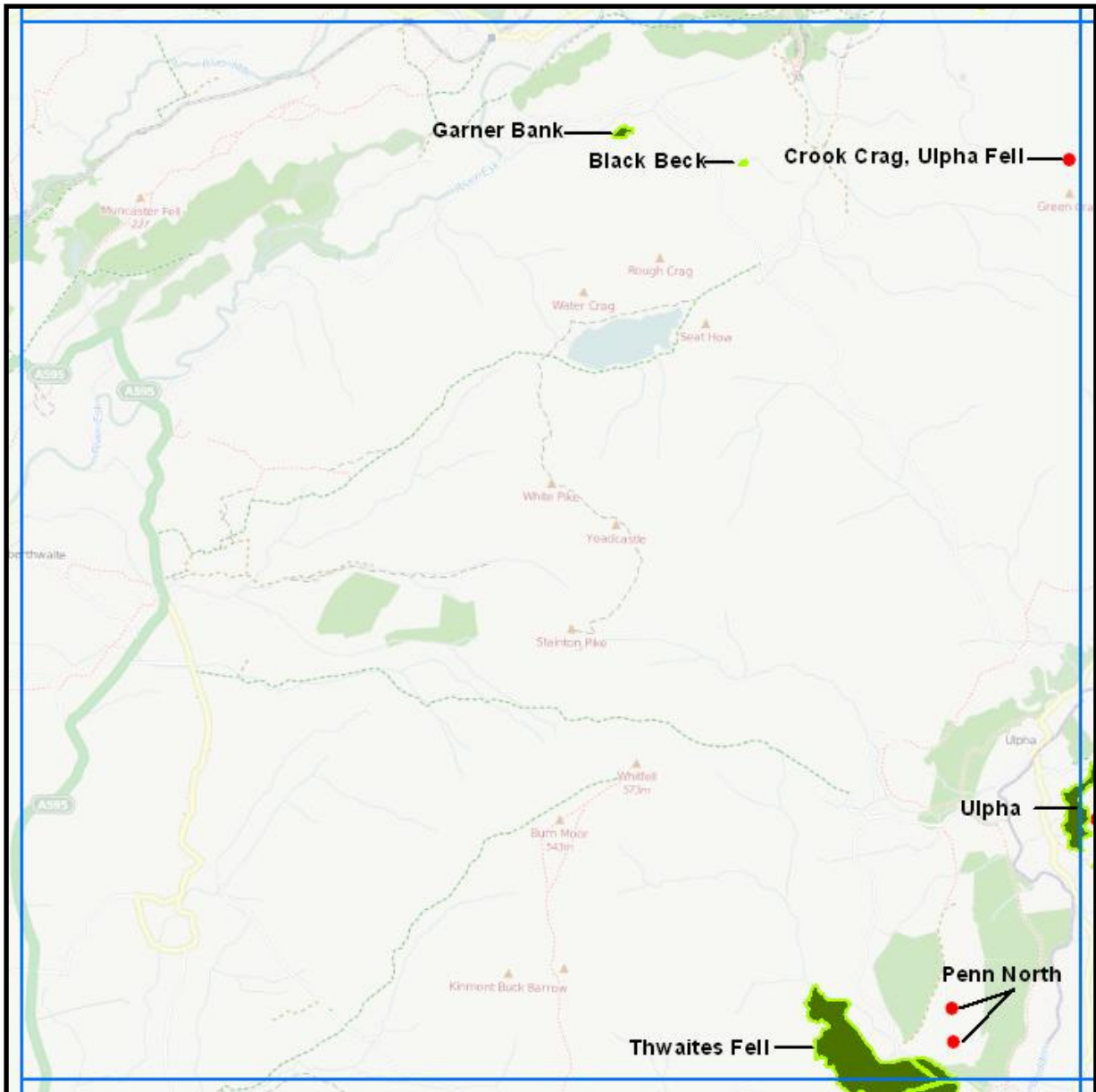


SD19



Sites List:

Jun-SD1598-01	Garner Bank
Jun-SD1698-01	Black Beck
Jun-SD1889-02	Thwaites Fell
Jun-SD1890-01	Penn South
Jun-SD1890-02	Penn North
Jun-SD1992-01	Ulpha
Jun-SD1998-01	Crook Crag, Ulpha Fell



