

**Progress Report:  
Invasive Species Removal and Habitat Restoration  
in Uplands Park**

**January, 2010**

Prepared for:  
**Municipality of Oak Bay**

Prepared by:  
Carrina Maslovat, R.P.Bio.  
175 Stewart Road, Salt Spring Island, BC V8K 2C4  
Email: [maslovat@telus.net](mailto:maslovat@telus.net)  
Telephone: (250) 537-1573

# Table of Contents

Background .....	2
Methodology .....	3
Results .....	5
Figure 1. Map of Priority Sites for Invasive Species Control .....	6
Table 1. Work Plan for Priority Invasive Species Removal in Uplands Park .....	7
Recommendations for Future Work.....	13
Ongoing Invasive Species Management .....	13
Public Education .....	13
References Cited .....	14
Appendix A. Log of Daily Work Completed in 2009 .....	15
Appendix B. Amount of Biomass Removed from Uplands Park .....	17

## Background

Uplands Park is a 31-hectare park managed by the Municipality of Oak Bay. The area is home to 21 plant species at risk (including 7 listed by COSEWIC) and 1 butterfly species at risk (Fairbarns 2004; Collier et al. 2004). Nine additional plant species at risk have formerly been extirpated from the park (Fairbarns 2004). Invasive plant species degrade the sensitive meadow ecosystems and are one of the primary threats to species at risk in the park.

Although volunteers and Municipality of Oak Bay staff have been removing invasive species in the park for some time, the size and extent of the invasion has exceeded the capacity of volunteers and regular staff efforts (Collier 2005). Funding available through the Habitat Stewardship Program (HSP) for Species at Risk has enabled more intensive invasive species removal for five years from 2005 to 2009. Once large open areas, sensitive areas with species at risk and linking corridors have been cleared of woody invasive species, it is hoped that volunteers and municipal staff can control ongoing recruitment of invasive species.

The invasive species removal in 2009 was guided by a management plan prepared by Maslovat in 2005. In the management plan, priority areas for invasive species removal were determined by evaluating factors including the location of species at risk, the degree of threat to species at risk by invasive species, the type of ecosystem, the degree of threat posed by different invasive species, and the degree of invasion.

This progress report provides an overview of all work completed with HSP funding but provides a detailed description and assessment of the work completed in the fall of 2009. Further details of the work completed from 2005, to 2008 can be found in the previous year's progress report (Maslovat 2005b; 2006; 2007; 2008). Recommendations for future work and direction for ongoing management and monitoring are also outlined.

For details of how each invasive species was managed and general protocols for working around species at risk, refer to the management plan (Maslovat 2005a). Maps showing the distribution of invasive plant species in Uplands Park can be found in Morbin and Jennings (2004).

## Methodology

The botanist developed a work plan for 2009 after a preliminary site survey with the crew leader. This site plan was posted to the Municipality of Oak Bay website and available to the public.

A paid crew removed invasive species at Uplands Park from September 8<sup>th</sup> to September 24<sup>th</sup>. The crew for 2009 included two Municipality of Oak Bay arborists (available on specific days), a botanical consultant, a crew leader, and a crew with a maximum of 5 people.

On the first morning, the crew was given an on-site orientation including:

- Brief orientation to the park, the sensitivity of the site and the purpose of the work
- Explanation of how areas with rare plants would be flagged and how to avoid these areas during work
- Guidelines for using the chipper including safety precautions
- Identification of invasive species that will be removed and comparison to similar native species
- Demonstration of invasive species removal to minimise re-sprouting and how approaches should differ for different species depending on whether they re-sprout from cut stems or not
- Logistical discussions of access routes and priority sites

At the beginning of each workday, an area was identified for work by the crew leader after consultation with the botanist. It was not possible to strictly follow the list of priority sites outlined in the 2009 work plan because of logistical considerations. The municipal arborists were only available on certain days. The crew required an arborist to use a chain saw to cut invasive trees and to apply cut stem treatments since only the municipal arborists had permits to use herbicides in the park. The crew leader and/or botanist told the crew and arborists which invasive species to remove and explained the details of how each species was to be removed (for more information refer to Maslovat 2005a).

