, including Creag Riabhach, An Grianan, Fashven, Cnoc na Glaic Tarsuinn and Farrmheall, the following species occur: *H. globosiflorum*, *H. glandulidens*, *H. senescens*, *H. dasythrix*, *H. ampliatum*, *H. shoobredii*, *H. caledonicum*, *H. argenteum*, *H. praetermissum*, *H. pauculidens*, *H. euprepes*, *H. subtenue*, *H. nitidum*, *H. rivale* and *H. rubiginosum*. The north-facing cliffs of Creag Riabhach where, by the way, *H. ampliatum* is a most unusual-looking plant, may well be worth further investigation. This is a very wild area. The range of hills comprising Cranstackie, Beinn Spionnaidh and Beinn Ceannabeine yields the following: *H. lingulatum*, *H. euprepes*, *H. anglicum*, *H. ampliatum*, *H. shoobredii*, *H. caledonicum* and *H. subrude*.

Possibly the most promising ground for hawkweeds is Foinnaven, including Cnoc a' Mhadaidh. In addition to several plants of doubtful identity, the following occur: *H. marginatum*, *H. centripetale*, *H. glandulidens*, *H. pseudanglicoides*, *H. lingulatum*, *H. senescens*, *H. shoobredii*, *H. sarcophylloides*, *H. argenteum*, *H. nitidum*, *H. subtenue*, *H. subhirtum*, *H. rubiginosum* and *H. dovrense*. This is the third Scottish station for *H. dovrense*, a Scandinavian species otherwise known only from Ben Loyal and near Rhiconich in the same vice-county. It belongs to the Section Alpestris. *H. marginatum* is otherwise known only from Ben Loyal, Ben More Coigach and Ben Klibreck. *H. sarcophylloides* in an unusual montane locality, and *H. pseudanglicoides* are other noteworthy species. The occurrence of the latter on Cnoc a' Mhadaidh greatly extends its known range. There is an interesting open ravine near Rhiconich which produces *H. glandulidens*, *H. ampliatum*, *H. shoobredii*, *H. nitidum* and the rare species *H. oxyodus* and *H. dovrense*.

A brief survey on Ben Stack produced only *H. caledonicum*, *H. duriceps* and *H. subtenue*, though there was a species of Section Alpina, unfortunately not in determinable condition. *H. iricum* is by Loch Stack, and *H. sparsifolium* by the River Laxford. The coastal areas about Oldshoremore have *H. pollinarioides*, *H. iricum* and *H. nitidum*, while the interesting Sandwood area

produces *H. jovimontis*, *H. praetermissum*, *H. argenteum* and *H. rubiginosum*. This last-mentioned area requires examination earlier in the year than we have so far found possible. North of the Sandwood area, in spite of apparently suitable ground, the coast and stream-sides seem devoid of hawkweeds until Cape Wrath is reached. Then in the area Geodha na Seamraig to Keirvaig we find *H. shoobredii*, *H. sarcophylloides*, *H. caledonicum* and *H. sparsifolium*. On the coast north of Loch Inshore, *H. caledonicum* and *H. strictiforme* occur, while near the Cape Wrath ferry *H. iricum*, *H. shoobredii*, *H. praetermissum*, *H. argenteum* and *H. latobrigorum* have been recorded. Near Durness, at Smoo, *H. pollinarioides* and *H. caesiomurorum* have been noted, and further east at Traigh na h-Uamha *H. praetermissum* and *H. variifolium* are present along with *H. iricum* and other species. *H. praetermissum* and *H. pollinarioides* are confined to this northwest corner of Sutherland, and *H. variifolium* is practically so, having one outlying station. *H. pollinarium*, which is also confined to West Sutherland where it is very local on the north coast, has been noted near the mouth of the River Naver at Bettyhill.

Several identifications have been made from other areas of the vice-county. Quinag has *H. globosiflorum* (again the dark-styled form), *H. glandulidens*, *H. anglicum*, *H. argenteum*, *H. pictorum* and *H. subtenuae*, and Glas Bheinn in the same area has *H. holosericeum*. On the limestone near Ledmore *H. angustisquamum* has been found; this is an interesting isolated locality for a species whose only other Scottish occurrences are in Argyll and Kintyre. Ben Hope has been visited, and that well-worked hill has given *H. shoobredii*, *H. nitidum*, *H. praetermissum*, *H. variifolium*, *H. subtenuae* and *H. campetopetalum*. Further to the east an interesting ravine near Kirtomy has produced *H. nitidum*, *H. scoticum*, *H. subrude* and *H. duriceps*.

