

Action Plans for Lower Plants in Scotland Project

– Lichens –

Lecanora achariana

Species Dossier

A M Fryday & B J Coppins

1999

**Scottish Natural Heritage
&
Royal Botanic Garden Edinburgh**

Lecanora achariana

1. Species Account

1.1 Name

Lecanora achariana A.L. Sm.
 Order *Lecanorales* Family *Lecanoraceae*
 English Name: Tarn Lecanora
 Swedish name: Kustlav ('shore lichen')

1.2 Status

1.2.1 Legal Status

Schedule 8 of the Wildlife and Countryside Act

1.2.2 Rarity

Red Data Book Category (CR) CRITICALLY ENDANGERED

1.2.3 Occurrence in protected areas

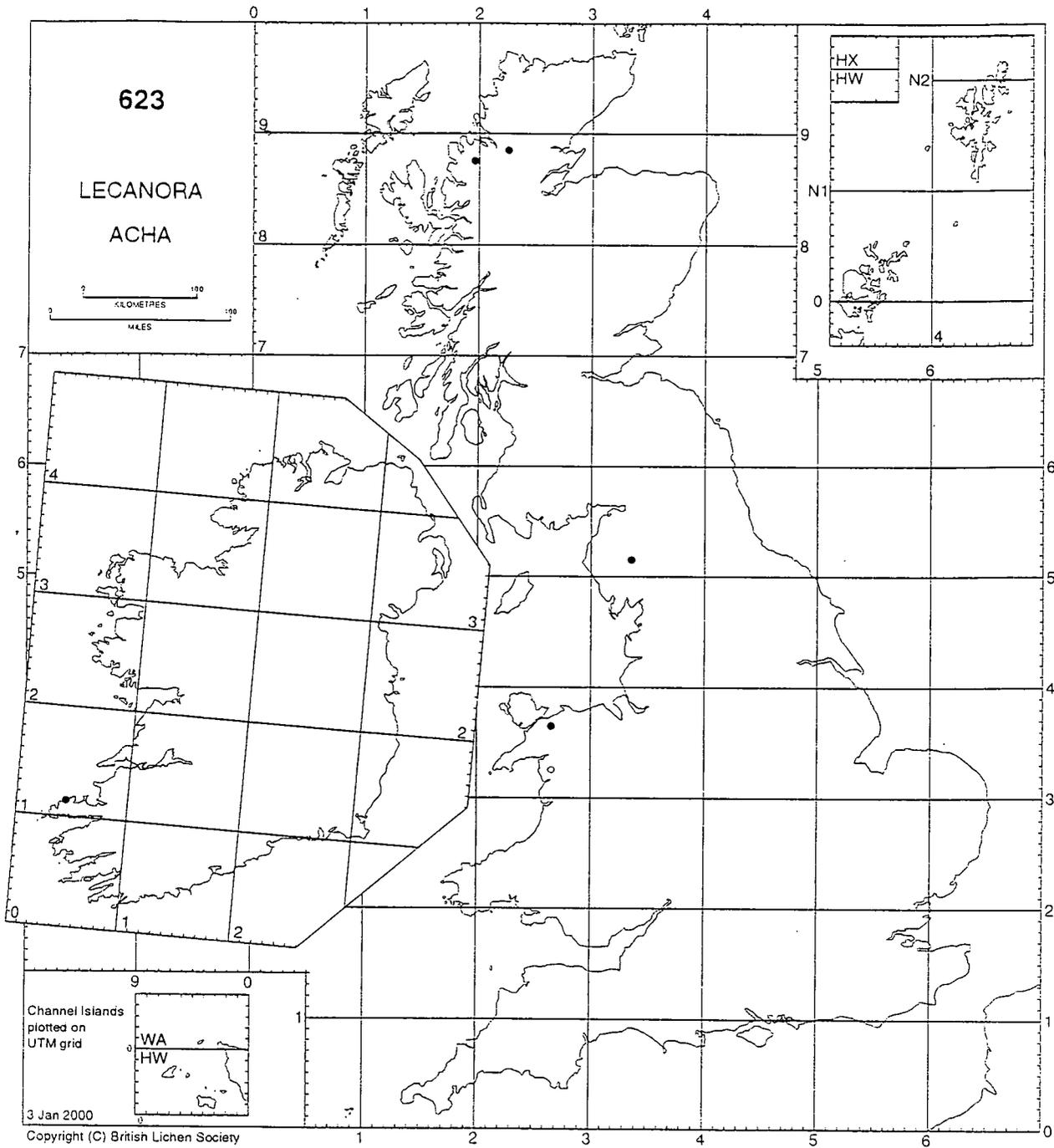
Two of the Scottish localities for this species are within the Beinn Dearg SSSI/pSAC, and the other two are within the Loch Maree Islands NNR/pSAC.