Only one herbaceous plant was targeted for removal. In 2005, giant hogweed plants were dug out but since the plants are growing amongst tree roots not all of the roots were removed. The plants re-sprouted in 2006 and 2007. In June of 2008, the leaves and stems of the plants were treated with herbicide, which appears to have killed them. There was no sign of re-sprouting in 2009.

Invasive trees including English hawthorn and European ash were removed in 2009. Large English hawthorn trees were cut with a chainsaw and Roundup was carefully applied to the cut stems to minimise re-sprouting. Herbicide was applied as quickly as possible to the cut stem with a small squeeze bottle applicator.

Small hawthorn and small ash were either pulled or cut with loppers and the cut stems treated.

Shrub removal in 2009 included Scotch broom, gorse, evergreen daphne, Himalayan blackberry, and English holly. Large broom was cut with a pruning saw or loppers and smaller broom was pulled by hand. Cut stems of broom were not treated since no re-sprouting was evident. Gorse plants remain at the edges where there were formerly dense patches of gorse. These plants were cut with loppers and the cut stems were treated to minimise re-sprouting. Large evergreen daphne was cut with loppers and the stems treated and small daphne was pulled by hand. Himalayan blackberry canes were cut with loppers and the cut stems were treated. Holly was cut with a pruning saw or loppers and the cut stems were treated.

During previous years, a variety of techniques have been used to kill dense patches of gorse seedlings. Former techniques to control gorse seedlings included covering an area with black plastic, spraying with Roundup, using a portable Steamhead steamer and burning using a tiger torch. None of the former approaches was entirely successful: gorse seedlings continue to persist at all sites. The steamer and black plastic were the least effective approaches. Tiger torching and Roundup appear to be the most successful. In 2009, gorse seedlings were again treated with Roundup in areas #8 and #15, although the treatment was only minimally effective and most plants did not die. As outlined in the Management Plan (Maslovat 2005), further ongoing restoration including re-establishing native vegetation and soil remediation will be required in both of these sites.

Access for the chipper truck into the park was decided after consultation with the botanist and arborists. All material was hand carried or hauled on tarps to the chipper truck. All cut material was chipped and removed from Uplands Park.

## Results

Figure 1 shows the locations of priority areas and outlines where work has been completed from 2005 through 2009. Detailed descriptions of treatments in each area are included in Table 1. A daily log of work completed is included in Appendix A. The amount of biomass removed from Uplands Park is included in Appendix B.

During each year of the HSP funded invasive species removal, a larger area has been cleared/re-cleared of invasive species. The approximate area has increased from 2.73 hectares in 2005, to 4.08 in 2006, to 6.23 in 2007, to 8.26 in 2008 and to 10.3 hectares in 2009.

The biomass of invasive species removed from the park is much less than in previous years. The reduction in biomass does not reflect a reduced effort but rather the smaller size of invasive species being removed. Invasive species that establish in previously cleared areas are much smaller than large established plants in areas that have not been previously cleared.

