bracken control

A Guide to Best Practice

SEARS
natural
scotland
SCOTTISH GOVERNMENT

WHAT IS SEARS?

SEARS is a partnership delivering rural and environmental services on behalf of the Scottish Government. We will provide:

- a streamlined service;
- easy access to information and advice;
- a consistent and responsive service; and
- a customer focused service

WHO ARE THE SEARS PARTNERS?

Animal Health

Cairngorms National Park Authority (CNPA)

Crofters Commission (CC)

Deer Commission for Scotland (DCS)

Forestry Commission Scotland (FCS)

Loch Lomond & The Trossachs National Park Authority (LLTNPA)

Scottish Environment Protection Agency (SEPA)

Scottish Natural Heritage (SNH)

Scottish Government Rural Payments and Inspections Directorate (SGRPID)

www.sears.scotland.gov.uk
email: info@sears.scotland.gov.uk

INTRODUCTION

THIS LEAFLET IS INTENDED FOR FARMERS, FORESTERS AND MOORLAND MANAGERS WHO:

- WANT TO KNOW MORE ABOUT BRACKEN CONTROL
- WANT TO PREPARE A BRACKEN MANAGEMENT PLAN

It is an updated version of a booklet originally produced by the Southern Uplands Partnership, which has proved useful to land managers throughout Scotland. Following the general information on these pages, the main steps which should be considered in order to produce a bracken management plan are laid out in Stages 1-5. A management plan will help to ensure that methods are appropriate and will achieve their aims, and is essential if you intend to seek support under the Scotland Rural Development Programme (SRDP) Rural Development Contracts - Rural Priorities. You may want to seek professional help with the production of a management plan.

BACKGROUND

Bracken (*Pteridium aquilinum*) is an important and natural part of our landscape, and its abundance appears to have fluctuated over thousands of years. Its invasive nature allows it to spread, and it now occurs widely within a variety of habitats throughout Scotland. Originally a woodland plant, bracken may formerly have been kept in check by shading from the woodland canopy. Large-scale loss of woodland cover over the centuries may have facilitated its spread and increased abundance.

Changes in land management practices have also tended to favour the spread of bracken, namely:

- fewer cattle in upland grazings and thus less trampling of bracken
- sub-optimal management of heather and/or grassland
- ending of the practice of cutting bracken for bedding
- increased numbers of sheep in the uplands (although high densities may help to contain bracken in grassland).

Bracken is now a recognised problem which is severe in some areas of Scotland. Recent attempts to control bracken have highlighted the need to carry out control properly. There has been a dependency on certain control techniques which are not appropriate in every situation. Bracken has an extensive underground stem (rhizome) system which can store large amounts of nutrients and carbohydrate. This means that it can recover after initial treatment if control is neglected so adequate follow-up treatment and aftercare must be planned and implemented.

PROBLEMS ASSOCIATED WITH BRACKEN

- Bracken reduces the potential grazing area available to livestock and wildlife.
- Bracken can make the task of gathering stock difficult.
- Bracken can make recreational access more difficult.
- Bracken can make deer control more difficult.
- Bracken can replace other important habitats such as heathland and species-rich grassland.
- Bracken can inhibit woodland regeneration.
- Bracken can harbour ticks which may cause disease in livestock, game and humans.
- Bracken is toxic and carcinogenic to stock and may have a negative impact on human health.
- Bracken can increase fire hazard.

BENEFITS OF BRACKEN

- Bracken can provide protective cover on steep slopes at risk of erosion.
- As part of a habitat mosaic, bracken can be important for many forms of wildlife including invertebrates, small mammals, some plant species and birds such as whinchat, tree pipit, yellowhammer and nightjar.
- Patchy bracken stands can support several rare fritillary butterflies which depend on violets and cow-wheat (often growing under bracken) as their sole food source.

- Bracken can support woodland ground flora in areas that were once tree-covered.
- Bracken is considered by some to possess considerable aesthetic value in the landscape, especially during the autumn months.
- There are potential uses of bracken for animal bedding, compost, and as a biofuel.