Some general comments on the distribution of species in the vice-county may be of interest. It is curious that *H. vulgatum* is apparently absent from the Rhiconich—Durness area. We have seen it by Loch Stack, and on the east side of Loch Eriboll. Elsewhere in the Highlands it seems to be ubiquitous. *H. caledonicum* is frequent in the areas we have examined, while *H. iricum* appears to be rather more frequent than it is in other parts of the west Highlands. Its preference seems to be for base-rich sites on the low ground. *H. anglicum* and *H. shoobredii* are predictably well distributed in the lower parts, and *H. argenteum* is also frequent.

*H. dovrense*, to which some reference has already been made, appears to favour ravine conditions at medium to high altitudes, and may well occur more widely than the records suggest. We do not know it in its Ben Loyal station where it seems to be a rare plant, but at Rhiconich and on Foinnaven it grows in some quantity. These sites are much like those favoured by *H. dewarii*, but in complete contrast to those of *H. sohum*.

Up to the present, 37 species have been noted by us in the vice-county.

#### GENERAL OBSERVATIONS

Having dealt with the species on a vice-county basis, it is now appropriate to make some observations on their distribution and ecology in relation to the west of Scotland area as a whole.

The preference of species of the Section Alpina is generally for the more exposed rocky situations, or even, as in the case of *H. holosericeum*, for exposed

stony summits; however, they sometimes occur in the higher gullies. The lowest altitude at which we have observed species of this section in the west central Highlands is on Ben Vane, Dunbartonshire, where *H. alpinum* and *H. eximium* grow at about 1,800 ft. In the northwest Highlands however, *H. globosiflorum* occurs on the Cape Wrath hills down to 1,300 ft.

Members of the Section Subalpina are generally found on the hills from about 1,000 ft upwards, although in a number of localities certain species occur at much lower altitudes. The species nearest to Section Alpina are unlikely to display this tendency. Undoubtedly the most frequent species are *H. lingulatum*, *H. senescens* and *H. dasythrix*, and these may reasonably be expected on any hill with a good hawkweed flora, except perhaps in the extreme north, where the species belonging to the Section Subalpina seem to be distinctly scarcer. On most of the hills of the west central Highlands *H. pseudanglicum* is rather frequent.

The species of the Section Cerinthoidea are not essentially plants of the hills. While some appear to be indifferent to base status, e.g. *H. shoobredii* and *H. langwellense*, others such as *H. anglicum*, *H. ampliatum* and *H. iricum* are distinctly basiphile. We have not observed plants of this section at a greater altitude than 2,000 ft.

Three species of the Section Oreadea are common and widespread in the west Highlands, namely *H. caledonicum*, *H. argenteum* and *H. chloranthum*, though the latter is absent from the extreme north. The species of this section vary in ecological preference, the three just mentioned not appearing to restrict themselves to basic sites, while the group centred on *H. dicella* seem to be found only on basic rock. As a whole the section is best represented at low to moderate elevations, *H. sommerfeltii* reaching the greatest elevation of the species we have seen.

The Section Vulgata contains a larger number of species than any other section and is a confusing assemblage of plants with few obvious characteristics common to all. The most frequent species are *H. subhirtum*, *H. pictorum*, *H. duriceps* and *H. vulgatum*. The first two are typical of the west Highland hills, and *H. duriceps*, though often seen in hill gullies, also occurs on exposed rock, sometimes at low elevations. *H. vulgatum* is a most variable and ubiquitous species almost throughout our area. It occurs in many habitats, both natural and artificial, and reaches at least 2,000 ft. Hawkweeds growing on walls and similar artificial sites practically always turn out to be this species, though as already mentioned *H. chloranthum* has once been obtained from a wall. Plants of the *H. exotericum* complex are not common in our area. They are introductions and probably spreading, and like *H. vulgatum* they often occur on walls or disturbed ground. The only representative dealt with in our account is *H. grandidens*.

Of the Section Tridentata, *H. sparsifolium* is widespread and frequent at moderate elevations in our area, and *H. uiginskyense* is of sporadic occurrence, though it has not been observed outside the Highland area. Of the remaining species, two have been noted, but these were not within the Highland area.

*H. latobrigorum* is perhaps the most frequent of the Section Foliosa, and it is not uncommon particularly on roadside habitats. *H. strictiforme* is almost as frequent but is perhaps more inclined to occur in natural habitats and at a greater elevation. *H. subcrocatum* and *H. reticulatum* are distinctly less common, and *H. subumbellatiforme* is apparently a rare plant. Mention has already been

made of its occurrence at the unusual elevation of 2,000 ft on Meall a' Bhuiridh, Glen Coe.