Uplands for Juniper Project – Survey Form

1. Site details

Site Name: Garner Bank	Equiv. L. Ward site (s): Garner Bank
Site Ref. code: Jun-SD1598-01	Survey date: 11/11/2012
Recorder name (s): D Benham and B. King	Cent. grid ref: SD1566 9896
Valley / area: Eskdale	Altitude: 40m – 90m
Aspect: 350 degrees	Ownership:

2. Stand area:

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

Sub stand	A									Total
Area	1.37									1.37
Confidence	4									4

3. Plant numbers and Juniper sub-species?

Ssp...J.c.comm

Sub stand	A									Total
Count	270									270
Method	WT									WT
Confidence	M									M

4. Dominant Vegetation ...wet heath / mire.....

Other habitats / vegetation types present:

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

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

Sheep Cattle Red Deer Other

Indicators of high grazing / browsing pressure?

No dwarf shrub heath present and few young juniper. Some evidence of higher grazing pressure in the past but no great change recently.

6. Other threats:

7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
2	14	47	33	3	1
Comments:					

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-SD1598-01A	SD 1587 9905	SW		Stand overview
Jun-NY1598-01B	SD 1575 9892	W		
Jun-NY1598-01C	SD 1563 9900	E		Old, browsed juniper

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

Difficult to access (have to wade across 2 m beck). Established bushes healthy but grazing probably preventing further increase at present.



Uplands for Juniper Project – Survey Form

1. Site details

Site Name: Black Beck	Equiv. L. Ward site (s): Black Beck
Site Ref. code: Jun-SD1698-01	Survey date: 11/11/2012
Recorder name (s): D. Benham and B. King	Cent. grid ref: SD 1680 9866
Valley / area: Eskdale	Altitude: 150m
Aspect: 350 degrees	Ownership:

2. Stand area:

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

Sub stand	A									Total
Area	0.23									0.23
Confidence	4									4

3. Plant numbers and Juniper sub-species?

Ssp...J.c. comm

Sub stand	A									Total
Count	21									21
Method	WT									WT
Confidence	M									M

4. Dominant Vegetation ...Bracken.....

Other habitats / vegetation types present:

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

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

Sheep Cattle Red Deer Other

Indicators of high grazing / browsing pressure?

Bog myrtle heavily grazed. No dwarf shrub heath present and only old junipers present.

6. Other threats:

7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
X	X	X	71%	24%	5%
Comments: Few berries					

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-SD1698-01A	SD1685 9867	NW		Stand overview
Jun-SD1698-01B	SD1680 9864	NW		Dying juniper

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

Juniper slowly dying off. Little for sheep to eat and lack of younger juniper age classes suggests long term over-grazing.



Uplands for Juniper Project – Survey
Uplands for Juniper Project – Survey Form

1. Site details

Site Name: Thwaites Fell	Equiv. L. Ward site (s): Thwaites Fell
Site Ref. code: Jun-SD1889-02	Survey date: 13/10/2011
Recorder name (s): M. Douglas	Cent. grid ref: SD 18050 90080
Valley / area: Duddon Valley	Altitude: 120m – 230m
Aspect: 60 degrees	Ownership: National Trust

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	C							Total
Area										62.32ha
Confidence										5

3. Plant numbers and Juniper sub-species?

Ssp...*J.c.comm*

Sub stand	A	B	C							Total
Count	346	343	1807							2496
Method										VP photo
Confidence	M	M	L							L

4. Dominant Vegetation ...wet heath / mire.....

Other habitats / vegetation types present:

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

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

Sheep Cattle Red Deer Other

Indicators of high grazing / browsing pressure?

Patchy grazing. High impact in the SE where some juniper have been browsed and bark stripped, alongside browsed *Erica tetralix*. Elsewhere juniper seedlings are unbrowsed.

6. Other threats:

7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
8%	36%	22%	21%	11%	present
Comments:					

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-SD1889-02A	-	-		Seed collecting work party and survey Oct 2011.
Jun-SD1889-02B	SD18854 90423	230 degrees		Overview of central area of stand, taken from Penn Hill
Jun-SD1889-02C	SD18854 90423	210 degrees		Overview of southern area of stand, taken from Penn.