BRACKEN MANAGEMENT

Your approach to treatment will depend very much on the type of vegetation you want to replace the bracken with. Whatever treatments are selected, they should be part of at least a 5 year management programme. Control programmes should consist of pre-control, primary and follow-up treatments, with post-control management addressing vegetation recovery. Primary treatment can achieve up to 98% kill. Follow-up treatment is targeted at the remaining fronds which will continue to appear. A large measure of control can be established with a carefully considered, targeted programme, but it may be difficult to eradicate bracken totally.

bracken control

STAGE 1 - WHAT SHOULD BE CONSIDERED?

WHAT ARE THE LONG-TERM LAND-USE OBJECTIVES?	• To re-establish heather, productive grass, pre-existing vegetation, or woodland? It is vital to consider what vegetation is to replace the bracken and how to manage this vegetation recovery long term. (see Stage 5) • To enhance wildlife or conservation interests? • To control disease in animals? • To protect archaeological interests? • To protect footpaths or public access?
WHAT IS THE CONDITION AND VIGOUR OF BRACKEN?	• Look at the density of bracken and the growth form (see Scenarios). These will also determine the method of treatment. • It is best to tackle bracken fronts which are invading desirable habitats such as heath, in order to prevent further encroachment, before tackling dense, static stands. • The benefits of controlling areas of sparse bracken which are growing weakly and not expanding may not be great. • Look at the amount of litter present and whether this will inhibit vegetation recovery. Litter destruction/removal may be needed.
WHAT IS THE CONDITION AND VIGOUR OF THE UNDERLYING VEGETATION?	• Bare or sparsely-vegetated ground can take years to revegetate without additional intervention and is at risk from over-grazing and erosion. • Stocking levels may need adjusting and fencing may be required to promote vegetation recovery. • Rabbits and other pests may need to be controlled. • Reseeding may be required. • Although trees can sometimes be planted through deep litter without any further treatment, it usually prevents revegetation, so may need to be burned, trampled or incorporated into the soil.
WATER QUALITY	• Is the area in a drinking water catchment (reservoir, stream intake, spring or borehole)? • Where are the waterbodies (rivers, streams, lochs, groundwater)? • Remember you will have to leave a buffer strip around waterbodies when using chemical control.

Cont.

OTHER ISSUES	• Natural heritage – non-target species can be severely damaged by chemical or mechanical treatments, or by loss of habitat. Consider whether control is appropriate, and if so which method is best. • There are special rules which apply to sites designated for their nature conservation interest. Contact SNH or SEPA (see below) for information and guidance. • Public access – you may need to post public warnings and obtain consents.
TARGET AREAS AND EXTENT OF BRACKEN	• Consider costs and follow-up treatments – it is best to tackle smaller areas properly than to try to treat large areas ineffectively. • Decide on the most important areas to treat (prioritise). • Consider slope and accessibility. Steep slopes affect access and safety of vehicle and driver and can add significantly to the plan area to be controlled. • Consider appropriate methods of control. • Erosion can result from spraying bracken on steep slopes or where the vegetation growing beneath is absent or sparse. • Accurate survey maps will be needed especially where grant-aid is applicable or where aerial spraying may affect a site designated for its nature conservation interest. • Maps are invaluable in planning a long term management programme.
CONSENTS AND CONSULTATIONS	• When planning treatment, account will need to be taken of statutory or legal requirements (see below).
RESOURCES	• Ensure that adequate resources are allocated for follow-up treatment. If you do not follow up primary treatment, bracken will rapidly recover and the resources deployed on the initial treatment will be largely wasted.

STAGE 2 - WHAT ARE THE MANAGEMENT OPTIONS?

THE BEST MANAGEMENT OPTION DEPENDS MAINLY ON YOUR LAND-USE OBJECTIVES, BUT ALSO ON THE RESOURCES AVAILABLE TO FOLLOW UP THE PRIMARY TREATMENT. IN MOST CASES A COMBINATION OF THE FOLLOWING WILL BE USED:

NO CONTROL	• Bracken control is not always appropriate, for example on steep slopes, where it could promote erosion, or where regeneration of other habitats to replace bracken is difficult. In some areas there will be species of nature conservation value that could be harmed by bracken control.
CONSERVATION MANAGEMENT	• Where it is desirable to maintain low-density or patchy cover for supporting species and habitats of conservation importance, any control is likely to be limited and selective.
LIMITED CONTROL	• Where the aim is to reduce the area or severely limit vigour and spread but not eliminate.
ERADICATION	• Where bracken is to be replaced with other vegetation.