The Section Umbellata is represented by *H. umbellatum*, which is sparingly distributed through much of our area, usually at a low altitude both in natural situations such as rocky woodland and in artificial habitats (railway embankments, waste ground etc.). We have not observed it north of Strontian, Argyll.

The only species of the Section Sabauda we have seen in our area is *H. perpropinquum* which has a scattered distribution on the lower ground as far north as Dornie in West Ross.

It is hoped that the foregoing information will serve in some measure to expand the information given in the *Critical Supplement*, and it may be found helpful when consulting the latter to use it in conjunction with the vice-county overlay provided with the *Atlas*. In mentioning the *Critical Supplement* it is necessary to draw attention to an unfortunate error concerning two of the *Hieracium* maps. Due to a transposition of the titles, the map of *H. nitidum* shows the distribution of *H. jovimontis* and *vice versa*.

#### THE GENUS *PILOSELLA*

In accordance with the view of Sell and West, first propounded by the brothers Schultz in 1862, we are treating the subgenus *Pilosella* as of full generic rank. The taxon *Hieracium pilosella* L. as a result of this treatment must now be known as *Pilosella officinarum* C. H. & F. W. Schultz, of which a number of distinct forms have been given subspecific rank (Sell & West 1967), and we give here some indication of the occurrence of these forms within our area. However, this at best is only a rough outline of their distribution as insufficient material has been determined from most of our area, though Argyll and Kintyre are well represented. It would therefore be unwise to draw any conclusions as to the relative frequency of the various subspecies.

*Pilosella officinarum sensu lato* usually occurs on neutral to basic grassland, walls, etc. Unlike most species of *Hieracium* it is usually a soil plant rather than rupestral.

##### *Pilosella officinarum* subsp. *officinarum*

- v.c. 98 Gallanach, near Oban; Seil; Cuan Ferry; Dun Nucaig; Stronmilchan, near Dalmally  
v.c. 104 Oskaig, Raasay

##### *Pilosella officinarum* subsp. *concinmata*

- v.c. 98 Isle of Kerrera; Kerrera Ferry; Gallanach; Luing; Seil; Ben Buidhe; Isle of Bernera, Lismore  
v.c. 101 Isle of Danna; Largybaan; Keil, Southend; Loch an Dobhrain and Cnoc na Seamraig, Knapdale  
v.c. 102 Garbh Eileach, Garvelloch Isles  
v.c. 103 Aros Bridge and Creag a' Ghail, Mull  
v.c. 105 Kishorn  
v.c. 108 Bettyhill; Traigh na h-Uamha; Sheigra; Culkein of Drumbeg

##### *Pilosella officinarum* subsp. *trichoscapa*

- v.c. 98 Bealach Mor; Creag a' Chapuill; Luing; Seil; Cuan Ferry; Dun Nucaig

- v.c. 101 Isle of Danna; Lussa; Achnamara; Point of Knap
- v.c. 102 Bridgend, Islay
- v.c. 103 Allt na Teangaidh, Mull
- v.c. 104 Near Loch Cill Chriosd, Skye

*Pilosella officinarum* subsp. *tricholepia*

- v.c. 72 Scar Water
- v.c. 86 Gonachan Burn, Campsie Hills
- v.c. 97 Drumnadrochit
- v.c. 98 Kerrera Ferry; Creag nam Fitheach; Creag an Sturra; Ford—  
Kilmartin road junction
- v.c. 101 Keills, Knapdale
- v.c. 102 Killeyan, Mull of Oa, Islay
- v.c. 104 Near Loch Cill Chriosd, Skye; in several localities on Raasay
- v.c. 108 Culkein of Drumbeg; Traigh na h-Uamha

*Pilosella officinarum* subsp. *nigrescens*

- v.c. 72 Dalveen Pass
- v.c. 86 Campsie Hills above Lennoxton
- v.c. 98 Luing; Seil; Kerrera; near Kirnan; Creag an Sturra; Gallanach;  
Kilmichael Glassary; Isle of Bernera, Lismore
- v.c. 101 Isle of Danna

*Pilosella officinarum*—unnamed subsp.