1.3 Distribution and Abundance

1.3.1 World Distribution

Clauzade & Roux (1985) give the distribution as mountains of Western Europe with an Atlantic climate. Along the Atlantic seaboard it is known from northern Norway, western British Isles and N. Portugal. In Fennoscandia it is widely distributed in the south, extending northwards along the Norwegian coast and eastwards into southern Finland (Moberg & Holmåsen 1982: 116, outline map). It is also found on the Estonian Baltic island of Saaremaa (Trass & Randlane 1994: 211) and the Danish island of Bornholm (Alstrup & Søchting 1989). It is apparently absent and has never been recorded from the lowlands of mainland Europe from Poland via the low countries through to southern France. There are a few records from the mountains of southern and Mediterranean Europe, but we have seen mostly only vague references to its occurrence. For example, for France, Ozenda and Clauzade (1970) cite its presence in the Vosges, Cévennes, the Pyrénées and the Alps. It is reported from the Schwarzwald (Baden-Württembergs) by Poelt (1969: 350), but this is questioned by Wirth (1995:452). In the Red List for Germany (Wirth *et al.* 1996: 337), *L. achariana* is considered Extinct, but no definite records are given for any province. In Italy it is known only from the higher peaks of the Gennargentu Massif in Sardinia (Nimis 1993: 340).

Lecanora achariana is not known outside Europe. A literature record for the Azores is considered as doubtful by Hafellner (1995).



Distribution of *Lecanora achariana* within the British Isles.

1.3.2 British Distribution

Lecanora achariana is known from one tarn/lochan in the English Lake District (Gilbert & Giavarini 1992), two sites in North Wales (Gilbert pers. comm., Orange 1999) and two on Brandon Mountain in South-West Ireland (Gilbert & Fryday 1996). In Scotland it is known from numerous pools and lochans on the Beinn Dearg SSSI near Ullapool in West Ross, and from two islands in Loch Maree NNR, also in West Ross. It was previously reported from a third Welsh site (Llyn Bodlyn, Merioneth) but it is no longer present there.

The four Scottish records fall within two 10 km grid squares. These are given below with Natural Heritage Zone (1998), SNH area and Local Authority Area:

GR	SNH	LA	NHZ	VC
18(NG)/97	4. W	4. Highland	4. NW	105. W Ross
28(NH)/28	3. N Highland	4. Highland	7. N	105. W Ross

1.3.3 Abundance

At the English and Welsh sites *L. achariana* is relatively plentiful but it is less frequent at the Irish site. The Scottish locality at Beinn Dearg represents the headquarters of the British distribution with a well developed population in pools and lochans along a 1 km long stretch of the River Lael and a second smaller population at a single lochan 3 km to the north. At Loch Maree is known from two localities, each with 5 or 6 individual thalli, but a more systematic search may well reveal further populations.

1.4 Identification

Lecanora achariana is a placodioid (i.e. with a crustose thallus with radiating margins) lichen forming pale-yellow rosettes on the flat tops of boulders in the margins of upland lochans (Fig 1). It is a conspicuous, distinctive species which once seen is unlikely to be confused with any other British species. It is, however, similar to other placodioid species of *Lecanora* and yellow, saxicolous *Parmelia* spp. which occur in the same situation.

It is most closely related to the common *Lecanora muralis*, with which it often grows, but has a more yellow-green thallus and paler apothecia. It also has less adpressed, flat to convex lobes (flat to concave in *L. muralis*) which pile up towards the centre of the thallus giving the plant a more robust appearance. The only other placodioid species of *Lecanora* to occur in the UK is the coastal *L. straminea* which has a C+ orange thallus due to the presence of xanthonenes. The non-British *L. macrocyclos* is similar to *L. muralis* but has narrow, strongly convex marginal lobes. It may well occur in N-W Scotland.

The colour and placodioid habit of *L. achariana* may lead to confusion with yellow species of *Parmelia* s. lat., especially *P. conspersa* or *P. sinuosa*, but both these

Fig. 1. *Lecanora achariana* (right) with *L. muralis* (left) - Gleann na Sguaib, Beinn Dearg SSSI