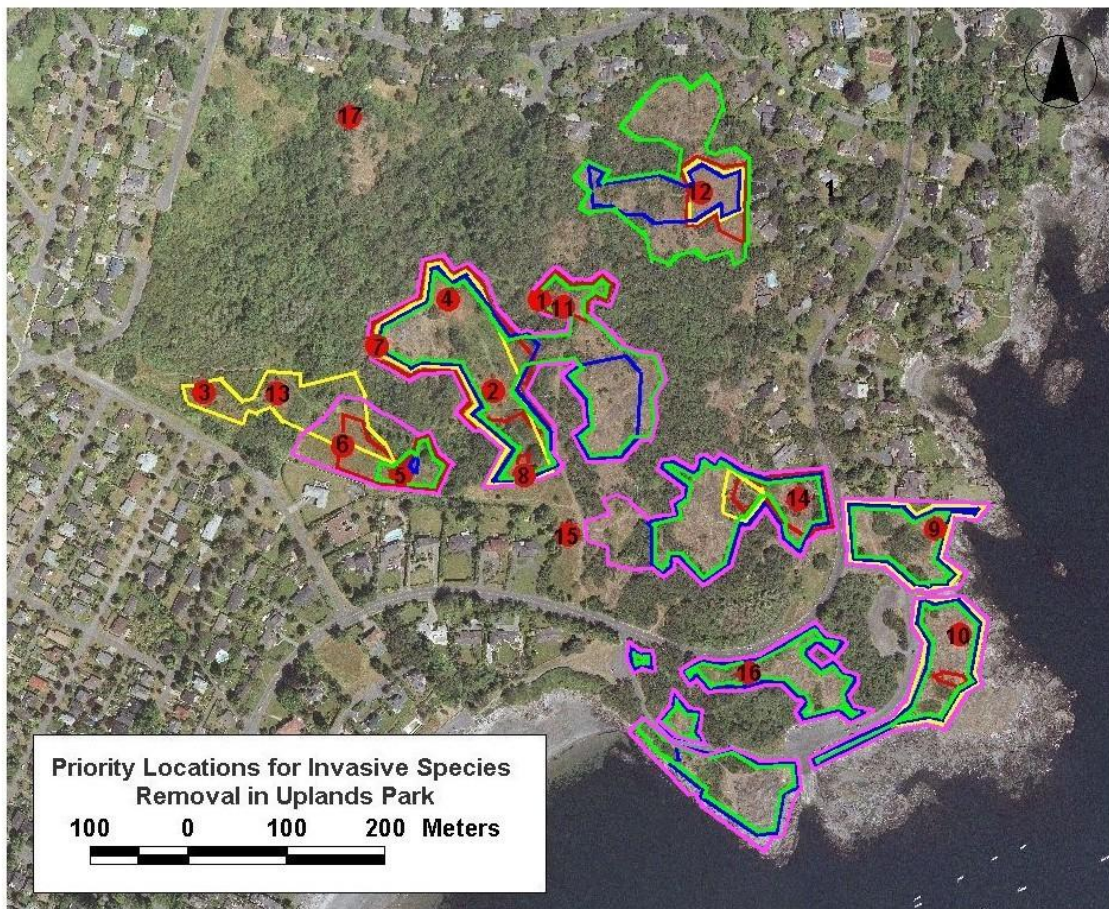
To date, the invasive species removal in Uplands Park has been highly effective. Most of the mature gorse and almost all the large, flowering Scotch broom has been removed from the park. Repeat clearing of previously cleared areas appears to be a highly effective means of controlling recruitment and appears to require less effort in each subsequent year, allowing larger areas including adjacent buffer areas to be cleared. Most importantly, the most sensitive part of the park, the central meadow (area #2, #4, and #7), is almost entirely free of evergreen daphne, English hawthorn, Scotch broom and Himalayan blackberry.

Two areas that previously had dense concentrations of gorse will require ongoing work since none of the methods tried have been particularly successful at controlling seedlings. Small amounts of native grass seed was collected on site and sown in area #8.

Because invasive species persist even in areas repeatedly cleared, ongoing work will be required to maintain these areas. However, the intensity of the effort required will be less than in previous years. It is expected that the amount of effort involved will continue to decline over time.

In addition to invasive species removal, two signs will be installed in 2010. Next to the path leading from Dorset Road, a kiosk will be constructed and a sign installed reminding people of the sensitive habitat and requesting they stay on the trails. A more detailed sign will be erected in the previously installed kiosk at Cattle Point. Text is currently being developed and photos sourced for these signs.

