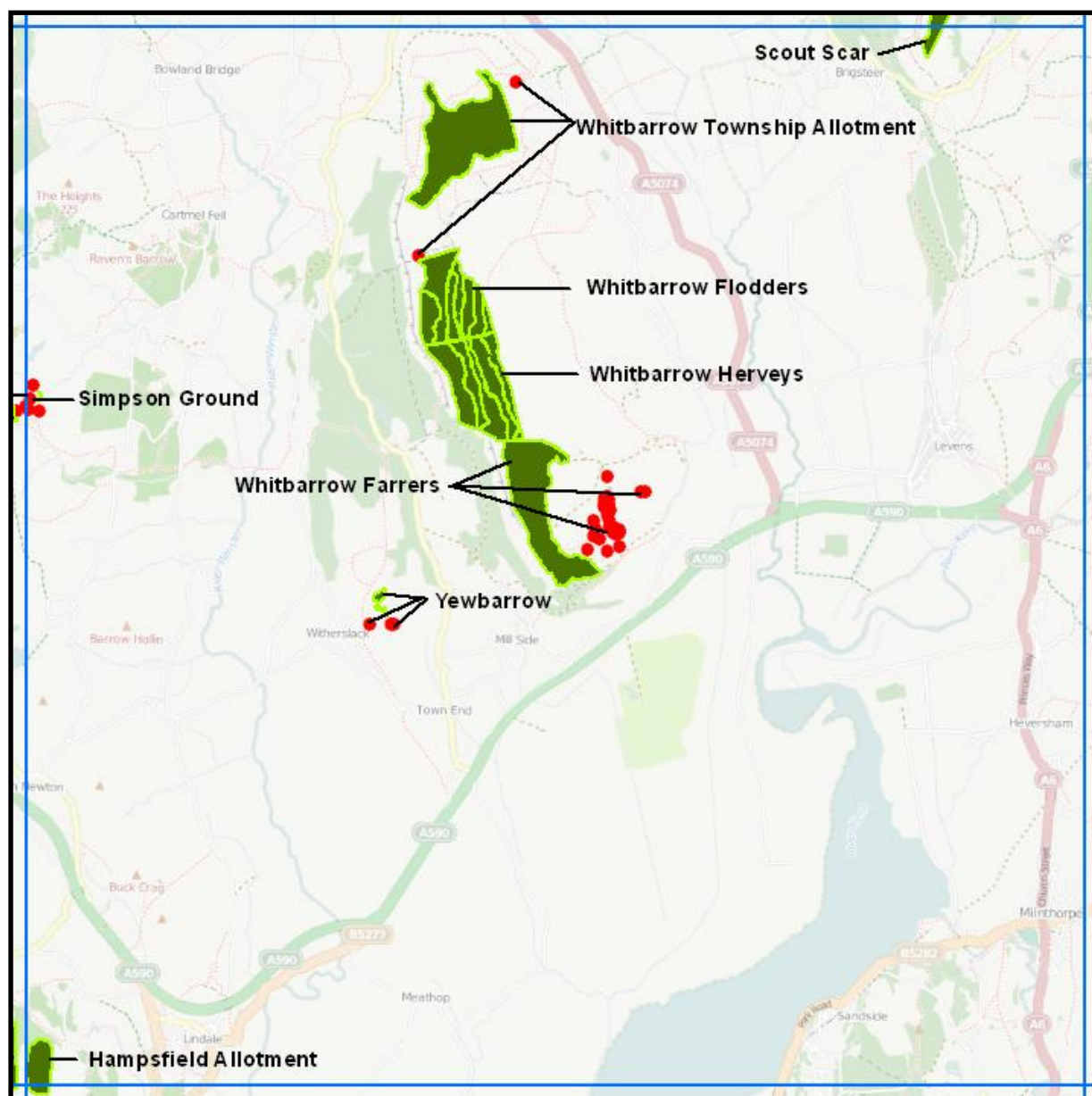


# SD48



## Sites List:

Jun-SD4080-01	Hampsfield Allotment
Jun-SD4086-01	Simpson Ground
Jun-SD4384-01	Yewbarrow
Jun-SD4485-01	Whitbarrow Farrers
Jun-SD4486-01	Whitbarrow Herveys
Jun-SD4487-01	Whitbarrow Flodders
Jun-SD4489-01	Whitbarrow Township Allotment
Jun-SD4990-01	Scout Scar

## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Hampsfield allotment	Equiv. L. Ward site (s): Hampsfield Allotment SW, NW, NE, SE
Site Ref. Code: Jun-SD4080-01	Survey date: 02/01/2012
Recorder name (s): P&C Matthiessen	Cent. grid ref: SD400-802
Valley / area: Field Broughton/Cartmel	Altitude: 130 – 190m
Aspect: NE/NW	Ownership:

### 2. Stand area:

- a) Have you changed the boundaries of the stand on the survey map? No
- b) GPS number and track name / label? No tracks recorded
- c) Area of sub stands and total area?