STAGE 3 - WHAT ARE THE CONTROL OPTIONS?

MEASURE	DETAILS	PROS/CONS
USE OF LIVESTOCK	A balanced stocking regime with cattle and fewer sheep on badly affected areas, combined with other treatments is an option that may assist long-term bracken management. Short-term high densities of livestock over winter can break up bracken litter and expose rhizomes to frost damage. This needs to be carefully managed to avoid damage to soils and vegetation. Feeding stock on badly affected areas will help concentrate impacts. Pigs can produce similar effects to mechanical cultivation, and will eat rhizomes, but cause extreme ground disturbance and there is a risk of bracken poisoning.	May require fencing. Bracken can be toxic to stock. Potential damage to soil.

MECHANICAL TREATMENTS

CUTTING/ CRUSHING/ BRUISING	For bracken control (rather than eradication) to be effective, it will be necessary to cut/roll/ flail bracken at least twice in the first year (in May/June and again in July/August) followed by at least one cut each year for the next five years. For bracken eradication, or where bracken is dense and vigorous, it may be necessary to cut/roll/flail up to three times per year. You should note that, where bracken control is carried out under the SRDP - Rural Priorities, it must be carried out according to the prescribed methods in force at the time. In 2008 these specify treatment three times per year. Special rollers designed for crushing bracken are available. Whipping with thin metal or hardwood rods can be used to cut bracken where vehicle access is restricted or where bracken is not dense. Mechanical methods can be used in combination with chemical treatments. A noticeable reduction in bracken density can be achieved in time. Do not use this method if ground-nesting birds are present. These options may not be appropriate in some areas because of steep slopes and difficult access. Vehicles should not be used on archaeological sites. Care should be taken to avoid damage to reptiles, ants, butterflies including fritillaries, and their habitats, where these species are present.	Good for scattered bracken and if little damage is likely to the underlying vegetation. Can give good, but slow, control of dense bracken; breaks up litter layer. Eradication is rarely achieved.
PLOUGHING OR TILLAGE	Should be carried out by late autumn. Additional kill may be gained by exposing rhizomes to frost action. Must be followed up with further treatment of recovered bracken in subsequent years. Not suitable on archaeological sites or where existing desirable vegetation may be excessively damaged.	Excellent control with litter broken up. Soil erosion.

BURNING BRACKEN LITTER	Does not achieve bracken control but may be used as part of a control programme where deep litter prevents vegetation recovery. Not suitable on steep slopes. Carry out in autumn. Not advisable on sites with standing stones.	Be aware of danger of erosion where there is no underlying vegetation.
BURNING HEATHER	Pre-control. Suitable for older heather where sparse bracken fronds are advancing as part of a control programme. These are vulnerable areas and burning will encourage thickening of the bracken. The bracken must be treated as soon as possible and within 2 years of the burn. Not advisable on sites with standing stones.	Danger of bracken spreading rapidly unless follow-up control carried out.
CHEMICAL TREATMENT		
AERIAL SPRAYING BY HELICOPTER	Suitable for primary treatment of large areas of dense bracken but not for small areas of scattered or patchy bracken, or where bracken is interspersed with other sensitive habitats such as pockets of woodland, scree, flushes and watercourses. Ensure buffer zones are agreed and not over sprayed. Beware of spraying areas which are far too extensive to permit adequate follow-up treatment and aftercare. Treating smaller areas thoroughly is likely to be much more cost effective and have greater long term benefits. Only approved herbicide: Asulam.	Good for areas inaccessible to ground vehicles. Good control of dense bracken but no effect on litter. Wasteful use of herbicide on scattered bracken.
TRACTOR/ATV WITH MOUNTED BOOM	Suitable for areas of shorter and/or scattered or patchy bracken stands on flat/even ground. Used for primary treatment. Recommended herbicide: Asulam Not suitable on archaeological sites.	Booms do not spray efficiently on rough land due to boom movement. Significant run-off of chemical can occur. Cheap and efficient use of herbicide. May be less effective as frond density and height increases.

