

## FCS Technical Note

# Support for Juniper conservation under the Scottish Rural Development Programme (SRDP)

Juniper (*Juniperus communis*) is a priority species listed in the UK Biodiversity Action Plan (UKBAP) and upland juniper scrub is listed as a habitat of EC interest. It is also one of six key species identified in the Scottish Forestry Strategy 2006 for widespread conservation action.

Juniper is eligible for SRDP grant support in woodlands, woodland edge and open upland and coastal habitats. This technical note describes how to use the range of options available to support juniper conservation, focussing on woodlands and adjacent areas. FCS will work with SNH and the Scottish Government Rural Payments and Inspections Directorate to encourage and support suitable applications to help conserve and enhance juniper.

Forestry Commission Scotland has published a Species Action Note setting out conservation needs and priorities in more depth than is included in this note. It also describes FCS action for the species. You can view the note on the [Species Action Note page](#) on the FCS website.

## Current status of juniper in Scotland

Two of the three sub-species of juniper found in the UK grow in Scotland: the upright type which is a shrub or small tree (*Juniperus communis* subsp. *communis*), and the prostrate or dwarf type (*Juniperus communis* subsp. *nana*). Both have separate male and female bushes. Pollen is wind-borne and berries are dispersed mainly by birds. Juniper supports a range of specialist insects, fungi and lichens, provides shelter and food for larger animals, and older bushes often protect tree saplings from browsing.

Juniper grows in a wide range of habitats, including moorland and maritime heaths, woodland and montane environments from sea level to 1000 m. altitude. Scotland now supports approximately 80% of the UK population of juniper which has been declining throughout the UK both in terms of range and size of populations.

Upright juniper grows in almost pure juniper stands which are classified as a native woodland type in the National Vegetation Classification *Juniperus communis* – *Oxalis acetosella* woodland (W19) and as more scattered stands in upland and coastal habitats. Juniper scrub can persist indefinitely, or it can be a successional stage in the development of native woodlands, usually birchwoods.

Prostrate juniper grows in exposed habitats from sea level to tree line communities notably in the *Calluna vulgaris* – *Juniperus communis* ssp *nana* heath community (H15),

A national picture of distribution and status in Scotland has emerged from recent surveys: Key points are:

- Juniper overall had disappeared from 23% of sites where it was formerly present.
- Over the remaining range, juniper is under threat in the short to medium term at 45% of sites, and a further 23% of populations are not secure and may need intervention to promote regeneration.

- Only a third of remaining sites have strong and secure juniper populations.

## Conservation needs

Current juniper populations are almost entirely self-sown and so the conservation of juniper should be based on promoting natural regeneration where possible. But planting will be needed in areas where this is not achievable, eg in small, moribund populations of old bushes or to restore juniper to areas of its former range.

There is great potential to introduce juniper into upland planted forests, to diversify internal edges, glades, old growth stands and upper margins at suitable sites.