Sub stand	A	B								Total
Area	4.5	10.8								15.3Ha
Confidence	Med	Med								

### 3. Plant numbers and Juniper sub-species?

**Ssp...**Common Juniper

Sub stand	A	B							Total
Count	78	300-400							378-478
Method	Direct	Direct							VP
Confidence	High	Medium							Medium

### 4. Dominant Vegetation ...Limestone Grassland & Ash/Holly open woodland

#### Other vegetation types present:

acid grassland	wet grassland / rushes
dry heath	wet heath / mire
Limestone grassland	Bracken
Scree	Outcrop / cliff
<u>Limestone scree</u>	<u>Limestone outcrop / cliff</u>

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep                      Cattle                      Red Deer                      Other Roe Deer

#### Indicators of high grazing / browsing pressure?

Medium grazing pressure from deer.

**6. Other threats:** Most of the area was covered by Conifer plantation until about 7 years ago, when it was clear-felled.

**7. Juniper age:**

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
		80%	10%	15%	
Comments: Die-back occurring where exposed to prevailing wind.					

**Are fruit bearing trees present?** Yes / no (approx. 15%)

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos. NO PHOTOS TAKEN

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point

**9. Comments (associated flora and fauna, survey / access difficulties?):**

The general impression is that the Juniper stand once covered a wider area but that the old conifer plantation (now felled) probably shaded out a lot of Junipers & caused them to die. The highest density of Juniper is in the SE part of sub-stand B which consists largely of Limestone pavement and would not therefore have been planted with conifers.

Access to parts of the Limestone pavement is difficult, hence the count for sub-stand B is not very accurate.

## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Simpson Ground	Equiv. L. Ward site (s): None
Site Ref. code: Jun-SD4086-01	Survey date: 05/09/2013
Recorder name (s): M. Douglas	Cent. grid ref: SD4004 8648
Valley / area: South Lakes	Altitude: 170m – 180m.
Aspect: Various	Ownership:

### 2. Stand area:

- b) Have you changed the boundaries of the stand on the survey map?  
N / A
- d) GPS number and track name / label?  
N / A
- e) Area of sub stands and total area?

Sub stand	A	B	C	D	E	F	G	H		Total
Area										
Confidence	4	5	5	5	5	5	4	5		4

### 3. Plant numbers and Juniper sub-species?

Ssp...J.c.comm .....

Sub stand	A	B	C	D	E	F	G	H		Total
Count	21	2	1	5	1	1	5	2		38
Method										WT
Confidence	h	h	h	h	h	h	h	h		h

### 4. Dominant Vegetation ...Acid grassland.....

#### Other habitats / vegetation types present:

acid grassland	wet grassland / rushes
<u>dry heath</u>	<u>wet heath / mire</u>
Limestone grassland	<u>Bracken</u>
Scree	<u>Outcrop / cliff</u>
Limestone scree	Limestone outcrop / cliff
<u>Woodland</u>	

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep                      Cattle                      Red Deer                      Other .....

#### Indicators of high grazing / browsing pressure?

Almost all junipers browsed, most showing moderate to heavy browsing impacts. Height, extent and depth of browsing all suggest red deer browsing. Impacts on heather also point to frequent browsing by red deer.

**6. Other threats:**

**7. Juniper age:**

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
4	1	3	25		5
Comments: Some very old juniper but numerous berry bearing trees and some recent regen.					

**Are fruit bearing trees present?** Yes / no

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos.

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point
Jun-SD4086-01A				Overview of Area A.

**9. Comments (associated flora and fauna, survey / access difficulties?):**

Juniper is scattered across a large area at this site and is mostly composed of old trees. Although 4 seedlings and one young juniper were found, the browsing on these and other bushes suggests that they might struggle to establish under current conditions. Numerous trees at this allotment include ash, rowan, holly, grey willow, birch and eared willow (1 individual found at SD 39984 86514).