TRACTOR/ATV WITH ROLLER WIPING GEAR (WEED WIPE)	Suitable where aerial spraying is deemed to be impractical. Buffer zones are smaller than for aerial spraying. Ideal for follow up treatment where ground conditions allow. Recommended herbicide: Glyphosate. Not suitable on archaeological sites.	Cheap and efficient use of herbicide. May be less effective as frond density and height increases.
HAND-HELD SPINNING DISC SPRAYERS SUCH AS THE MICRON ULVA+	Suitable for large areas of shorter bracken or smaller areas of dense, tall bracken which are inaccessible to vehicles, in establishing woodland, or for treating missed strips. Recommended herbicide: Asulam.	Waterless spraying (therefore light to carry) for difficult areas.
ATV OR QUAD BIKE WITH A SPRAY-LANCE	Necessary for follow-up over larger areas where wiping is not possible. Recommended herbicide: Asulam.	Efficient use of herbicide on the scattered fronds left over after primary treatment.
SPOT-GUN SUCH AS THE 2ML ACCU-DOS	Essential where eradication is required: can treat fronds too small for any other method. Recommended herbicide: Asulam.	Smaller volumes per squirt (0.5ml) avoids fatigue.

RELATIVE COSTS OF CHEMICAL AND MECHANICAL PRIMARY TREATMENT

Aerial spraying costs about the same as boom spraying by tractor or ATV. Most other treatments cost about a third as much for a single treatment (i.e. cutting twice per year will be about two-thirds of the cost of aerial spraying). The exceptions are knapsack spraying, which costs about three times as much as aerial or tractor spraying, and ULVA application, which costs about twice as much as aerial or tractor spraying.

HERBICIDES

Asulam (e.g. Asulox) - Although asulam is a selective herbicide, other non-target species may also be susceptible e.g. some ferns, young heather plants, western gorse and some grass and tree species. Seek advice if you need further details. Buffer zones are necessary to protect watercourses and wildlife interests.

Glyphosate (e.g. Roundup Pro Biactive) - This is not a selective herbicide (in contrast to asulam) and will damage or kill all green vegetation it comes into direct contact with. It is most appropriately used on very dense bracken where it forms an over-storey which acts to prevent the chemical directly contacting the other vegetation beneath. Buffer zones are necessary to protect watercourses and wildlife interests.

STAGE 4 – MONITORING AND FOLLOW-UP TREATMENT

USUALLY A NUMBER OF DIFFERENT CONTROL METHODS WILL BE APPLICABLE DURING THE TERM OF THE PROGRAMME. MONITORING WILL BE REQUIRED TO ASSESS WHICH FOLLOW-UP TREATMENT IS MOST APPROPRIATE.

- Plan for follow up treatment in subsequent years. Any single primary chemical or mechanical treatment will not eradicate bracken and in the absence of follow-up treatments bracken will quickly recover (often within 5 years) and all the benefits of primary treatment will be lost.
- Patchy growth of bracken fronds following primary treatment may be tackled by mechanical (crushing or cutting) or chemical means over several years. Chemical spot treatment approach in July/August may be carried out using an ATV fitted with wiping gear (or suitable spray lances for less accessible sites). Final eradication is usually achieved on foot, treating the last remaining fronds using a spot gun.

STAGE 5 – AFTERCARE (VEGETATION RECOVERY)

- Aftercare should begin in the first year after primary treatment. The choice as to which vegetation type is aimed at to replace bracken will be determined by the land use objectives and the remaining understorey and adjoining vegetation. How much intervention is required will depend to a large extent on how much understorey remains.

The following prescriptions for the restoration of heathland and moorland have been successful where tried experimentally:

LITTER DISTURBANCE	This can be achieved in a number of ways: burning, incorporation, winter foddering and removal. All should increase the speed of ground vegetation growth and all can be initiated before treatment of the bracken begins, although if existing bracken fronds are damaged, the effectiveness of some primary treatments can be reduced. This option should not be considered on steep slopes where the risk of soil erosion is high.
SEEDING – HEATHER	Re-instatement of heather requires the use of seed from other areas of heathland or moorland where long established or dense bracken stands are treated. Deep bracken litter can hamper heather regeneration. Litter may need to be broken down or removed. Seed can be applied as heather litter (at about 1 t/ha) or as cut shoots collected in November or December (at about 5-15 t/ha). Seeding can now also be done from the air. Stabilisation of the soil whilst heather establishment takes place can be accomplished with some types of forestry brashings. Good stock management to prevent selective grazing of young heather may be crucial.