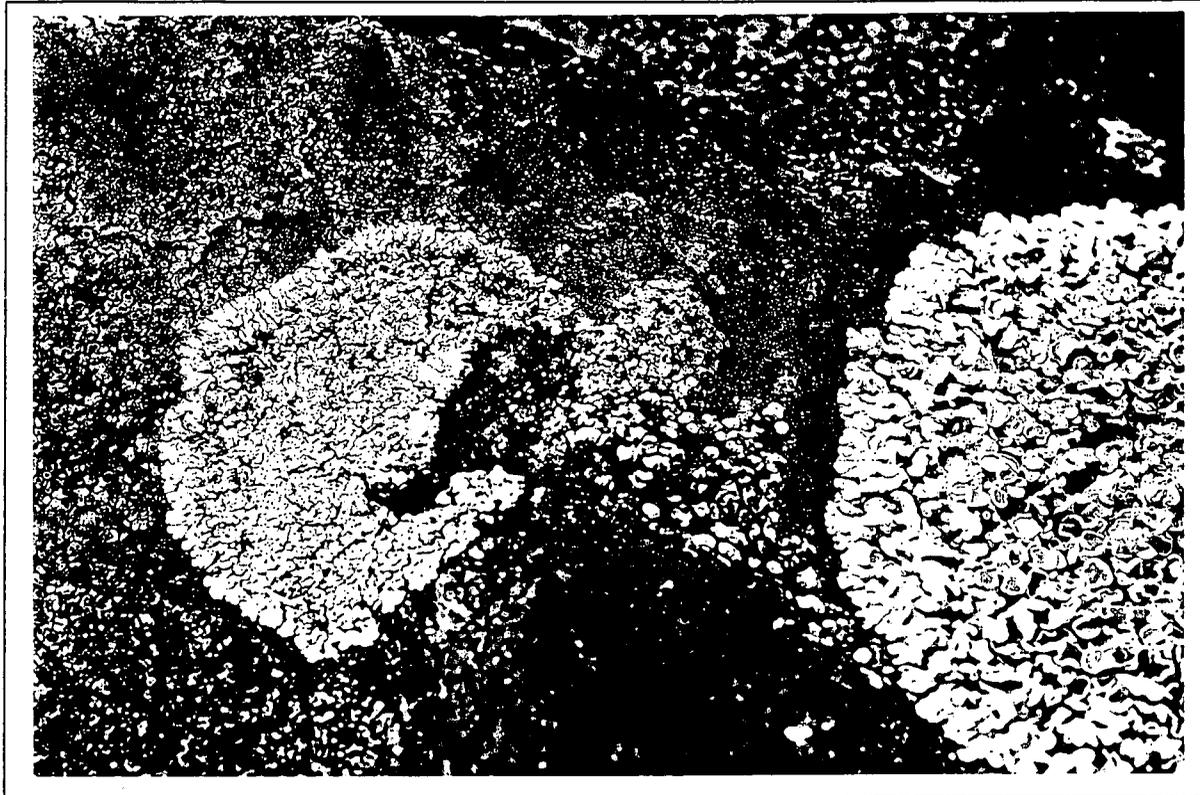
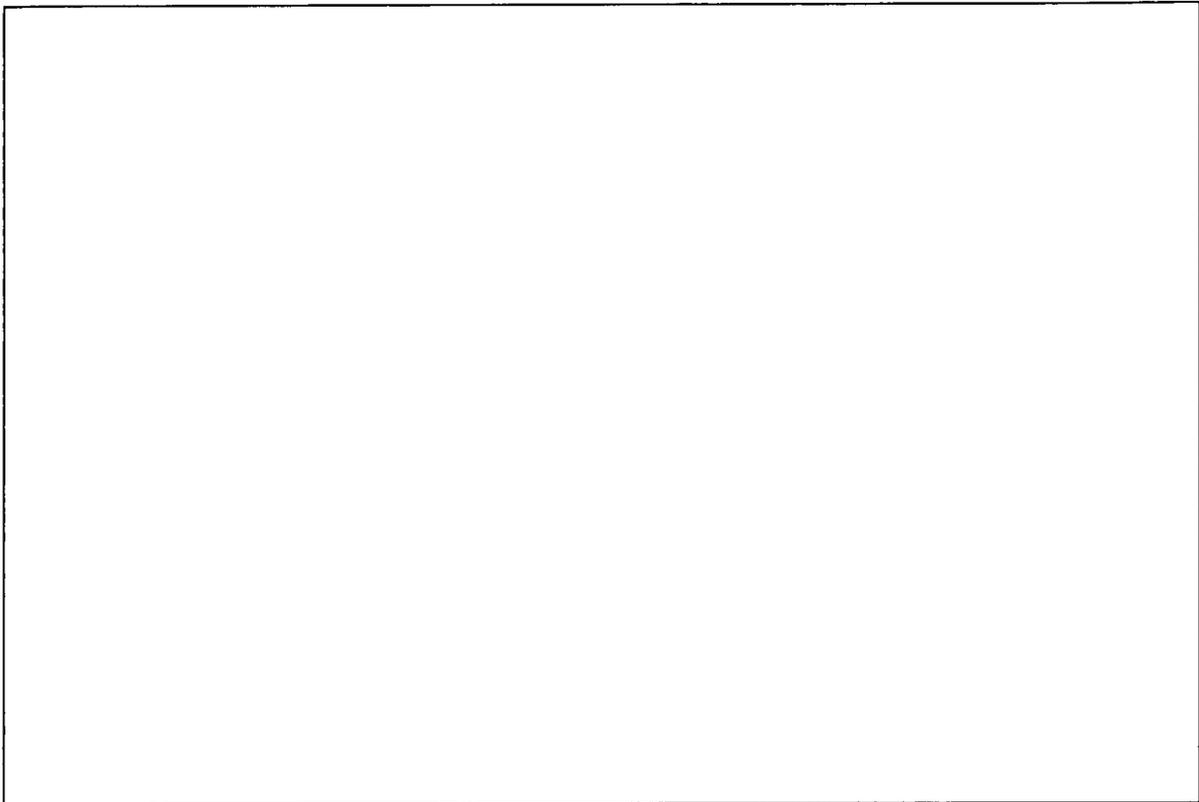