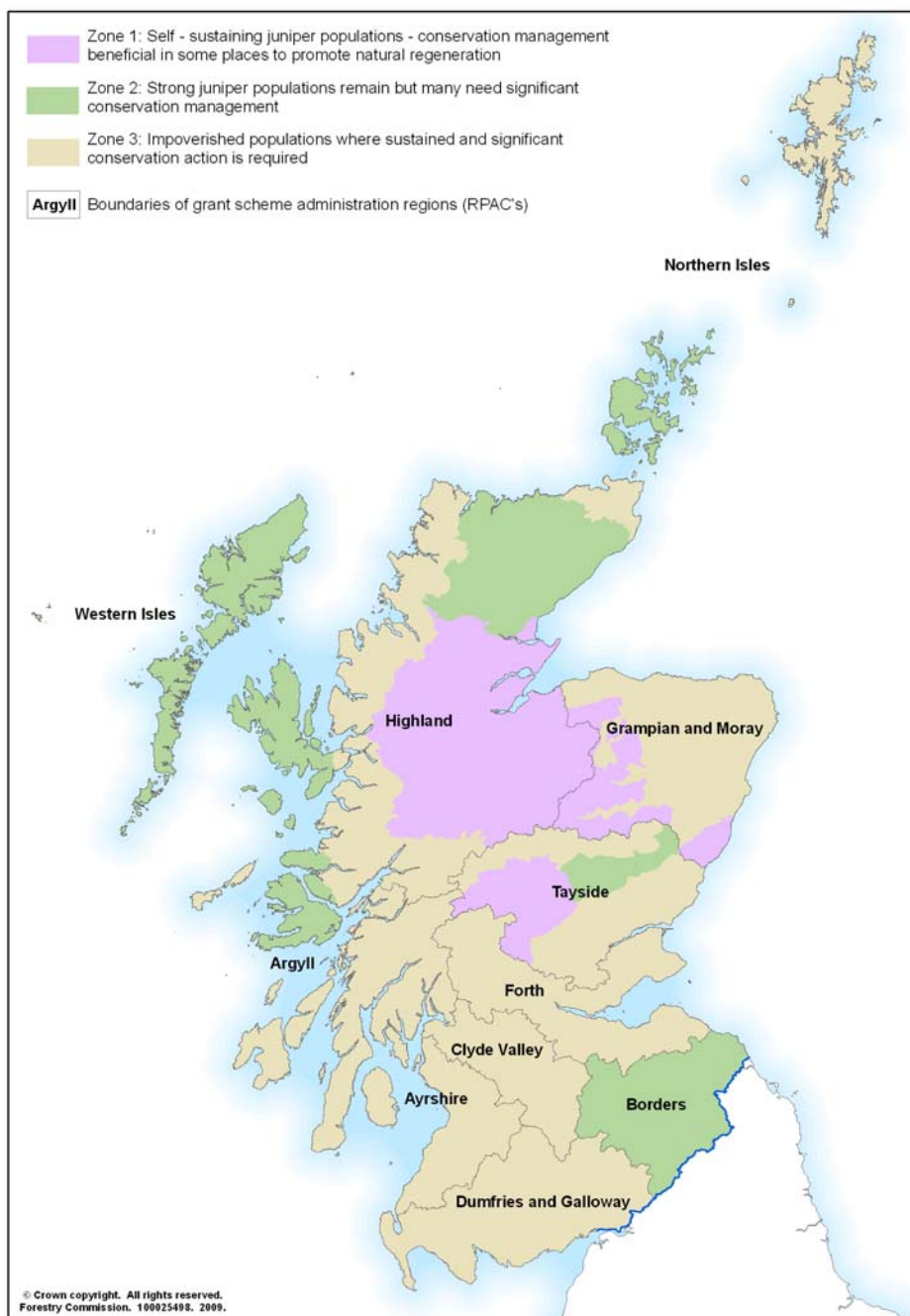
Plants can be grown from seed or cuttings, and there is a need to promote a greater plant supply from sources across the range of juniper in Scotland.

**Table 1 Key conditions required for maintaining juniper populations**

Aim	Required conditions
Bush survival and growth	<ul style="list-style-type: none"> <li>• Full light to slight shade: can persist as an understorey in open canopied woodland, glades, open edges and treelines;</li> <li>• Plants can stand grazing/browsing but growth can be retarded;</li> <li>• Well drained soils: waterlogging and fluctuating water tables can lead to stress and disease.</li> </ul>
Natural regeneration	<ul style="list-style-type: none"> <li>• Browsing levels low: so fruiting and flowering shoots remain;</li> <li>• Open / bare, well drained ground for seedling establishment, but no long dry periods in spring and summer;</li> <li>• Full light or slight shade only (see above);</li> <li>• Seedlings can appear after severe grazing, but will only persist when grazing pressure is low or where dwarf shrub cover protects them;</li> </ul> <p><i>Parent population:</i></p> <ul style="list-style-type: none"> <li>• Age structure-young bushes produce more fertile seed more reliably;</li> <li>• Good mix of male and female bushes;</li> <li>• Population (minimum c 50 bushes) in same stand or in scattered stands less than 500m. apart.</li> </ul>
Establishment by planting	<ul style="list-style-type: none"> <li>• Full light to slight shade;</li> <li>• Well drained, nutrient-poor soils, either acidic or alkaline;</li> <li>• Protected from grazing and rodent damage;</li> <li>• Absence of drought conditions;</li> </ul> <p><i>Planting material:</i></p> <ul style="list-style-type: none"> <li>• Well adapted and suitably sourced material; normally from the same or neighbouring seed zones and similar altitude to the planting site – follow advice in <a href="#">Seed Sources for native trees and shrubs in Scotland</a>.</li> <li>• Mix of male and female bushes;</li> <li>• At least c.50 bushes planted together in same stand or in scattered stands less than 500m.apart.</li> </ul>

## Juniper conservation priorities

Action for juniper should follow the strategy for Scottish juniper developed by Plantlife and Forest Research, which defines in three zones as mapped in Figure 1(below).