SEEDING – GRASSLAND	Establishment of a grass sward is easier. For productive grassland, normal agricultural practices should be followed. For upland grazing a mix of species such as Common Bent, Wavy Hair Grass and Sheeps Fescue should be sown at 60 kg/ha. Diversifying the mixture with a range of herbs will produce a grassland with higher conservation interest, though at extra cost. Native species should be used, and, where available, local seed sources.
FERTILIZER AND LIME (ON IMPROVED LAND ONLY)	Preferably a slow release fertilizer with a high phosphate to nitrogen ratio should be employed (150 kg/ha). For grassland establishment lime can be added to raise the pH to above 5.5 to aid establishment and growth.
WOODLAND ESTABLISHMENT (NOT SUITABLE ON ARCHAEOLOGICAL SITES)	Initial localised control of bracken in the area intended for planting may be necessary to permit tree establishment. Natural regeneration is unlikely to be successful unless an adequate seed source exists, and if the regeneration site is free of deep bracken litter, bracken, and other competing vegetation. Follow up spot treatment or cutting of bracken may be necessary for 3-5 years after planting, until there is no danger of competition with saplings
GRAZING CONTROL	In all cases where vegetation is being re-instated, grazing should be reduced or prevented in the year of seeding to allow establishment. In grassland, grazing should be possible the following year, though careful monitoring to prevent overgrazing should be maintained. The slower growth of heather plants means they should be protected from grazing for a longer period - especially during the winter (when stock has little other grazing), for up to five years. Even after this, care should be taken to prevent overgrazing.

SUMMARY OF SUGGESTED BRACKEN CONTROL SCENARIOS, AND RESTORATION OPTIONS

SITUATION AND TASK	METHODS	BENEFITS/DRAWBACKS	AFTERCARE AND RESTORATION
1: Control of scattered bracken or bracken invading from a front **Major task:** • Reducing bracken frond density thus allowing ground flora to be maintained.	• Cutting, rolling or crushing • Spot gun, ATV & lance or Weedwiper • Aerial spraying, tractor spraying or ULVA+ spraying	Good if little damage caused to underlying vegetation or wildlife interest. Cheap, efficient use of herbicide. Wasteful use of herbicide if bracken is sparse and other ferns affected if present.	Little other treatment required - improve maintenance management to increase competitiveness of grass/heath to prevent further invasion. Manipulate stocking density to prevent over- or undergrazing. Follow up to maintain control.
2: Control of dense bracken with significant cover of ground vegetation **Major task:** • Reducing bracken frond density	• Cutting, rolling or crushing • Aerial spraying, tractor spraying or ULVA+ spraying • Weed wiper	Good if little damage done to underlying vegetation. Other ferns affected if present. May be less effective as frond density increases.	Little treatment required - improve maintenance management to increase competitiveness of grass/heath to prevent further invasion. Manipulate stocking density to prevent over or undergrazing. Follow up to maintain control.
3: Dense bracken, little ground flora - good vehicular access **Major tasks:** • Reducing frond density • Disturbing litter layer to enhance growth of new vegetation • Establishing new ground vegetation	• Cutting, rolling or crushing • Ploughing • Burn litter • Aerial spraying or tractor spraying • Weed wiper or ULVA+ spraying • Mixed mechanical/chemical	Good control though slow- breaks up litter layer. Excellent initial control with litter broken. No control but removes litter. May give good initial control but no effect on litter. May give good initial control but no effect on litter. Combination of techniques often gives best control.	Major problem in re-establishment of vegetation. • Assuming litter layer is reduced must add seeds of appropriate species. • Reduce stock grazing until vegetation established. • Use slow release fertilizer and lime if appropriate. Follow up to maintain control.
4: Dense bracken, little ground flora – inaccessible vehicular access **Major task:** • Removing litter Restoring vegetation	• Aerial spraying or ULVA+ spraying • Follow up by hand with Asulam or Glyphosate	No litter breakdown, poor revegetation. Labour intensive.	Options: • Plant trees - usually avoids the need to remove litter. • Burn litter, and add seeds and slow release fertilizer (if appropriate) by hand or air. • Grazing and trampling may aid litter breakdown. • Follow up to maintain control.