Fig. 1. *Lecanora achariana* (right) with *L. muralis* (left) - Gleann na Sguaib, Beinn Dearg SSSI



species have wider lobes with a dark lower surface (white in *L. achariana*) and rhizines as well as having a positive reaction with K and Pd (negative in *L. achariana*) and either isidia (*P. conspersa*) or soredia (*P. sinuosa*) although these are sometimes difficult to detect.

1.4.1 Illustrations

Moberg & Holmåsén (1982: 116, colour photo.).

1.5 Ecology

In the UK, *L. achariana* is confined to the upper surfaces of rocks and boulders, mostly in upland tarns and lochans, exposed to the air but where it can withstand occasional inundation. At one locality it grows near sea-level in a large freshwater loch (Loch Maree), and at one of the Welsh sites it is by a stream (Orange 1999). In Fennoscandia and the Baltic islands it is sometimes found on coastal rocks, but no coastal localities for this species are yet known in the British Isles. Although the literature give the habitat as siliceous (acid) rocks (Purvis *et al.* 1992, Santesson 1993), pH and associated species evidence suggests a somewhat basic influence. Gilbert & Giavarini (1993) report a pH of 6.8 for the Lake District location of *L. achariana* (compared with 6.1–6.3 of other tarns in the area) whereas that of the Beinn Dearg location was measured as 6.7. Associated species also suggest a slight base-enrichment along with slight ornithocoprophilic eutrophication. From the River Lael site on Beinn Dearg these include *Aspicilia caesiocinerea* agg., *Dermatocarpon intestiniforme*, *D. ?meiophyllizum*, *Lecanora muralis*, *Nephroma parile*, *Parmelia saxatilis*, *Phaeophyscia endococcina*, *P. sciastra* *Physcia caesia*, *Placynthium flabellum*, *Rhizocarpon badioatrum* and *Umbilicaria deusta* whereas at the Lochan Sgeirich location *Aspicilia caesiocinerea* agg., *Candelariella vitellina*, *Collema glebulentum*, *Dermatocarpon luridum*, *Hymenelia lacustris*, *Lecanora muralis*, *Phaeophyscia endococcina*, *Physcia caesia* and *Rhizocarpon lavatum* were recorded as immediate associates with *L. achariana* with *Nephroma parile*, *Phaeophyscia sciastra* and *Placynthium flabellum* also present in the vicinity.

A detailed description of the ecology of *L. achariana* at its Lake District location is given by Gilbert & Giavarini (1993).

1.6 Threats

There is little danger to the continued presence of *L. achariana* on the Beinn Dearg SSSI. The only potential threats are those which may cause some change in the water course which effects the level of water, its rate of flow, its pH, or mineral content.

At Loch Maree NNR, the lichen could be damaged should the boulders where it occurs be used as stepping-stones whilst boat handling or fishing. However, since their location is not used for these purposes and there is very little recreational activity on the loch, the actual level of threat is considered to be extremely low.

1.7 Management

Little management is required or possible. Ensuring that land owners and conservation agencies are aware of the presence of this species along with monitoring of the known populations are the only actions necessary.

Occasional monitoring of the Lochan Sgeirich population is probably more important due to its small size.

1.8 Specialists

Dr Alan Fryday,

NB: Now working in USA - can be contacted via Dr Coppins.

Dr Oliver Gilbert, 42 Tom Lane, Sheffield, S10 3PB.

Tel.: 01142 306988.

Dr Brian Coppins, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR.

Tel.: 0131 248 2864.

Fax:: 0131 248 2901.