**Figure 1. Map of Priority Sites for Invasive Species Control**



- Priority location
- Approximate location of areas cleared of invasive species in 2005
- Approximate location of areas cleared or re-cleared of invasive species in 2006
- Approximate location of areas cleared or re-cleared of invasive species in 2007
- Approximate location of areas cleared or re-cleared of invasive species in 2008
- Approximate location of areas cleared or re-cleared of invasive species in 2009

**Table 1. Work Plan for Priority Invasive Species Removal in Uplands Park**

<b>Map #</b>	<b>General area</b>	<b>Year of work</b>	<b>Work completed</b>	<b>Further work required</b>	<b>Access for chipper</b>	<b>Species at risk in area</b>	<b>Invasive species targeted</b>
1	Southeast of eastern meadow	2005 2006 2008	Hogweed plants dug out in 2005 but re-sprouted in 2006. Herbicide applied in June 2008 appears effective.	Continue to monitor for new plants.	None required	Yellow montane violet, Foothill sedge	Giant hogweed
2	Central meadow (southern section)	2005 2006 2007 2008 2009	Invasive trees and shrubs removed throughout meadow and at edges of meadow.	Ongoing removal of small invasive shrubs and trees to maintain cleared areas. Should require minimal effort if maintained.	Beach Drive north of Cattle Point loop entrance. Chipper only permitted at southern edge of central meadow in order to avoid sensitive areas.	Water-plantain buttercup, Elegant rein orchid, Foothill sedge, Heterocodon, Mountain sneezeweed, Tall woolly heads	In 2009, the area was re-cleared of new recruitment of Scotch broom, small English hawthorn and European ash. Maintenance of previously cleared areas was minimal.
3	Southwest corner of park	2006	Invasive trees and shrubs removed next to species at risk.	Ongoing removal of invasive shrubs and trees to maintain cleared areas.	Dorset Road	Water-plantain buttercup	No further work done in this area in 2009.

<b>Map #</b>	<b>General area</b>	<b>Year of work</b>	<b>Work completed</b>	<b>Further work required</b>	<b>Access for chipper</b>	<b>Species at risk in area</b>	<b>Invasive species targeted</b>
4	Central meadow (northern section)	2005 2006 2007 2008 2009	Invasive trees and shrubs removed throughout meadow and at edges of meadow	Ongoing removal of invasive shrubs and trees to maintain cleared areas. Should require minimal effort if maintained.	Beach Drive near Cattle Point loop entrance. All material was carried by hand to chipper at southern edge of central meadow.	Chaffweed, Heterocodon, Kellogg's rush, Mountain sneezeweed, Muhlenberg's centaury, Spanish clover, Tall woolly heads, White-top aster Winged water star-wort	In 2009, the area was re-cleared of small seedlings of Scotch broom, Himalayan blackberry and evergreen daphne. Minimal effort required.
5	Southwest of central meadow	2005 2006 2007 2008 2009	Large gorse shrubs removed in 2005 and new gorse plants and seedlings removed from 2006-2009.	Ongoing removal of gorse recruitment to limit reinvasion. Will require very little restoration since native shrubs are re-establishing.	Dorset Road.	Foothill sedge, Elegant rein orchid, Tall woolly heads	In 2009, new gorse recruitment and small European ash were removed.
6	Southwest section of the park	2006 2009	Invasive trees and shrubs removed next to species at risk and at the edges of meadow.	Ongoing removal of invasive shrubs and trees to maintain cleared areas.	Dorset Road.	Tall woolly heads, Foothill sedge	In 2009, an expanded area was cleared/re-cleared of evergreen daphne, Scotch broom, European

Map #	General area	Year of work	Work completed	Further work required	Access for chipper	Species at risk in area	Invasive species targeted
							ash and English hawthorn.
7	West side of large rock outcrop (west of central meadow)	2005 2006 2007 2008 2009	Invasive trees and shrubs removed throughout meadow and at the edges of the meadow	Ongoing removal of invasive shrubs to maintain cleared areas. Snowberry next to Yellow montane violet has been cut as part of maintaining fire access routes in the park.	Beach Drive near Cattle Point loop entrance. All material carried by hand to chipper at southern edge of central meadow.	Poverty clover, Yellow montane violet	In 2009, the area was re-cleared of Scotch broom recruitment.
8	Large rectangle of gorse and topsoil removed in 2004 with backhoe.	2005 2006 2007 2008 2009	Larger gorse shrubs around edges of scraped area removed in all years. A variety of treatments applied to small gorse seedlings.	Ongoing removal of gorse seedlings to limit reinvasion. Will require major restoration due to previous soil disturbance.	Off Beach Drive near Cattle Point loop entrance.	Elegant rein orchid	In 2009, large gorse seedlings next to scraped area were cut. Small gorse seedlings were treated with Roundup- this treatment was not very effective. English hawthorn and European ash were