Red deer may be visiting the site frequently and could be an obstacle to plans to plant juniper in the near future.

## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Whitbarrow Farrers	Equiv. L. Ward site (s): Whitbarrow Farrers and Hervey (part of)
Site Ref. Code: Jun-SD4485-01	Survey date: 05/07/2012
Recorder name (s): M. Douglas	Cent. grid ref: SD44800 85400
Valley / area: Whitbarrow	Altitude: 150 m – 190 m
Aspect: Various	Ownership:

### 2. Stand area:

- c) Have you changed the boundaries of the stand on the survey map?  
Yes
- f) GPS number and track name / label?  
N / A
- g) Area of sub stands and total area?

Sub stand	A	B								Total
Area	48.45									48.45
Confidence	5	5								5

### 3. Plant numbers and Juniper sub-species?

Ssp...comm...

Sub stand	A	B								Total
Count	1768	209								1977
Method	VP	VP								VP
Confidence	M	H								M

### 4. Dominant Vegetation ...limestone grassland.....

#### Other habitats / vegetation types present:

acid grassland	wet grassland / rushes
<u>dry heath</u>	wet heath / mire
Limestone grassland	Bracken
Scree	Outcrop / cliff
<u>Limestone scree</u>	<u>Limestone outcrop / cliff</u>
<u>Woodland</u>	

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep                      Cattle                      Red Deer                      Other .....

#### Indicators of high grazing / browsing pressure?

All non-juniper scrub heavily browsed and juniper moderately to heavily browsed.

## 6. Other threats:

Shading by tall trees in isolated areas.

## 7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
X	present	present	present	present	present
Comments: Dominated by old trees. At least 40 dead and ill trees along path north from SD44887 85525. These should be tested for Phytophthora austrocedrae. Reported to FERA 06/07/2012.					

**Are fruit bearing trees present?**

Yes / no

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos.

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point
Jun-SD4485-01A				Red deer damage on juniper.
Jun-SD4485-01B				Red deer damage on juniper.
Jun-SD4485-01C				Typical size of surviving juniper from 2001 – 2003 planting.

## 9. Comments (associated flora and fauna, survey / access difficulties?):

All of the outliers, barring the three southern points and the northern most point, indicate planting areas that now contain 209 surviving young trees. The majority of the 26 planting areas are within exclosures, of which around one half are still stock proof. Where this is the case young junipers are struggling to compete with the growth of bracken and birch.

The junipers were planted between 2001 and 2003, once the felling of Corsican pine was completed. These young trees show great variation in growth rates, and the majority can't be considered 'established' due to small size (< 1 foot tall) and competition with bracken, bramble and other scrub. Removal of all exclosure fencing and a single visit to weed bracken and scrub would help maximise survival at this stage.

The three southern outliers have 7, 30 and 30 junipers running from west to east, and the northern outlier, close to the new barn has at least three junipers scattered around this point.

The bulk of the juniper on Farrer's Allotment lies to the west of the area which was planted with Corsican Pines. This area is now dominated by old trees, and although some mature and young trees were present, no seedlings were found. Farrer's Allotment junipers are the most heavily browsed on the Whitbarrow Massif and given the carefully controlled cattle grazing that is taken place here, it is likely that this is

due to red deer. The damage sustained by many junipers is consistent with red deer damage seen elsewhere in the County, with large branches snapped off, bark stripped, and shoots browsed back to woody material.

A small die off of junipers has taken place along the path north from SD44887 85525, with at least 40 dead or ill trees present. These should be tested for *Phytophthora austrocedrae*, and were reported to FERA on 06/07/2012.

There were lots of dark green and small pearl bordered fritillaries around on the survey date, and also small heath, meadow brown and grayling butterflies.

### **Restoration:**

#### **Browsing:**

Grazing and browsing are very important at this site for the continued existence of juniper. Large herbivores will open up swards and provide regeneration niches for juniper and the grazing of ground flora, browsing of non-juniper scrub and the trampling of bracken aids the survival of established junipers. The condition of established junipers on Farrer's Allotment suggests that current impacts are too high though, possibly due to frequent visits by herds of red deer. Elsewhere on Whitbarrow, similarly damaged junipers are hard to find and it may be that red deer are accessing this area from the Woodlands to the south. An increase in red deer cull rates in this area may therefore be important for the future of juniper on Farrer's Allotment.