E-mail: B.Coppins@rbge.org.uk

2. Action/Recovery Plan

2.1 Objectives/prescriptions

The first priority with this species is to safeguard the populations which currently exist. Due to its habitat of the tops of boulders on the edges of lochs or lochans or slow-moving streams it is particularly susceptible to changes in quality or quantity of water flow. **A monitoring programme of representative plants in the main population at Beinn Dearg would be advisable.**

Further survey work is also required to visit other potential sites for this species. This should be centred on the Western Highlands and concentrate on lochans at an intermediate altitude (500–700 m) with a pH of c. 6.7 or where there is known to be basic rocks in the vicinity. A systematic search of potential habitats on the Loch Maree Islands is also recommended, as the two 1999 finds there were made during a 6-day general survey, concentrating primarily on the woodland flora.

2.2 Recovery potential

There is no evidence for a decline in this species and so maintenance of the current population should be the primary consideration.

2.3 Implementation

The main threats to this species in the UK are changes in the quality of the water-courses or water-bodies in which it occurs. Likewise the quantity of the water flow or water-levels. **Every effort should be made to safeguard the present conditions in terms of water quality, flow régime and water level at its sites.**

Primary survey work of other potential sites should be undertaken to ascertain the total population of the species in the UK.

3. Localities

18(NG)/9.7

18(NG)/908.732: VC 105, West Ross: Loch Maree Islands NNR, small island to north of Garbh Eilean, on projecting boulder in the narrow channel that separates the two halves of the island when water levels are high, 5 or six individual thalli, June 1999, *V.J. Giavarini*. For details see *Giavarini et al.* (1999).

18(NG)/909.729: VC 105, West Ross: Loch Maree Islands NNR, Garbh Eilean, on western shoreline of the narrow channel that divides the two northern peninsulas of the island, 5 or 6 individual thalli on at least one boulder, June 1999, *V.J. Giavarini*. For details see *Giavarini et al.* (1999).

28(NH)/2.8

28(NH)/24-5.82: VC 105, West Ross: Beinn Dearg SSSI, River Lael, Gleann na Sguaib, below Diollaid a' Mhill Bhric, alt. 525–675 m, August 1995, *A. M. Fryday*, 'numerous plants (>100) on boulders at margins of shallow pools in slow-flowing stream. Also at margin of lochan and on side of boulder in fast-flowing stream.'

28(NH)/252.857: VC 105, West Ross: Beinn Dearg SSSI, Coire an Lochan Sgeirich, alt. 640 m, August 1996, *A. M. Fryday* - Discovered during present survey.

3.1 Maps

See maps attached to locality details

3.2 Individual localities

See separate sheets. For details of the Loch Maree localities see *Giavarini et al.* (1999).

4. References

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- Wirth, V. (1995) *Die Flechten Baden-Württembergs*. Stuttgart: Eugen Ulmer.
- Wirth, V. *et al.* (1995) Rote Liste der Flechten (Lichenes) der Bundesrepublik Deutschland. *Schriftenreihe für Vegetationskunde* 28: 307–368.

3.2 Individual Localities:

3.2.1 28(NH)/24-5.82: VC 105, West Ross: Beinn Dearg SSSI, River Lael, Gleann na Sguaib, below Diollaid a' Mhill Bhric, alt. 525–675 m, August 1995, *A. M. Fryday*

Status: - SSSI, pSAC, pSPA (part)

Owner: - Foich Estate

Factor: Toby Metcalf, Smith's Gore, 7 The Square, FOCHABERS, Moray. Tel.: 01343 820213

Local Contact: - Alan McGillivray - contact Chris Wright (SNH, 17 Pulteney Street, Ullapool, Ross-shire, IV26 2UP - Tel: 01854 613418) for address/phone no.

Access: - Generally unrestricted but check during stalking season.

SITE VISITED: SPECIES RE-FOUND AND SURVEYED

A. M. Fryday, C. Wright (SNH)

Date of Visit: 23 August 1996 **Weather:** Good

Lecanora achariana is abundant on the tops of flat boulders around the periphery of lochans and pools along a *c.* 500 m, slow-moving section of the River Leal below Diollaid á Mhill Bhric. Most plants are *c.* 30–50 cm above the water. *L. achariana* is also present at the outflow and around the margin of the lochan below the bealach (GR 28(NH)/253-4.821, 675m). Associated species include: *Aspicilia caesiocinerea* agg., *Dermatocarpon intestiniforme*, *D. meiophyllizum*, *Lecanora muralis*, *Nephroma parile*, *Parmelia saxatilis*, *Phaeophyscia endococcina*, *P. sciastra*, *Physcia caesia*, *Placynthium flabelliforme*, *Rhizocarpon badioatrum* and *Umbilicaria deusta*.

Lochan á Chnapaich, *c.* 1.5 km to the north, and a series of small lochans at the head of Allt Uisg á Bhrisdidh were visited but *L. achariana* was not recorded.