Map #	General area	Year of work	Work completed	Further work required	Access for chipper	Species at risk in area	Invasive species targeted
							removed in adjacent areas.
9	North of East Point, Cattle point	2006 2007 2008 2009	Invasive shrubs removed throughout the meadow and at the edges of the meadow.	Ongoing removal of invasive shrubs to maintain cleared areas.	Edge of Cattle Point loop.	Coastal silverpuffs, Purple sanicle, Bearded owl clover	In 2009, the area was re-cleared of flowering and most non-flowering Scotch broom and evergreen daphne. Required minimal effort.
10	East point of Cattle point	2006 2007 2008 2009	Scotch broom was removed in open areas	Ongoing removal of invasive shrubs to maintain cleared areas. Should require minimal effort if maintained.	Edge of Cattle Point loop.	Bearded owl-clover, Coastal silverpuffs, Poverty clover, Winged water star-wort	In 2009, the area was re-cleared of Scotch broom. Required minimal effort.
11	Southeast of eastern meadow	2005 2008 2009	Invasive shrubs and trees removed in 2009.	Ongoing removal of invasive shrubs to maintain cleared areas. Should require minimal effort if maintained.	Southdowne Road	Foothill sedge, Tall woolly heads, Winged water star-wort	In 2009, Scotch broom, English hawthorn and European ash removed.
12	Eastern	2005	Invasive	Ongoing	Southdowne	Spanish clover,	No further work

Map #	General area	Year of work	Work completed	Further work required	Access for chipper	Species at risk in area	Invasive species targeted
	meadow	2007 2008	shrubs were removed from all open meadows and the edges of the meadow.	removal of new recruitment of invasive shrubs and trees to maintain cleared areas.	Road to NE fire hydrant.	Foothill sedge	was done in 2009.
13	Small meadow in southwest section of park	2006	Invasive trees and shrubs removed next to species at risk.	Ongoing removal of invasive shrubs and trees to maintain cleared areas.	Dorset Road	Heterocodon	No further work done in this area in 2009.
14	Eastern meadow close to North end of Cattle Point loop	2005 2006 2007 2008 2009	Invasive shrubs removed.	Ongoing removal of new recruitment of invasive shrubs and trees to maintain cleared areas.	Beach Drive adjacent to area #14. Chipper was not driven into open area to prevent damage to rein orchids.	Elegant rein orchid	In 2009, the area was re-cleared of all flowering and most non-flowering Scotch broom. Required minimal effort.
15	South of central meadow, close to Beach Drive	2005 2006 2007 2009	Gorse seedlings treated in all three years with a variety of approaches	Gorse seedlings will require ongoing treatment. Restoration as outlined in management	Off Beach Drive near Cattle Point loop entrance.	None Restoration required	In 2009, area cleared was much expanded. Gorse, Scotch broom, European ash were removed.

Map #	General area	Year of work	Work completed	Further work required	Access for chipper	Species at risk in area	Invasive species targeted
				plan.			
16	South of Beach Drive, within Cattle Point loop	2007 2008 2009	Invasive shrubs were removed from all open areas in the vicinity.	Ongoing removal of new recruitment of invasive shrubs and trees to maintain cleared areas. Should require minimal effort if maintained.	Cattle Point loop	Elegant rein orchid	In 2009, removal of Scotch broom and evergreen daphne from all open areas. Required minimal effort.
17	Northwestern corner of the park		Other areas determined to be higher priority	Trees should be removed at some point in the future if funding is available.	To be determined in consultation with botanist and arborist.	None	Norway maple satellite trees