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

Sub site A southern most subsite, B eastern most and C main stand.

Juniper at low density across the area, mixed in with very scattered willow spp, holly, rowan and sycamore. Redwing and Fieldfare flocks appeared to be feeding on fallen juniper berries.

This is a very wet site with abundant Sphagnum spp, Tricophorum germanicum, heavily browsed Calluna vulgaris and patchily browsed Erica tetralix, with some cranberry and bog rosemary.

Proportions within different age classes were derived from a sample of 198 juniper observed on a 'W-walk' across the site.

Restoration:

This is an unusual site in that regeneration is occurring despite browsing and bark stripping of juniper taking place elsewhere in the stand. On the face of it, enough regeneration is taking place to sustain the population in the long term. Most seedlings and young bushes are in wetter areas though, where ultimate growth and reproductive output is likely to be suppressed due to sub-optimal conditions. The stand has also been confirmed as a *Phytophthora austrocedrae* infected site, with at least tens of trees suffering from this pathogen. Recent research has revealed that bushes growing in wet ground are more susceptible to this disease.

A reduction in winter sheep stocking densities will be necessary to allow regeneration to occur on drier areas, and such a seasonal reduction would also put an end to bark stripping damage on established bushes. Although complete off-wintering is a preferred option for juniper stands, partial off-wintering may allow regeneration when accompanied by shepherding, with the aim of preventing a concentration of livestock in areas identified for natural regeneration.

Potential Planting areas:

Two planting areas were identified during a desk based survey, both within 3 km and upslope of the existing juniper. Planting at either of these sites would help to bolster the juniper population at the extreme SW of its range in Cumbria, and would help ensure against an acceleration in *Phytophthora austrocedrae* infection at the Thwaites Fell stand.

1. **Plough Fell** The drawn area of 10.58 ha would require a fence of 960m length (assuming that the existing wall to the east is stock-proof). Assuming that 60% of the area is plantable, and using a planting rate of 300 juniper/ha, 1800 juniper could be planted in the proposed enclosure. 240 taller tree species could also be planted, including rowan, birch and aspen.

2. **Buck Barrow** The drawn area encompasses 28.43ha, and assuming that walls to the west are stock-proof, this area would require 1420m of fencing. Assuming that 40% of the area is plantable, and using the planting rate of 300 juniper/ha, 3300 juniper could be planted, along with 440 taller tree species including rowan, birch and aspen.



Uplands for Juniper Project – Survey Form

1. Site details

Site Name: Penn South	Equiv. L. Ward site (s): None
Recorder name (s): M. Douglas	Survey date: 04/10/2012
	Cent. grid ref: SD18798 90369
Valley / area: Duddon Valley	Altitude: 190m
Aspect: Various	Ownership:

2. Stand area:

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

Sub stand	A									Total
Area										
Confidence	5									

3. Plant numbers and Juniper sub-species?

Ssp...comm.....

Sub stand	A									Total
Count	34									34
Method	WT									WT
Confidence	H									H

4. Dominant Vegetation ...Dry heath.....

Other habitats / vegetation types present:

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

Most junipers showing signs of past browsing down to woody material, but neighbouring DSH only lightly browsed.

6. Other threats:

7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
10%	30%	50%	10%	X	X
Comments: Regeneration event 20 to 40 years ago? Three seedlings amongst heather.					

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?):

Combination of browsing impacts suggests that red deer may occasionally visit the site, impacting upon the juniper on an otherwise lightly sheep-grazed site. Other trees include hawthorn, holly, rowan, birch, spruce spp, and sessile oak. There appeared to be a climatically dwarfed individual of the latter species at SD 18905 90385 (just 200m alt).

Management Recommendations:

The mosaic of habitats on this site are of high wildlife value and the patchy and generally low impact stocking regime is allowing the development of some juniper scrub.

The small population of juniper on Penn could be boosted by planting. This could be done without tree guards as long as low-grazing impact areas were chosen (within lightly browsed and un-browsed heather). This location is unusual in the Lake District as it is a site where a transition from woodland to scrub and then to dwarf shrub heath could be achieved given some juniper planting and on-going light grazing. The value of these habitats is all the more important due to the proximity of the large Thwaites Fell juniper stand, and the Duddon Valley Woodlands SSSI.