Locality Action Plan:

This is the most extensive population of this species in the British Isles. **Regular monitoring of selected plants would yield important data on its growth rate and performance, along with information of the population dynamics of the, apparently undescribed, community in which it occurs.**

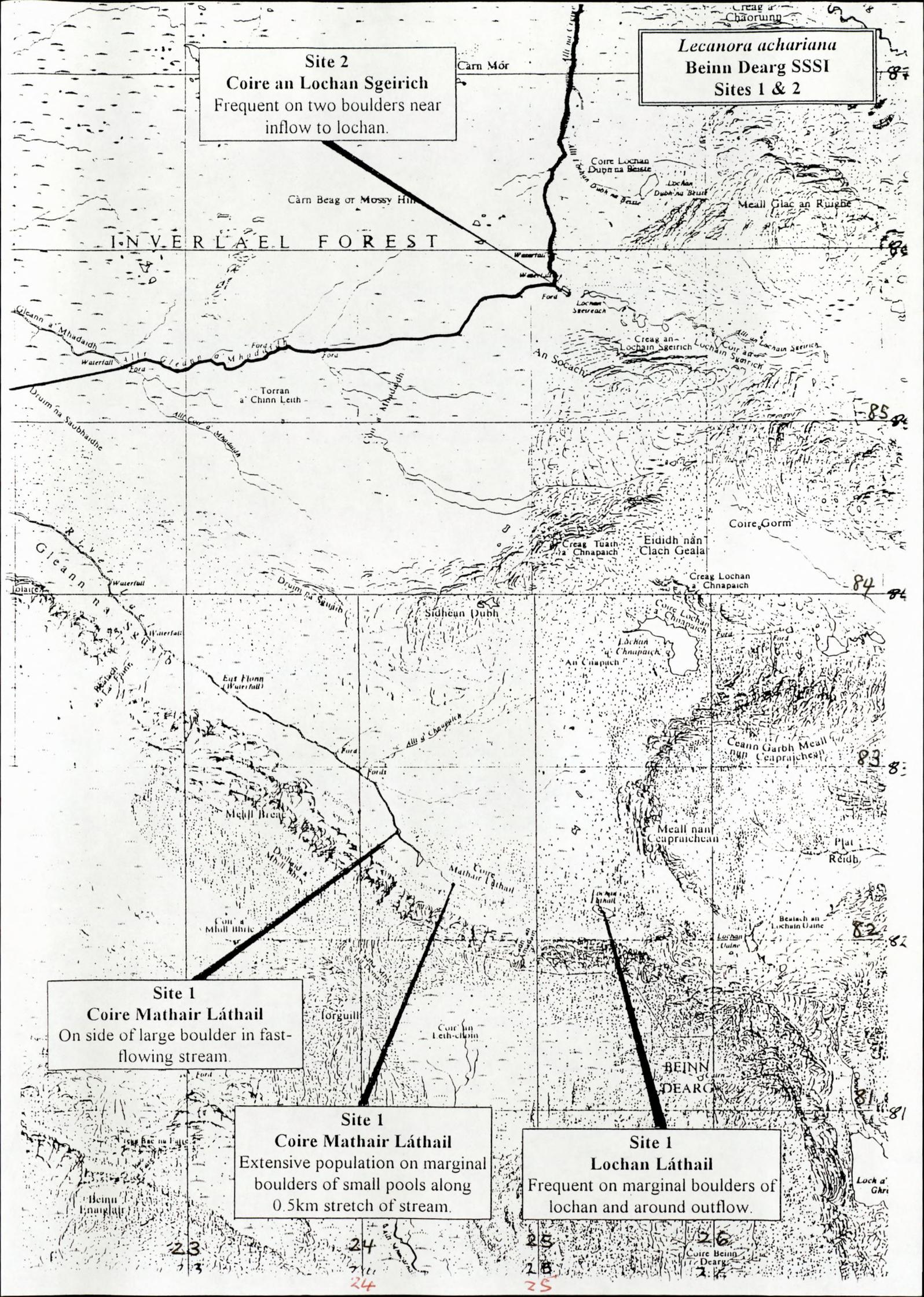
Lecanora achariana
Beinn Dearg SSSI
Sites 1 & 2

Site 2
Coire an Lochan Sgeirich
Frequent on two boulders near
inflow to lochan.

Site 1
Coire Mathair Láthail
On side of large boulder in fast-
flowing stream.

Site 1
Coire Mathair Láthail
Extensive population on marginal
boulders of small pools along
0.5km stretch of stream.

Site 1
Lochan Láthail
Frequent on marginal boulders of
lochan and around outflow.



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Figure 2. Habitat of *Lecanora achariana* - on top of low boulders in Coire Mathair Láthail, River Leal, Gleann na Sguaib, Beinn Dearg SSSI.



Figure 3. Location of *Lecanora achariana* - Coire Mathair Láthail, River Lael, Gleann na Sguaib, Beinn Dearg SSSI. Looking towards Diollaid a' Mhill Bhric.