#### **Planting:**

The large area which was under forestry plantation until around 2000 is largely devoid of juniper or any other scrub at the moment. Thanks to the efforts of the Forestry Commission, more than 200 junipers are on their way to establishment, and will soon provide new seed trees in the valley running from SD456851 to SD454855. Similar efforts to plant trees to the northwest and to the east of this area will provide a good basis for future spread of junipers.

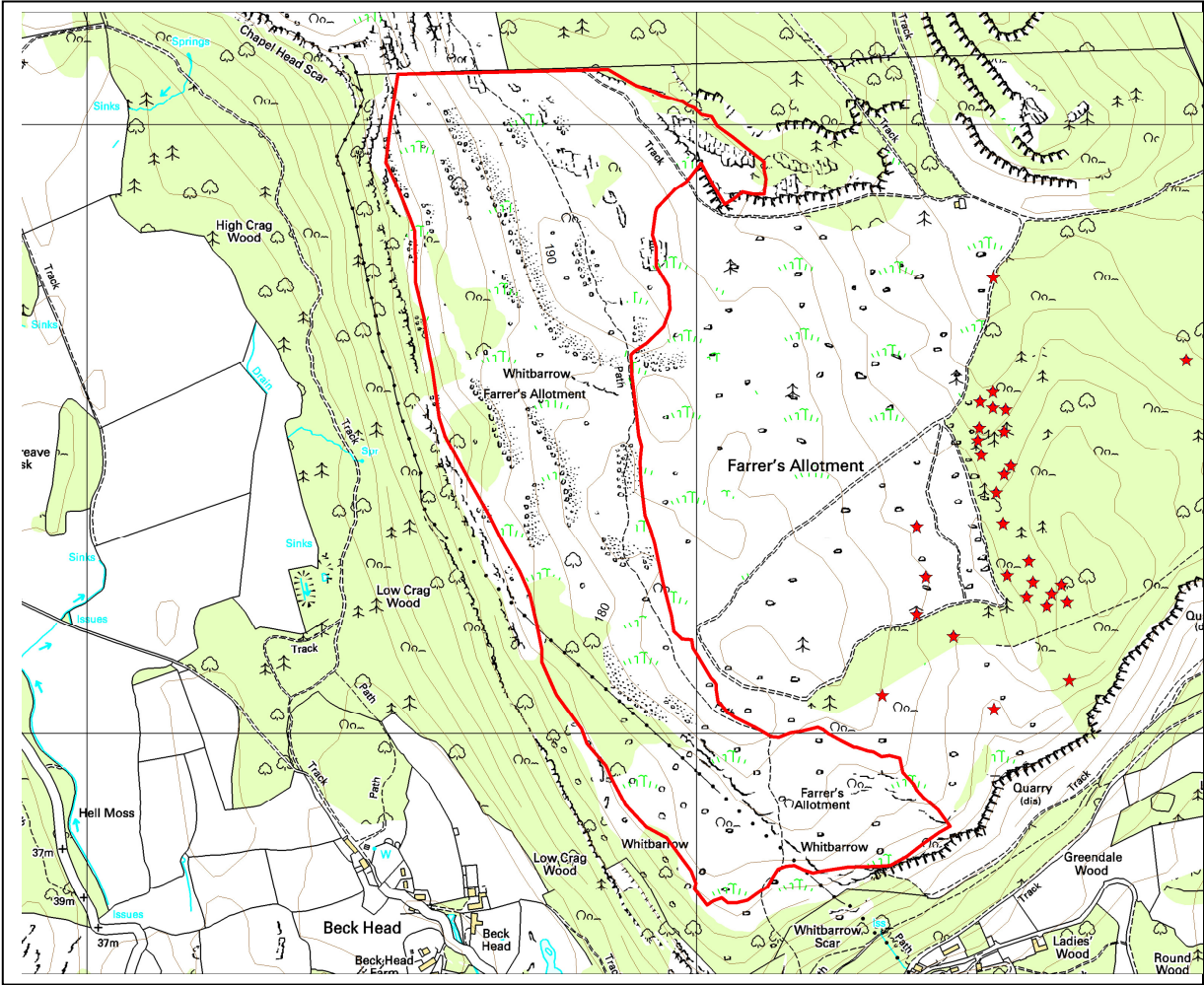
Junipers should be planted in clumps of between ten and fifty junipers, with a distance between plants of 1.5 to 2.5 metres. Such clumps should coalesce into thickets as they grow, providing valuable scrub habitat and limiting damage from large herbivores. The creation of large numbers of juniper clumps across the Allotment should minimise the damaging effects of red deer as only some of the planted areas will lie within regularly used areas.