Four-hundred juniper could be planted between the existing juniper and the summit of Penn. Although current sheep grazing regimes should allow these bushes to establish, monitoring of red deer populations and impacts in the area, followed by increases in cull rates where necessary will be important.



Uplands for Juniper Project – Survey Form

1. Site details

Site Name: Penn North	Equiv. L. Ward site (s): None
Site Ref. Code: Jun-SD1890-02	Survey date: 04/10/2012
Recorder name (s): M. Douglas	Cent. grid ref: SD1878 9068
Valley / area: Duddon Valley	Altitude: 190 – 220m
Aspect: Various	Ownership:

2. Stand area:

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

Sub stand	A									Total
Area										
Confidence	5									

3. Plant numbers and Juniper sub-species?

Ssp...comm.....

Sub stand	A									Total
Count	24									24
Method	WT									WT
Confidence	H									H

4. Dominant Vegetation ...dry heath.....

Other habitats / vegetation types present:

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

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

Sheep Cattle Red Deer Other

Indicators of high grazing / browsing pressure?

Most junipers showing signs of past browsing, but surrounding vegetation only lightly grazed.

6. Other threats:

7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
X	present	present	present	X	X
Comments: 1 young bush, 4 mature and the rest old.					

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?):

Combination of browsing impacts on different vegetation suggests occasional visits by red deer, to otherwise lightly sheep-grazed area. Spruce species are spreading into this area from neighbouring plantation.



Uplands for Juniper Project – Survey Form

1. Site details

Site Name: Ulpha	Equiv. L. Ward site (s): Dunnersdale Fell, West and East
Site code: Jun-SD1992-01	Survey date: 23/11/2012
Recorder name (s): M. Douglas and S. Townsend.	Cent. grid ref: SD 19920 92700
Valley / area: Duddon	Altitude: 60 – 200m
Aspect: Various	Ownership:

2. Stand area:

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

Sub stand	A	B	C	D						Total
Area	15.11	2.13								17.24
Confidence	5	5	5	5						5

3. Plant numbers and Juniper sub-species?

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

Sub stand	A	B	C	D						Total
Count	830	195	34	34						1093
Method	VP	VP	VP	VP						VP
Confidence	M	H	H	H						M

4. Dominant Vegetation ...bracken.....

Other habitats / vegetation types present:

<u>acid grassland</u>	<u>wet grassland / rushes</u>
<u>dry heath</u>	<u>wet heath / mire</u>
Limestone grassland	Bracken
<u>Scree</u>	<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?

Majority of junipers show signs of winter browsing, hard and extensive on some bushes. Some bushes at the north end of the stand have been browsed recently.

Only one seedling found and no young trees. Lots of mature trees showing suppressed growth, illustrating long term heavy browsing pressure.

6. Other threats:

Succession to tall trees. Almost all regeneration of tall trees is within the protective canopy of existing junipers, leading to the death of these junipers in the long term.

7. Juniper age:

Estimate Percentage					
seedling	young	mature	old	Ill	Dead
1 of	X	present	present	X	Present
Comments: Almost all bushes mature or old. Berry bearing trees abundant.					

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-SD1992-01A				Aspen suckers establishing in protection of juniper.
Jun-SD1992-01B				Ash and yew established after regenerating within juniper canopy.

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

Sub stands and outliers comprise A: Main stand, B: Northern sub-stand adjacent to Birks Wood, C: outliers to east of main stand and D: Southern outlier at Cinderhill Beck.

Large juniper stand of variable density, with abundant oak, ash, rowan, birch, hawthorn, holly, yew and aspen. Two large clones of the latter numbered 8 and 10 large stems respectively, with many smaller suckers present. Largest mature stem at SD19883 92480, measuring 1.85m. circumference or 59cm DBH.

Few sycamore and 1 beech present (planted).

Almost all regeneration of tall tree species is within the protection of juniper canopies, something which will aid the decline of this juniper stand given its complete lack of regeneration at present.

Numerous large juniper present including one of 44cm diameter at base, or 140cm circumference, at SD 19890 92254.