Figure 4. Lochan Láthail, Beinn Dearg SSSI. *Lecanora achariana* is frequent on marginal rocks



Figure 5. Outflow from Lochan Láthail, Beinn Dearg SSSI. *Lecanora achariana* occurs on the large boulder in the centre of the picture.

3.2 Individual Localities:

3.2.2 28(NH)/252.857: VC 105, West Ross: Beinn Dearg SSSI, Coire an Lochan Sgeirich, alt. 640 m, August 1996, *A. M. Fryday*

Status: - SSSI, pSAC

Owner: - Foich Estate

Factor: - Toby Metcalf, Smith's Gore, 7 The Square, FOCHABERS, Moray. Tel.: 01343 820213

Local Contact: - Alan McGillivray - contact Chris Wright (SNH, 17 Pulteney Street, Ullapool, Ross-shire, IV26 2UP - Tel: 01854 613418) for address/phone no.

Access: - Generally unrestricted but check during stalking season.

SITE VISITED: SPECIES FOUND AND SURVEYED

A. M. Fryday

Date of Visit: 25 August 1996 **Weather:** Good

Lecanora achariana was recorded from the flat upper surface (30–40 cm above the water-line) of two boulders near the inflow to the lowest of a series of lochans below Coire an Lochan Sgeirich (i.e. just before Allt na Creige Duibhe turns due north - GR 29/252.857, 650 m.). One boulder supported 5 large thalli (the largest *c.* 10 cm diam.) and 5–6 smaller scraps and the other 3 large thalli (similar size) and 10–12 smaller scraps. Also occurring on these two boulders were: *Aspicilia caesiocinerea* agg., *Candelariella vitellina*, *Collema glebulentum*, *Dermatocarpon luridum*, *Hymenelia lacustris*, *Lecanora muralis*, *Phaeophyscia endococcina*, *Physcia caesia* and *Rhizocarpon lavatum* with *Nephroma parile*, *Phaeophyscia sciastra* and *Placynthium flabellosum* also present in the vicinity.

The pH of this lochan was measured at 6.7, which is close to the reported pH of 6.8 for the Lake District location of *L. achariana* compared with the 6.1–6.3 of other tarns in the area (Gilbert & Giavarini 1993).

All the other lochans higher up this water course were visited but *L. achariana* was not seen again.

Locality Action Plan:

This is a small population in a remote locality. It is unlikely to be adversely influenced by factors other than changes to the water-course. The only action required is **occasional monitoring to assess its performance and ensure its continued existence.**



Figure 6. Lochan below Lochan Sgeirich (from the SE). *Lecanora achariana* occurs on two boulders at the inflow to the main lochan (cf. Fig. 8).