**Figure 1. Conservation action zones for juniper in Scotland**

The conservation priorities for each zone are summarised below. This broad strategic approach needs to be adjusted for individual sites based on knowledge of the condition of juniper populations and local circumstances.

**Zone 1: Self- sustaining juniper populations - conservation management beneficial in some places to promote natural regeneration.**

Management is either already suitable for juniper conservation or could readily be made suitable, mainly through control of grazing regimes. Planting will rarely be required.

**Zone 2: Strong juniper populations remain but many need significant conservation management.**

Woodland juniper has suffered some decline, but there is some potential for regeneration, with help from measures like fencing, deer control, conservation grazing and selective tree felling to reduce shade. Some planting may be required for small or moribund populations. Management of moorland sites could be improved by controlling the timing and intensity of grazing, protecting bushes from muirburn and removing encroaching vegetation.

**Zone 3: Impoverished populations where sustained and significant conservation action is required.**

Juniper is scattered and typically in small and/or overmature populations with little regeneration. Action should concentrate on reducing grazing impact and bulking up populations quickly, focusing especially on populations that help maintain the species range.

In woodlands, fencing, deer control, selective felling and conservation grazing may all help to secure regeneration. But planting will often be needed to secure minimum populations of 50-100 bushes before parent bushes die out. Planting should also be used to help restore juniper range as part of wider efforts to increase biodiversity of planted forests.

## **Support under SRDP**

There are a range of [RDC-Rural Priorities](#) options that can help juniper in both woodland and open areas. Regional priorities for support for juniper conservation are decided by Regional Proposal Assessment Committees (RPACs). RPAC areas are shown in Figure 1 above.

Where possible, applicants should look for opportunities to develop integrated applications that include both open and adjacent wooded areas together. This will increase the prospects of developing a long-term dynamic mosaic of woodland, scrub and moorland habitats with juniper as a feature, which should be more sustainable, better for biodiversity and more adaptable to climate change.

Regeneration should be the preferred method where it is practical, but planting will often be required eg where populations are scattered or moribund.

Key actions that can be supported by various SRDP options are described below:

### **Juniper in and around woodlands**

**Action 1. Enhancing juniper populations in and around new and existing native woods** by promoting regeneration, or by planting (*all zones*);

Enhance the role of juniper as a shrub species of understorey, woodland edge and glade and treeline, for native woods throughout its range. Juniper can be a shrub component of open canopied native pinewoods, upland birchwoods and also upland oakwoods; and it can form larger patches of W19 juniper scrub which can also count as a native woodland type.

*Rural Priorities options:*

- [Woodland Creation: native woodland planting; natural regeneration of native woods.](#)

This option can support planting or regeneration of juniper in areas over 0.25ha, normally as a minor part of a mixture with other native species to form new areas of priority woodland types (upland birchwoods, native pinewoods, upland oakwoods). New areas of juniper scrub woodland over 0.25ha can also be supported here if they contribute to native woodland and scrub habitat networks. Smaller areas of juniper planting can be funded under *Woodland Improvement Grant: improving woodland habitats and species (small scale tree planting)*-see below.

- [Sustainable management of forests – areas of native woods](#)

Use this option to support work to improve the condition of native woods, or restore Planted Ancient Woodlands to native woodlands. Work to help juniper can include removal of heavy shade from exotic trees or shrubs, thinning or small-scale felling to promote regeneration, removing livestock to reduce grazing or control of deer browsing.

- [Woodland improvement Grant – restructuring regeneration](#)

Juniper can be part of a native species mix planted to replace areas of even -aged Scots pine planted woodland that have been restructured by partial felling. Grant support is provided for planting and juniper qualifies for the mixed native broadleaved rate.