CONSENTS, CONSULTATION, AND NOTIFICATIONS

Legislation and Codes of Practice apply to the control of bracken in most circumstances. In some instances formal approval or consent is required, and in all instances consultation or notification may need to be undertaken. The sections below explain what is required in different circumstances, but their content is not a comprehensive statement of the law. Section A) deals with bracken control by any means on sites designated for their nature conservation interest, section B) deals with aerial spraying of bracken, and section C) deals with non-aerial application of herbicides near water.

Please note that, if you are applying for funding for a bracken management programme for habitat enhancement through the SRDP - Rural Priorities, some of these procedures may be dealt with through that application process. Your case officer will be able to advise on this.

A) LAND DESIGNATED FOR ITS NATURE CONSERVATION INTEREST

If you want to carry out bracken control by any means within or affecting a Site of Special Scientific Interest (SSSI), and the proposed operation is an Operation Requiring Consent (ORC), you must apply for and obtain consent from SNH before carrying out the work. You can see the ORCs for SSSI at SiteLink www.snh.org.uk/snhi or you can obtain details from your local SNH office. Contact details for SNH's offices can be found on www.snh.org.uk or from the SEARS contact number 08452 30 20 50. The law allows SNH up to 4 months to respond to applications for consent, and so **you are strongly advised to submit your application as early as possible in order to avoid the possibility of spraying being delayed.**

Additional assessment may be required if the area where bracken is to be controlled is within or close to a Special Area of Conservation (SAC) or Special Protection Area (SPA). This applies whether the site is also an SSSI or not.

If you plan to control bracken using aerial application of herbicide the requirements relating to designated sites will be dealt with through the application process referred to in B) below.

If you plan to control bracken on a designated site by other means, contact your local SNH office.

B) AERIAL APPLICATION OF HERBICIDE FOR BRACKEN CONTROL.

SEPA must be consulted under the Control of Pesticides Regulations 1986 (as amended) not less than 72 hours before you intend to carry out aerial application of herbicides if this is to take place within 250 metres of water. There is no charge for this, and in practice consultation will be required for almost all aerial applications. The Application form for aerial application of herbicide for bracken control should be submitted to SEPA who will liaise with SNH and Scottish Water as appropriate. The form will be available online at www.sepa.org.uk and from SEPA offices. Contact details for SEPA's offices can be found on www.sepa.org.uk or from the SEARS contact number 08452 30 20 50.

You are also required to consult SNH not less than 72 hours before you intend to carry out aerial application of herbicide, even if the land to be sprayed does not have any nature conservation designation on it, but is within 1500m of an SSSI. The application form for aerial application of herbicide for bracken control allows you to give SEPA authorisation to consult SNH where appropriate on your behalf. In order to allow your application to be given full consideration, you are strongly advised to submit it as early as possible (preferably 21 days in advance of the intended treatment). Remember that if the application relates to a site designated for its nature conservation interest there are special rules described in Section A above.

There are also other consultations and notifications which must be carried out if you carry out aerial spraying, as described in the table below.

ORGANISATION OR PERSON	WHEN YOU NEED TO CONSULT OR NOTIFY	WHAT YOU MUST DO
Local Authority	When the area to be sprayed is within 1500m of a Local Nature Reserve (LNR)	Consult at least 72 hours before spraying
Local Authority Chief Environmental Health Officer	Always	Notify at least 24 hours and no more than 48 hours before spraying
Schools, Hospitals, and other institutions	When any flight path to be used in the operation is within 150m of the institution	Notify at least 24 hours and no more than 48 hours before spraying
Occupiers (or their agents) of neighbouring properties	When the area to be sprayed is within 25m of neighbouring property	Notify at least 24 hours and no more than 48 hours before spraying
Local beekeepers	When there is a local beekeepers' spray warning scheme operating within the district	Notify the appropriate reporting point for the scheme at least 48 hours before spraying

C) NON-AERIAL APPLICATIONS OF HERBICIDES NEAR WATER

If you are carrying out direct applications of herbicides into water bodies, or near water bodies where there is a significant risk of contaminating ground and/or surface water bodies (including land which may be susceptible to flooding), you must consult SEPA. **Application form for non-aerial application of herbicides near water** should be completed and submitted to SEPA 21 days in advance of commencing the herbicide treatment. The form will be available online at www.sepa.org.uk and from SEPA offices. Contact details for SEPA's offices can be found on www.sepa.org.uk or from the SEARS contact number 08452 30 20 50. Further details are given on the form.

