

Photographic record of vegetation change during restoration process on CBO

Ian McKee



Introduction

This document illustrates the change in vegetation communities on Copeland Bird Observatory that took place during the 'degradation' restoration programme that was carried out between 1996 and 2015.

Aims:

Assess change in vegetation communities:

- Presence and relative cover of the stages of restoration from Bracken, to Red campion cover, to grasses

Methods:

Analysing the images for vegetation cover:

Photographs taken before each lawnmower treatment, rather than after, shows the growth of red campion and bracken more clearly. Photographs taken after treatment can be useful for illustrating the proportion of, or areas with Yorkshire fog grass. This is because the rabbits did not limit the development of the grass, and so a dead 'cushion' usually formed. This cushion was topped by the lawnmowers, leaving a pale straw-coloured surface, from which the grass regrew subsequently. However, the Yorkshire fog grass died out across the island in Spring 2012. This was a significant change, and the cover was replaced with a recovery of red campion, an increased invasion of bracken fronds, and a component of mosses. Only small patches of grasses had naturally regenerated by 2015.

Photographic dates and sites:

Sandy McWilliams took some very useful photographs in 1994, particularly of the South path, and several views from the roof of the old buildings of the North and South gardens, the cricket pitch, and radar. Other photographs taken prior to the first restoration treatment were taken of paths at Toilet steps, Heli-bushes, Gully bridge, and at the Well path.

Sites showing the trend in vegetation community change during the first few years of restoration: Lower Well path shearwater area, Toilet steps, North garden and Gully Bridge.

The photographs will be captioned with:

- Name of the site
- Date, either season and year, or exact date
- Whether the photo was taken before or after treatment
- Date of previous treatment

Contents

An illustration of the changes in vegetation communities during restoration

- 1) Lower Well path shearwater area
- 2) Toilet steps

Before and after photographs of specific sites to illustrate change over a period of time

- 1) North garden
- 2) Gully bridge

Lower Well path shearwater area



Left: 4th July 2009,
before first
treatment, showing
bracken, thistles,
grasses in
foreground edge

**Right: 3rd October
2010.** first scything
and raking on 14th
August, then first
mown on 2nd
October

Change: increased
cover of grasses



**Left: 14th
August 2011.**
Previously
mown
on 9th April, 6th
July, 8th August.

Change: further
increase in cover
of grasses

**Right: 23rd
August 2012.**

Previously
mown on 18th
May, 13th June,
11th July.

Mown again
after photo on
29th August and
7th October

Change: death
of grasses, re-
colonisation of
red campion



Lower Well path shearwater area, continued



Left: 18th August 2013. previously mown on 22nd May, 9th July.
Then mown on 20th August, and 9th October.



Right: 20th July 2014. previously mown on 1st June.
Then mown on 22nd July, 16th September.
Change: increased cover of mayweed, reduction in red campion



Left: 13th September 2015.
Previously mown on 20th May, 30th June.
Mown after on 16th September.
Change: high cover of mayweed

Discussion of changes to “Lower Well Shearwater area”.

The number of treatments per year varied slightly. First year was treated twice, from mid way through the season. Then 2011, 2012, and 2013 received 4 treatments, with 2014 and 2015 only receiving 3 per year.

The ground was covered with a fairly high proportion of bracken litter and red campion at the start in 2010, which decreased over time. The cover of grasses increased dramatically from 2010 to 2011 in response to the treatments. However, the death of Yorkshire fog grass across the whole island (including areas that were not managed) was a significant event. Red campion cover increased again, as did ragwort.

The latest dominant species on this site is *Tripleurospermum maritimum* (Sea mayweed). This only occurs in one other place on the island at the “Cliff Edge Steps to Bluebell” path. It is thought this is the result of so many mowing treatments that have suppressed the red campion plants and possibly reduce the plant available nitrogen to below the threshold that red campion requires.

This progression is typical of most sites around the island, until 2014 onwards, when Sea mayweed increased in cover. It is absent from other sites.