- v.c. 97 Letterfinlay
- v.c. 98 Coire Chalein, Beinn Beag; Kilmartin; Kirnan; Tibertich; Creagan-  
tairbh Mor
- v.c. 101 Isle of Danna; Ballygroggan; Campbeltown; Keil, Southend; Largy-  
baan coast
- v.c. 108 Sheigra

The distinguishing characters of these subspecies and of the other species of *Pilosella* occurring in the British Isles are given in Appendix I. It should be pointed out that, while many specimens can be referred to one or other of these taxa, intermediates are common and have been ignored for the purpose of the present notes. *P. officinarum* subsp. *concinata*, the most frequent subspecies in our area, occurs in two distinct forms, one with short pale glandular hairs, and the other with short darker glandular hairs. This second form should not be confused with the unnamed subspecies with long, dark glandular hairs.

#### ACKNOWLEDGMENTS

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11. Phyllaries 10–12 mm long ( <i>P. flagellaris</i> )	.. .. .	12
Phyllaries 6–9 mm long	.. .. .	13
12. Hairs of stem 2–3 mm long; hairs of phyllaries to 1.5 mm long	.. .. .	
	* <i>P. flagellaris</i> subsp. <i>flagellaris</i>	
Hairs of stem up to 7.5 mm long; hairs of phyllaries to 2.5 mm long	.. .. .	
	* <i>P. flagellaris</i> subsp. <i>bicapitata</i>	
13. Stem with up to 8 capitula ( <i>P. lactucella</i> )	.. .. .	14
Stem with usually more than 10 capitula	.. .. .	15
14. Stem 5–12 (–20) cm high	.. .. .	<i>P. lactucella</i> subsp. <i>lactucella</i>
Stem over 20 cm high	.. .. .	<i>P. lactucella</i> subsp. <i>hebeola</i>
15. Leaves deep yellowish green, oblanceolate, widest leaves of plant 15–30 mm wide		
	* <i>P. caespitosa</i> subsp. <i>colliniformis</i>	
Leaves caesius green, very narrowly elliptic or oblong, widest leaves less than (usually much less than) 15 mm wide ( <i>P. praealta</i> )	.. .. .	16
16. Leaves glabrous or nearly so; phyllaries 5–6 mm long	<i>P. praealta</i> subsp. <i>spraguei</i>	
Leaves with hairs, at least on the margins and midrib; phyllaries 6–8 mm long		17
17. Stolons short and upturned; peduncles and phyllaries with no or few simple hairs	.. .. .	<i>P. praealta</i> subsp. <i>praealta</i>
Stolons long and prostrate; peduncles and phyllaries with numerous simple hairs	.. .. .	* <i>P. praealta</i> subsp. <i>arvorum</i>

## APPENDIX II

## INDEX OF PLACE NAMES MENTIONED IN THE TEXT WITH NATIONAL GRID REFERENCES

v.c. 72, Dumfries			
Crawick Water	26/79.13	Mennock	26/81.08
Dalveen Pass	26/90.07	Scar Water	25/79.99
Glenwhargen Craig	26/76.03		
v.c. 73, Kirkcudbright			
Colvend	25/88.54	Lauriston	25/68.64
Grey Mare's Tail,		Poldores Burn	25/61.96
Newton Stewart	25/49.72	Tongland Bridge	25/69.53
High Bridge of Ken	26/61.90		
Kells range	25/5.8		
v.c. 75, Ayr			
Craig Hill, Straiton	26/38.01		
Dalmellington	25/50.03		
v.c. 76, Renfrew			
Lochwinnoch	26/35.59		
Neilston	26/47.57		
Shielhill Glen	26/23.72		
v.c. 86, Stirling			
Ballagan Glen	26/57.79		
Campsie Glen	26/61.80		
Double Craigs	26/63.87		
Gonachan Burn	26/63.85		

## v.c. 97 (Argyll)

Beinn na Beathrach	17/75·57	Killundine	17/58·49
Beinn na h-Uamha	17/68·53	Loch Dur na Marst	17/66·52
Creach Bheinn	17/87·57	Maol Odhar	17/88·57
Garbh Bheinn	17/90·62	Meall nan Each	17/88·56
Gearradh	17/96·61	Sithean na Raplaich	17/64·52