A large proportion of planted junipers could be left unprotected as the primary threat to seedlings will be competition with surrounding ground flora and non-juniper scrub. Protecting one-quarter to one-third of trees with individual protectors or fencing should ensure that some trees survive if browsing impacts increase in the future.

A useful guide for the ultimate density of junipers on Farrer's Allotment is provided by neighbouring allotments to the north. The Hervey Reserve, with 5000 junipers has a density of 100 junipers per hectare, while Flodders Allotment (these were split for practicalities' sake during survey), with 6000 trees has a density of 140 junipers per hectare.



Farrer's Allotment Juniper Stand Boundaries and outliers, July 2012



## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Whitbarrow Hervey	Equiv. L. Ward site (s): Whitbarrow Res C and D
Site Ref. Code: Jun-4486-01	Survey date: 17/01/2012
Recorder name (s): M. Douglas	Cent. grid ref: SD44300 86650
Valley / area: Witherslack	Altitude: 140 – 210m
Aspect: Various	Ownership:

### 2. Stand area:

d) Have you changed the boundaries of the stand on the survey map?

Yes

h) GPS number and track name / label?

i) Area of sub stands and total area?

Sub stand	H	I	J	K	L					Total
Area	14.25	7.87	10.12	10.91	7.36					50.51
Confidence										5

### 3. Plant numbers and Juniper sub-species?

Ssp...comm.....

Sub stand	H	I	J	K	L					Total
Count	2120	1262	701	438	406					4927
Method										WT
Confidence										med

### 4. Dominant Vegetation ...limestone grassland.....

#### Other vegetation types present:

acid grassland

dry heath

Limestone grassland

Scree

Limestone scree

Woodland

wet grassland / rushes

wet heath / mire

Bracken

Outcrop / cliff

Limestone outcrop / cliff

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep

Cattle

Red Deer

Other Roe deer.....

#### Indicators of high grazing / browsing pressure?

Few signs of juniper browsing or bark stripping despite severe browsing of yew and holly. Probable thrashing / fraying damage from red deer around SD44103 86643.

**6. Other threats:** Shading by taller trees along western slope. Past die off of more than ten juniper around SD 44530 86217.

**7. Juniper age:**

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
present	present	present	present	present	present
Comments: Only one ill tree seen. Young trees numerous and seedlings not difficult to find.					

**Are fruit bearing trees present?** Yes / no

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos.

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point

**9. Comments (associated flora and fauna, survey / access difficulties?):**

Juniper healthy and regenerating well, despite severe browsing of yew and holly by livestock. Red deer impacts limited to a few juniper in a small area on the western slope.

## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Whitbarrow, Flodder Allotment	Equiv. L. Ward site (s): Whitbarrow Res. A and B
Site Ref. Code: Jun-SD4487-01	Survey date: 12 and 17 <sup>th</sup> January 2012
Recorder name (s): M. Douglas	Cent. grid ref: SD44010 87380
Valley / area: Witherslack	Altitude: 140 – 210m
Aspect: Various	Ownership:

### 2. Stand area:

e) Have you changed the boundaries of the stand on the survey map?

Yes

j) GPS number and track name / label?

k) Area of sub stands and total area?

Sub stand	A	B	C	D	E	F	G			Total
Area	6.77	13.96	5.17	4.54	5.21	4.40	1.70			41.75
Confidence										5

### 3. Plant numbers and Juniper sub-species?

Ssp...comm

Sub stand	A	B	C	D	E	F	G			Total
Count	1730	1730	1150	544	380	270	190			5994
Method										WT
Confidence										med

### 4. Dominant Vegetation ...Limestone grassland.....

#### Other vegetation types present:

acid grassland

wet grassland / rushes

dry heath

wet heath / mire

Limestone grassland

Bracken

Scree

Outcrop / cliff

Limestone scree

Limestone outcrop / cliff

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep

Cattle

Red Deer

Other Roe Deer.....

#### Indicators of high grazing / browsing pressure?

Few signs of past or present browsing on juniper and difficult to find damage to bushes due to rubbing or thrashing by large herbivores. This is despite occasional browsing of *Calluna*, and heavy browsing of all accessible holly and yew.