- [Woodland Improvement Grant – improving woodland habitats and species](#)

Under this option, work to enhance juniper (as a UK priority species) can be carried out, if it is part of a management plan for an area of native woodland. The plan needs to describe the proposed 'direction of travel' for stand structure, regeneration, herbivore impact, species composition and threats and risks. Specific benefits for juniper will need to be identified. Small –scale planting of areas under 0.25ha is supported. Other work might include fencing or thinning to stimulate regeneration.

- [Scrub and tall herb communities](#)

This option supports the management of grazing of scrub and open habitats to maintain a balanced mosaic. Scrub should be kept in good condition and regeneration should be sufficient to maintain its current extent. Upland juniper scrub is one of the types listed. Transitions between native woodlands and scrub are one of the features to be favoured. Black grouse may benefit from these mosaics at a landscape scale.

NB Juniper will also benefit from an RDC-RP *woodland conservation grazing option* if this is developed in 2009/2010.

*Land Managers Options:*

- [Option 18: Small-scale woodland creation](#)

For planting small native woods between 0.1 and 1ha in size. Juniper can be planted as part of the area or could make up all of a scheme if it aims to develop juniper scrub woodland.

- [Option 19: Management of small woodlands](#)

Supports management of small woods (1-30ha) on farms. Can include management to conserve biodiversity eg by reducing grazing removing exotic species and thinning to stimulate juniper and other native shrubs.

**Action 2. Adding juniper to diversify non-native and mixed planted woods** in new planting or restructuring schemes focused at upper edges, rides, roadsides and riparian areas (mainly zones 2,3). This will normally need planting, natural colonisation/regeneration should be encouraged where there are mature juniper present.

*Rural Priorities options:*

- [Woodland Creation: native woodland planting](#)

Can support planting juniper in areas over 0.25ha, normally as part of a mixture with other native species to form new areas of priority woodland types (upland birchwoods, native pinewoods, upland oakwoods). This option can also be used for creating patches of juniper scrub where they contribute to habitat networks eg at forest edges.

- [Woodland improvement grant – restructuring regeneration: -restructuring with native mixed broadleaves/restructuring with Caledonian Scots pine](#)

This option is for planting to replace felled areas. Juniper can be planted either as part of patches of native woodland or as small areas of scrub along rides, roadsides and forest margins.

- [Woodland Improvement Grant – improving woodland habitats and species](#)

Management for juniper as a UK priority species can be supported here. Specific benefits for juniper will need to be identified in a plan. Small –scale planting of new juniper scrub areas under 0.25ha can be included here, and other work might include fencing or thinning to stimulate regeneration.

- [Sustainable management of forests – areas under low-impact silvicultural systems](#)

In some planted woods with lightly shading species (eg pine or larch) thinning or selective felling under this option may encourage juniper as an understorey shrub. A deer management plan will be required as part of this option.

- [Scrub and tall herb communities](#)

This option supports the management of grazing of scrub and open habitats to maintain a balanced mosaic. Scrub should be kept in good condition and regeneration should be sufficient to maintain its current extent. Upland juniper scrub is one of the types listed. Managing scrub near forest edges can help to encourage regeneration into forests and create habitat networks and woodland/scrub/open ground mosaics. These can be valuable as habitat for black grouse.

**Action 3. Regenerating and expanding small remnant populations** to secure them, which will often need planting (mainly zone 3);

This can be supported by a range of the Rural Priorities and Land Managers Options described for Actions 1 and 2 above. The focus should be protecting mature bushes to prolong survival, and increasing populations to reach a minimum of 50-100 mature bushes as soon as possible, by regeneration, planting or both.

**Action 4. Stimulating an increased supply of planting material** by registering and managing self-seeded stands of juniper that are suited to seed production (all zones)

*Land Managers options:*

- [Management of tree stands for seed production](#)

Stands must be over 1ha. and should contain at least 100 mature juniper bushes with a mixture of male and female plants. Mixed species stands can be included as long as juniper is favoured in management.