## **Recommendations for Future Work**

### **Ongoing Invasive Species Management**

- Giant hogweed in Area #1 should continue to be monitored to ensure no new seedlings are found. This plant was controlled as it was beginning to establish.
- Further work will be required to maintain the areas cleared by crews from 2005 to 2009. Future work should focus on clearing areas that link the open meadows and removing new recruitment.
- Priority for clearing should be given to areas that have been repeatedly cleared and will require the smallest amount of effort to maintain. This should include all areas in the central meadow (#2, #4, #7 and #8), areas outside the Cattle Point loop (#9, #10 and #16), and areas north of the cenotaph (#14).
- Gorse seedlings in Areas #5, #8 and #15 will require ongoing management in order to control their re-establishment. Larger gorse seedlings should continue to be cut from Area #5 in order to prevent re-invasion and this area requires greater focus in 2010 due to the ineffectiveness of Roundup at controlling the species. The other areas require ongoing restoration since gorse seedlings continue to establish vigorously. However, it is recommended that invasive species be thoroughly controlled before native plants are planted in these areas. If future restoration requires sowing of native grass seed, it is recommended that seed be purchased rather than collected on site due to the small numbers of native grasses at Uplands.
- The Municipality of Oak Bay should mow re-sprouting snowberry shrubs next to the yellow montane violet in Area #7 every year in the late summer after the violet has set seed. Himalayan blackberry may need to be re-cut if it grows over the newly designated trail.
- Botanists should continue to monitor species at risk in Uplands Park to evaluate the impact of the invasive species removal.
- The Municipality of Oak Bay should continue to co-ordinate volunteer efforts (Girl Guides, Boy Scouts, Rotary Club) to remove invasive species.

### **Public Education**

- The final version of the 2009 progress report should be posted to the Municipality of Oak Bay website.
- Prior to any future work in Uplands Park, work plans should be posted online in order to involve community members and minimise alarm.
- Future field crews and volunteers should continue to be given brochures with information about invasive species to distribute to park users who want further information.

## References Cited

- Collier, R. 2005. Invasive Species Management Plan: Uplands Park, Oak Bay, B.C. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Collier, R. Spenser and J. Miskelly. 2004. Uplands Park Stewardship Plan. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Fairbarns, M. 2004. Uplands Park and Cattle Point: Managing Rare Plants. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Maslovat, C. 2005a. Management Plan for Invasive Plant Species in Uplands Park. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Maslovat, C. 2005b. Progress Report: Invasive Species Removal and Habitat Restoration in Uplands Park: October 2005. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Maslovat, C. 2006. Progress Report: Invasive Species Removal and Habitat Restoration in Uplands Park. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Maslovat, C. 2007. Progress Report: Invasive Species Removal and Habitat Restoration in Uplands Park. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Maslovat, C. 2008. Progress Report: Invasive Species Removal and Habitat Restoration in Uplands Park. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Morbin, A. and C. Jennings. 2004. Maps of Invasive Plant Species – Uplands Park. Unpublished report prepared for the Municipality of Oak Bay, Victoria, BC.
- Novak, S. 2005. Personal communication. Arborist, Municipality of Oak Bay, Victoria, BC.

## **Appendix A. Log of Daily Work Completed in 2009**

### **September 8** (crew leader + 4 staff)

- The crew was given an on-site orientation including purpose of work, how to minimise the impact to species at risk, and protocols for removing invasive species.
- Locations of species at risk were identified. The crew removed flowering and non-flowering Scotch broom and evergreen daphne from outside and inside the Cattle Point loop (area #9, #10 and #16). Material was removed for chipping.

### **September 9** (crew leader + 5 staff)

- Locations of species at risk were identified. The crew removed all flowering and most non-flowering Scotch broom and large amounts of evergreen daphne from open meadow areas north of the cenotaph (area #14). Material was removed for chipping.