SOURCES OF ADVICE

ADVICE ON BRACKEN MANAGEMENT, INCLUDING PREPARING BRACKEN MANAGEMENT PLANS AND APPLYING FOR GRANTS, IS AVAILABLE FROM A RANGE OF LAND MANAGEMENT CONSULTANTS AND FROM ORGANISATIONS SUCH AS THOSE LISTED BELOW.

Farming And Wildlife Advisory Group Scotland
Algo Business Centre, Glenearn Road, Perth, PH2 ONJ
Tel: 01738 450500
info@fwagscotland.org.uk
www.fwag.org.uk/contact.htm

Scottish Agricultural College
Mark Ballingall, Senior Arable Consultant, SAC,
Sandpiper House, Ruthvenfield Industrial Estate,
Perth, PH1 3EE
Tel 01738 636611
Fax 01738 627860
email: mark.ballingall@sac.co.uk
Web address: www.sac.co.uk

The Heather Trust
Newtonrigg, Holywood,
Dumfries, DG2 0RA
Tel/Fax: 01387 723201
Web: www.heathertrust.co.uk
email: info@heathertrust.co.uk

Game and Wildlife Conservation Trust
Northern Scotland: Ian McCall, GWCT Scottish HQ, Couston, Newtyle, Perthshire PH12 8UT. Tel: 01828 650543; Fax: 01828 650560; Email: imccall@gct.org.uk
Southern Scotland:Hugo Straker, Garvald Grange, Garvald, East Lothian EH41 4LL.
Tel: 01620 830230; Fax: 01620 830303; email: hstraker@gct.org.uk

Advice on managing bracken on organic holdings can be obtained from
Soil Association Scotland, Tower Mains,18c Liberton Brae, Edinburgh EH16 6AE
Tel 0131 6662474 contact@sascotland.org web www.soilassociation.org

Advice on control of bracken on designated sites is available from SNH. Contact details for SNH's offices can be found on www.snh.org.uk or from the SEARS contact number 08452 30 20 50.

Advice on any aerial application of herbicide or non-aerial application of herbicide in or near water is available from SEPA. Contact details for SEPA's offices can be found on www.sepa.org.uk or from the SEARS contact number 08452 30 20 50.

Guidance on grants for bracken management under the SRDP is available from the Scottish Government website (www.scotland.gov.uk/Topics/Rural/SRDP).

FURTHER INFORMATION ON BRACKEN

Rural Development Service Technical Advice Note 23: Bracken control, vegetation restoration and land management
www.defra.gov.uk/rds/publications/technical/tan23.pdf

Prof. R. J. Pakeman, Macaulay Land Use Research Institute
Craigiebuckler
Aberdeen
AB15 8QH

The Applied Vegetation Dynamics Laboratory, University of Liverpool
www.appliedvegetationdynamics.co.uk

ACKNOWLEDGEMENTS

Thanks in particular go to the Southern Uplands Partnership for allowing their original version of this guidance to be updated, revised and rebranded. More information about the partnership can be found at www.sup.org.uk. Much of the content of this guidance is derived from work carried out by the Macaulay Land Use Research Institute and the University of Liverpool for the production of Rural Development Service Technical Advice Note 23.

Photographs supplied by Lorne Gill/SNH and A. MacDonald.

Published by SEARS 2008.
Printed and designed by RRD June 2008.
RRD1k0608


Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland


SEPA
Scottish Environment
Protection Agency


Forestry Commission
Scotland


SCOTTISH
WATER


The Scottish
Government

© Crown copyright 2008
RR Donnelley B56732 06/08

This booklet is printed on 100% recycled material