### **Action for juniper in moorland and upland areas**

**Action 5. Conserving and regenerating existing juniper scrub areas** eg by managing grazing and browsing and protecting from muirburn (all zones);

*Rural Priorities options:*

- [Scrub and tall herb communities\\*](#)

This option supports the management of grazing of scrub and open habitats to maintain a balanced mosaic. Linkage to native woodlands or planted forest with juniper should also be considered. Scrub should be kept in good condition and regeneration should be sufficient to maintain its current extent.

- [Muirburn and heather swiping\\*](#)

This option supports planned programmes of burning or cutting (swiping) heather to maintain a mosaic of heather patches of different ages. It should benefit juniper and other Biodiversity Action Plan priority species. Juniper areas should be protected from burning in most cases; but a single burn at stand edges may aid regeneration.

- [Moorland stock disposal\\*](#)

This option supports regeneration of suppressed heather or other moorland vegetation of conservation interest, including juniper, by reducing numbers of grazing sheep. A grazing management plan is required.

- [Off –wintering of sheep](#)
- [Away- wintering of sheep](#)

These options can help juniper by reducing winter sheep grazing on upland vegetation. A moorland management plan is required in each case.

- [Management of habitat mosaics\\*](#)

This option aims to maintain mixed habitats on in-bye farmland that contribute to the range of wildlife and landscapes in its area. It is available on areas that support a mosaic, of traditional semi-natural habitats on farmland that need to be managed as a single unit. Habitats may include juniper as part of a mosaic of scrub, coastal

heath, scattered pockets of woodland and wood pasture as well as wetland, wet grassland, unimproved grassland, semi-improved grassland, tall herb communities, and limited improved grassland. A management plan is required to control grazing, use of fertilisers and other activities.

- [Lowland heath\\*](#)

Control of grazing is supported under this option. Lowland heath is relatively rare in Scotland but does contain juniper as a species

- [Management of moorland grazing](#)
- [Wildlife Management on Upland and Peatland Sites](#)
- [Moorland Grazings on Uplands and Peatlands](#)

These options aim to enhance the condition of moorland, upland and peatland habitats by promoting good soil management, eg by controlling deer trampling, grazing and muirburn. Juniper can benefit, especially dwarf juniper.

- [Conservation management of small units](#)

Supports the management of habitat mosaics across small units, to help to maintain and enhance the distinctive landscape and wildlife of crofting communities. Juniper may benefit eg in coastal heath areas and small patches of scrub or woodland.

- [Habitat grazing management](#)

This option supports additional shepherding work to benefit moorland and upland habitats within SSSI or Natura sites, eg to prevent localised over-grazing or under-grazing. This could be used to help juniper regeneration.

*\* juniper is listed as possible beneficiary for these options*

**Action 6. Planting juniper to secure moribund populations or restore juniper scrub to sites where it has recently been eliminated**, especially sites close to other woodland or moorland juniper populations (mainly zone 3).

The most suitable options to help achieve this on moorland areas are:

*Rural Priorities options:*

- [Woodland creation-native woodlands](#)

For areas of over 0.25 ha of native woodland planted or naturally regenerated, (see Action 1).

*Land Managers Options:*

- [Option 18: Small-scale woodland creation](#)

For areas between 0.1 ha and 1 ha.

## **Further information on juniper ecology and management**

More information can be found at the references and weblinks below:

**Distribution and condition**

Sullivan, G. (2003) *Extent and Condition of Juniper Scrub in Scotland*. Report to Scottish Natural Heritage, Contract No. BAT/AC205/01/02/96.

Long, D and Williams, J (2007) [Juniper in the British Uplands: the Plantlife juniper survey results](#). Includes the strategy for juniper conservation in Scotland.

**Ecology and habitats**

Ward, L. (2004) [Juniperus communis species dossier for Plantlife](#).

**Advice on management**

Broome, A. (2003) [Growing juniper: propagation and establishment practices](#). Forestry Commission Information Note FCIN50.

Plantlife International (2005) [Managing uplands for Juniper](#). Back from the Brink Management Series.

Creating New Native Woodlands. Forestry Commission Bulletin 112. Can be ordered from <http://www.forestry.gov.uk/publications>

[Seed Sources for native trees and shrubs in Scotland. Forestry Commission Scotland, 2006](#)