**6. Other threats:** Some shading of juniper on western slopes.

**7. Juniper age:**

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
present	present	present	present	none	present
Comments: Seedlings not numerous but they were found within each portion.					

**Are fruit bearing trees present?** Yes / no

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos.

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point

**9. Comments (associated flora and fauna, survey / access difficulties?):**

Juniper is providing protection for regenerating trees in section A, and some of these are shading out the juniper as they grow. Although yew and holly are severely browsed wherever they grow, juniper is largely untouched by herbivores. Other standard trees include hazel, blackthorn, ash and birch. Four snipe were flushed from juniper and surrounding vegetation during the survey.

Cattle (11 of) and sheep (7 of) were recorded, but there were no obvious signs of red deer presence, despite known populations in the area. Roe deer droppings were found amongst the juniper.

## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Township Allotment, Whitbarrow	Equiv. L. Ward site (s): Whitbarrow North A, B, C and D
Site Ref. Code: Jun-SD4489-01	Survey date: 01/02/2012
Recorder name (s): Mike Douglas	Cent. grid ref: NY 44160 89000
Valley / area: Whitbarrow	Altitude: 110 – 170m.
Aspect: various	Ownership: Crosthwaite and Lythe PC

### 2. Stand area:

- f) Have you changed the boundaries of the stand on the survey map?  
yes
- l) GPS number and track name / label?  
na
- m) Area of sub stands and total area?

Sub stand	A									<b>Total</b>
Area	58.32									58.32 ha
Confidence	4									4

### 3. Plant numbers and Juniper sub-species?

Ssp...comm.....

Sub stand	A									<b>Total</b>
Count	9646									9646
Method	Aerial									Aerial
Confidence	Low									Low

### 4. Dominant Vegetation Limestone grassland.....

#### Other vegetation types present:

acid grassland	wet grassland / rushes
<u>dry heath</u>	wet heath / mire
Limestone grassland	Bracken
Scree	Outcrop / cliff
<u>Limestone scree</u>	Limestone outcrop / cliff

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep                      Cattle                      Red Deer                      Other .....

#### Indicators of high grazing / browsing pressure?

Juniper in the NE corner of the site show signs of recent and past browsing and within this area, there are no seedlings, the stand is dominated by old trees, and there are many dead individuals and some diseased trees. Elsewhere it is difficult to find browsed juniper and there are more young and seedling juniper.

## 6. Other threats:

## 7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
present	present	present	present	present	present
Comments: Most seedlings and young trees (many tens of) found at the south and south west ends of the stand, usually in deeper soils alongside Heather, <i>Calluna vulgaris</i> .					

Are fruit bearing trees present? Yes / no

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos.

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point

## 9. Comments (associated flora and fauna, survey / access difficulties?):

There is huge variation in juniper density throughout the stand, and large areas without any juniper at all within Township Allotment. This stand has a slightly more open feel compared with the other Whitbarrow Allotments further south, and the grassland seems to be shorter cropped with tussocks of *Sesleria* less abundant. Standard trees include yew, Scot's pine, larch, ash, birch and a number of sycamore. The northern half of the stand seems to be dominated by old trees with little sign of regeneration in recent decades.

## Management Recommendations:

It seems that juniper is regenerating and sustaining itself only in a small area at the western end of the Allotment. Changes in management may encourage regeneration to the east, but planting of junipers will be necessary at the southern end of the site to speed up juniper colonisation here.

It is difficult to see why existing juniper is not regenerating at the eastern end of the site, other than the occasional browsing of established trees, which may point to seedlings being pulled up or browsed by livestock. Similar substrates to the south, at Hervey's Allotment, have good numbers of seedlings and young trees. Livestock, particularly sheep, are usually a problem for juniper in the winter, when other food stuffs are exhausted and they turn to the less palatable juniper. Limiting the numbers

of out-wintered livestock would be one solution to the lack of regeneration. Another would be to ensure that any winter feed is given to animals well away from existing juniper, effectively reducing the time spent in areas where seedlings are likely to be found.

At the south of Township Allotment there is a large (50ha) area which is almost devoid of juniper or other scrub. This limits the biodiversity of this area, and may present a barrier on the Whitbarrow Massif, to the movement of some invertebrates associated with juniper. Natural regeneration of juniper in this area would take many decades or longer, making planting a good option. Absolute numbers to be planted will depend on the wishes of the landowner / managers, but given the size of the site and its importance to juniper conservation in Cumbria, substantial numbers should be considered. The planting of around 1500 junipers should be a realistic goal within HLS, and this will result in densities of junipers approaching that found across the rest of the site.