## v.c. 98, Argyll

Aonach Dubh	27/15·56	Creag nam Fitheach	17/83·04
Balvicar	17/76·16	Creag an Sturra	17/82·14
Bealach Mor	17/83·04	Creagantairbh	17/18·01
Beinn a' Chaisteal	27/34·36	Cruach an Nidd	17/85·14
Beinn a' Chleibh	27/24·25	Cuan Ferry	17/75·14
Beinn Buidhe	27/20·18	Dalvuie	17/92·36
Beinn Dothaidh	27/32·40	Dun Nucaig	17/75·15
Beinn an Lochain	27/21·07	Ellenbeich	17/74·17
Beinn Luibhean	27/24·07	Gallanach	17/82·25
Ben Cruachan	27/09·30	Ganavan	17/85·32
Ben Donich	27/21·04	Glen Gallain	17/85·18
Ben Ime	27/25·08	Kerrera Ferry	17/83·28
Ben Narnain	27/27·06	Lag na Cille	17/85·25
Beinn an t-Seilich	27/20·07	Loch Tralaig	17/87·16
Beinn Udlaidh	27/27·32	Meall a' Bhuiridh	17/24·50
Bernera	17/79·39	Meeting of the Waters	27/17·56
Bidean nam Bian	27/14·54	Pass of Melfort	17/84·15
Binnean an Fhidhleir	27/21·10	Raera	17/82·20
Buchaille Etive Mor	27/21·54	Sroin na Creise	27/23·52
Coire Chailean	27/31·33	Stob an Eas	27/18·07
Creag Bhan	27/10·53	Tibertich	17/84·02
Creag a' Chapuill	17/85·02		

## v.c. 99, Dunbarton

Ben Vane	27/27·09	Cochno Loch	26/47·75
Ben Vorlich	27/29·12	Glenarbuck	26/45·74
Beinn Dubh	27/27·11	Glenmallan	26/25·96
Auchengaich Burn	26/27·90	Kilpatrick Hills	26/4·7

## v.c. 101, Kintyre

Artilligan Burn	16/85·77	Lussa (river)	16/77·85
Achinhoan Head	16/76·17	Loch an Dobhrain	16/80·79
Bellochantuy	16/66·38	Meall Ruadh	16/79·80
Carse	16/73·61	Mull of Kintyre	16/60·07
Cnoc na Seamraig	16/80·77	Ormsary	16/73·71
Cruach Lusach	16/78·83	Scotnish	16/75·88
Danna	16/69·78	Sliabh Gaoil	16/82·74
The Gauldrings, Ballygroggan	16/62·19	Stronefield	16/71·73
Keil	16/67·07	Wishing Ledge	16/72·61
Largybaan cliffs	16/59·15		

## v.c. 102, South Ebudes

Garvelloch Isles	17/66·12	Rudha Mhail	16/42·79
Lower Killeyan	16/27·43	Texa Isle	16/39·43
Rudha Bholsa	16/38·78		

## v.c. 103, Mid Ebudes

Allt na Teangaidh	17/45-32	Creach Bheinn	17/63-26
s-Airde Bheinn	17/47-54	Creag a' Ghail	17/45-32
Aros Bridge	17/55-44	Knock	17/54-39
Beinn Fhada	17/54-35	Loch Spelve	17/73-27
Ben More	17/52-33	Sorisdale, Coll	17/27-63
Choirc Bheinn	17/48-32		

## v.c. 104, North Ebudes

Blaven	18/53-21	Elgol	18/52-14
Broadford	18/6-2	Loch Cill Chriosd	18/61-20
Duntulm	18/41-74		

## v.c. 105, West Ross

An Sgurr	18/85-38	Coulin Forest	18/9-5
Bad a' Chreamha	18/85-36	Cul Beag	29/14-08
Beinn Gobhlach	28/05-94	Dornie	18/88-26
Ben More Coigach	29/10-04	Kishorn	18/83-40
Blarnaleych	28/14-90	Sgurr an Lochain	28/00-10
Core an t-Slugain	28/05-08	Sgurr a' Gharaidh	18/88-44

## v.c. 108, West Sutherland

An Grianan	29/26-62	Glas Bheinn	29/25-26
Beinn Ceannabeine	29/42-64	Kearvaig	29/29-72
Beinn Spionnaidh	29/36-57	Kirtomy	29/76-62
Ben Hope	29/47-50	Ledmore	29/24-12
Ben Loyal	29/58-48	Loch Eriboll	29/40-54
Ben Stack	29/27-42	Loch Inshore	29/33-70
Cape Wrath ferry	29/37-66	Oldshoremore	29/20-58
Cnoc na Glaic Tarsuinn	29/29-65	R. Laxford	29/24-47
Cnoc a' Mhadaidh	29/32-52	Quinag	29/19-29
Cranstackie	29/35-55	Parphe	29/25-60
Creag Riabhach	29/28-64	Sandwood	29/22-65
Culkein of Drumbeg	29/11-34	Sheigra	29/19-60
Farrmheall	29/30-59	Smoo	29/41-67
Foinaven	29/31-50	Traigh na h-Uamha	29/44-65
Geodha na Seamraig	29/28-73		