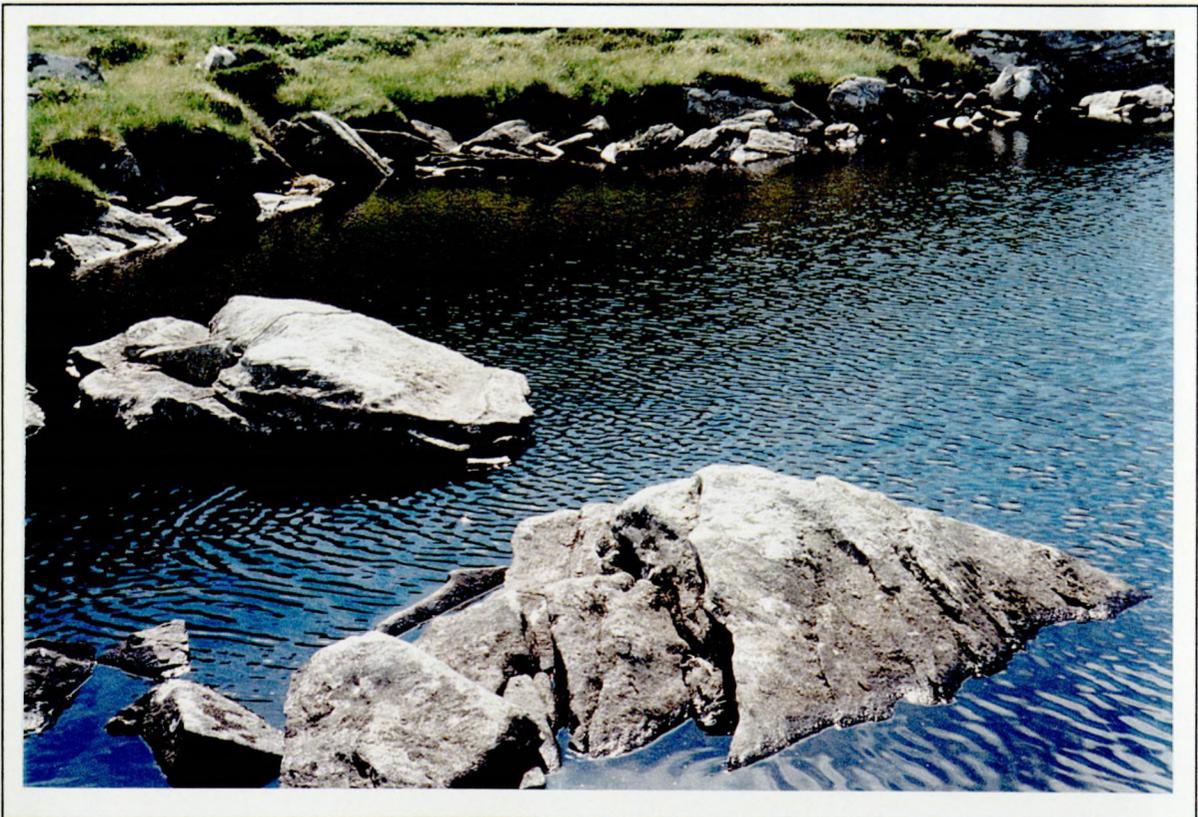
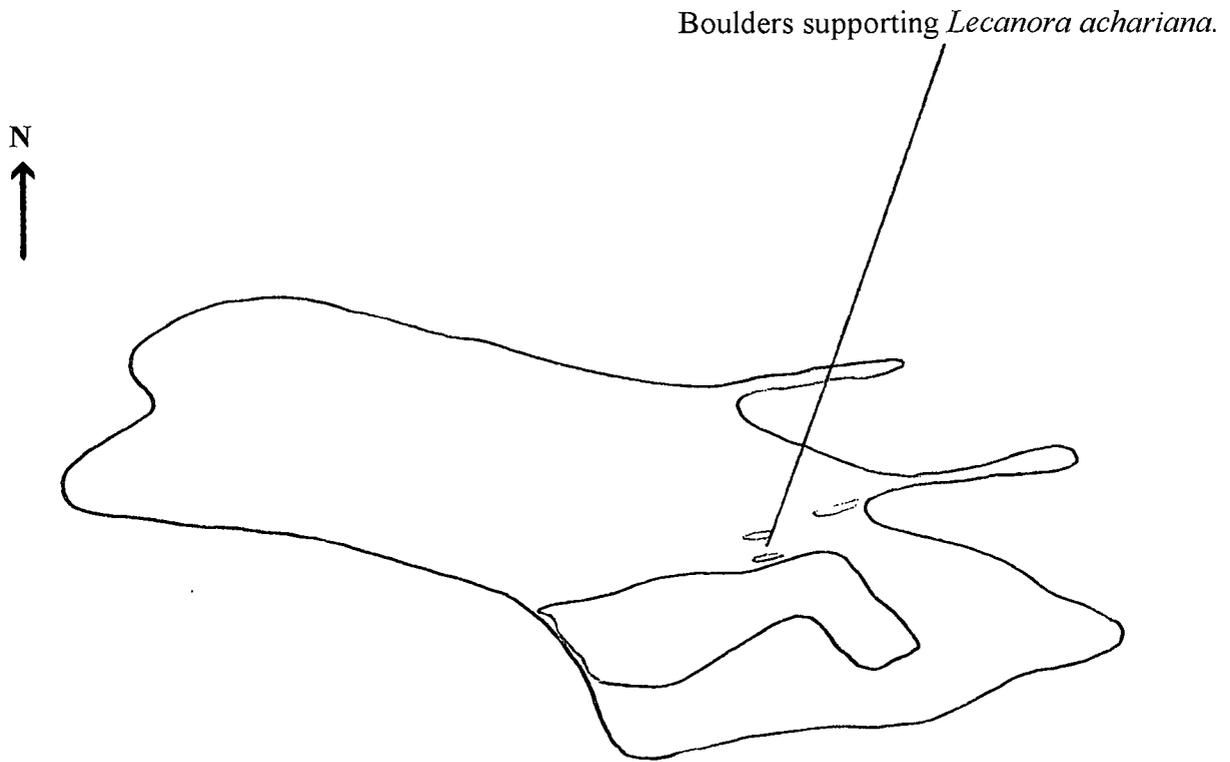


Figure 7. Lochan below Lochan Sgeirich. The two boulders near the inflow which support *Lecanora achariana* (from the N).



Lochan below Lochan Sgeirich. Location of boulders which support *Lecanora achariana*.



Figure 9. Lochan below Lochan Sgeirich. Habitat of *Lecanora achariana* (with *Physcia caesia*)



Figure 10. .Lochan below Lochan Sgeirich. *Lecanora achariana*.(with *Physcia caesia*)