### **September 10** (crew leader + 4 staff)

- Locations of species at risk were identified. The crew removed gorse from area #15 and re-cleared the central meadow (area #7, #4, #2 and #8) of Scotch broom, European ash, English hawthorn, evergreen daphne and Himalayan blackberry. Material was removed for chipping.

### **September 11** (crew leader + 6 staff)

- Flowering and non-flowering Scotch broom and small English hawthorn, European ash, evergreen daphne were removed from the central meadow (area #11 towards area #2). Material was removed for chipping.

### **September 14** (crew leader + 5 staff)

- Scotch broom, European ash and evergreen daphne were removed from previously uncleared area west of #15.

### **September 15** (crew leader + 5 staff)

- The crew re-cleared the central meadow (area #7, #4, #2 and #8) of Scotch broom, European ash, English hawthorn, evergreen daphne and Himalayan blackberry. Material was removed for chipping.

### **September 16** (crew leader + 4 staff)

- Locations of species at risk were identified. The crew removed evergreen daphne, English hawthorn, European ash and Scotch broom from area #5 and #6 off Dorset Road. Material was removed for chipping.

### **September 17** (crew leader + 5 staff + 2 arborists)

- The crew was given a safety orientation and instruction on use of the chipper and safety around chain saws.

- The crew cut English hawthorn, European ash and English holly in the central meadow (area #7, #4, #2 and #8). All material was chipped on site.
- Gorse seedlings were treated with Roundup in areas where soil had been scraped (area #8).

**September 18** (crew leader + 5 staff + 2 arborists)

- The crew cut English hawthorn and European ash in the central meadow (area #7, #4, #2 and #8) and south of area #11. All material was chipped on site.

**September 21** (crew leader + 5 staff)

- The crew removed flowering and non-flowering Scotch broom and evergreen daphne from outside and inside the Cattle Point loop (area #9, #10 and #16). Material was removed for chipping.

**September 22** (crew leader + 4 staff)

- The crew removed small European ash and English hawthorn from the southern edge of the central meadow (between #8 and #2). Material was removed for chipping.

**September 23** (crew leader + 4 staff)

- The crew removed small European ash and English hawthorn from the southern edge of the central meadow (between #8 and #2). Material was removed for chipping.

**September 24** (crew leader + 4 staff)

- Scotch broom, European ash and evergreen daphne were removed from previously uncleared area west of #15. Material was removed for chipping.

**September 25** (crew leader + 4 staff)

- The crew cleared Scotch broom, evergreen daphne, small European ash and English hawthorn from the area south of #11. Material was removed for chipping.

**January 15** (crew leader + botanist)

- Larger gorse plants were removed from area #5. Material was removed for chipping.

## Appendix B. Amount of Biomass Removed from Uplands Park

<b>Date</b>	<b>Amount of biomass removed</b>	<b>Species removed</b>
<b>September 8</b>	0.5 yards	Scotch broom and evergreen daphne
<b>September 9</b>	1 yards	Scotch broom and evergreen daphne
<b>September 10</b>	1.5 yards	Scotch broom, European ash, English hawthorn, evergreen daphne, Himalayan blackberry and gorse
<b>September 11</b>	1 yards	Scotch broom, European ash, English hawthorn and evergreen daphne
<b>September 14</b>	1 yards	Scotch broom, European ash and evergreen daphne
<b>September 15</b>	1.5 yards	Scotch broom, evergreen daphne, European ash, English hawthorn and Himalayan blackberry
<b>September 16</b>	1 yards	Scotch broom, evergreen daphne, English hawthorn and European ash
<b>September 17</b>	8 yards	English hawthorn, European ash, English holly and gorse
<b>September 18</b>	10 yards	English hawthorn and European ash
<b>September 21</b>	1 yards	Scotch broom and evergreen daphne
<b>September 22</b>	1 yards	English hawthorn and European ash
<b>September 23</b>	1 yards	English hawthorn and European ash
<b>September 24</b>	1 yards	Scotch broom and evergreen daphne
<b>September 25</b>	1 yard	Scotch broom, evergreen daphne, English hawthorn and European ash
<b>January 15</b>	1 yard	Gorse