Junipers should be planted in clumps of between 10 and 50 plants, with space between trees of 4 to 8 foot. This will allow plants to coalesce as they grow, forming self-protecting clumps of relatively high value to other wildlife. A number of planting sites should be selected across this large area taking in slightly different substrates and allowing for differing grazing pressures across the area in the future.

Tree protection can be provided by fencing or individual tree guards. The latter need to be 0.9m high, at least 30cm in diameter and preferably of an open mesh type to limit the 'greenhouse effect' within protectors. Fencing could be a good option on this site, as linking short stretches to the existing boundary wall would allow areas to be stock excluded relatively cheaply. Some junipers could be planted without protection and monitored through their first year to see if this method could be more widely used.

The selection of grassy areas for planting will limit the amount of weeding required around planted bushes. If areas of deeper soil with bracken are chosen for planting, more weeding will be required, perhaps as often as twice per year for the first two or three years.



## Uplands for Juniper Project – Survey Form

### 1. Site details

Site Name: Scout Scar	Equiv. L. Ward site (s): Helsington Barrows and Bradleyfield
Site Ref. code: Jun-SD4990-01	Survey date: 08/08/2013 and 01/02/2013
Recorder name (s): Mike Douglas	Cent. grid ref: SD4908 9092
Valley / area: Kendal	Altitude: 120m – 220m
Aspect: Various	Ownership:

### 2. Stand area:

- g) Have you changed the boundaries of the stand on the survey map?  
Yes
- n) GPS number and track name / label?  
N / A
- o) Area of sub stands and total area?

Sub stand	A									<b>Total</b>
Area	129.9									129.9
Confidence	4									4

### 3. Plant numbers and Juniper sub-species?

**Ssp...***J.c. comm* .....

<b>Sub stand</b>	A									<b>Total</b>
<b>Count</b>	1888									1888
<b>Method</b>	VP									VP
<b>Confidence</b>	M									M

### 4. Dominant Vegetation ...Limestone grassland.....

#### Other habitats / vegetation types present:

acid grassland	wet grassland / rushes
<u>dry heath</u>	wet heath / mire
Limestone grassland	<u>Bracken</u>
Scree	Outcrop / cliff
<u>Limestone scree</u>	<u>Limestone outcrop / cliff</u>
<u>Woodland</u>	

### 5. Grazing / browsing (circle appropriate grazing animal)?

Sheep                      Cattle                      Red Deer                      Other .....

#### Indicators of high grazing / browsing pressure?

Generally light to moderate grazing but patchy across the site. In the SE corner, many junipers had apparently been damaged by red deer (1<sup>st</sup> Feb 2013 survey), with at least five junipers killed recently due to excessive browsing and bark stripping. Many

taller, conical juniper had also been damaged, with branches of more than 2cm diameter snapped off alongside browsing and bark stripping.

**6. Other threats:** Some juniper on Scout Scar has been confirmed with *Phytophthora austrocedrae* after testing by FERA, but no ill juniper were seen during these surveys.

**7. Juniper age:**

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
present	present	20%	70%	present	present
Comments: Scout Scar (A): poor mix of age classes suggesting grazing has been heavier than neighbouring Bradleyfield for some time.					

**Are fruit bearing trees present?** Yes / no

**8. Fixed point photography:** Insert Grid reference and compass bearing fixed point photos.

Photo label / Number	Grid Ref.	Comp. bearing	Magnification	Description of fixed point
Jun-SD4990-01A	SD 4924 9101	SE		Red deer browsed juniper in the foreground, typical juniper density of Scout Scar illustrated in background.

**9. Comments (associated flora and fauna, survey / access difficulties?):**

This stand is struggling to regenerate under recent and current grazing pressure. The short cropped nature of the limestone grassland suggests that livestock grazing effects are higher here than those seen at neighbouring Bradleyfield, and the browsing damage and death of a number of juniper (5 dead juniper found during 01/02/2013 survey) suggests that red deer are frequently using the site. Numerous associated trees included ash, rowan, yew, holly, gorse, hawthorn and dog rose. Isolated sycamore are present but these do not appear to be regenerating strongly. Six autumn gentians were found at SD 49237 91051.