Toilet steps shearwater area



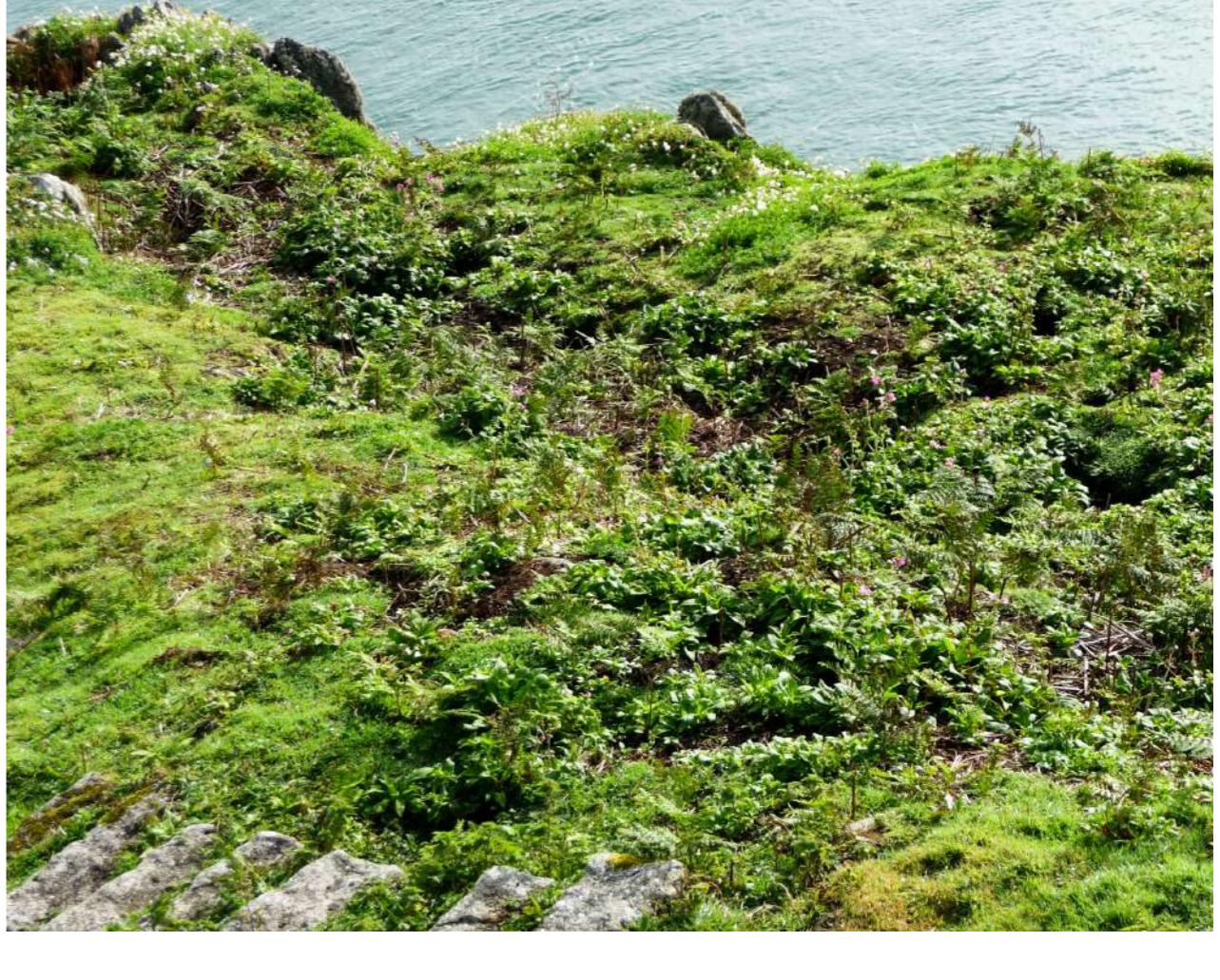
Left: 1st August 2010. previously scythed and raked on 4th July 2010.

This site had been strimmed from 2007 to 2009. Note the bracken litter and red campion cover

Right: 12th September 2010. previously mown on 1st August (left).

Subsequently mown on 12th September and 5th October.

Change: increase in grasses cover



Left: 6th August 2011. Previously mown on 14th May, and 4th July.

Subsequently mown on 6th August and 20th October.

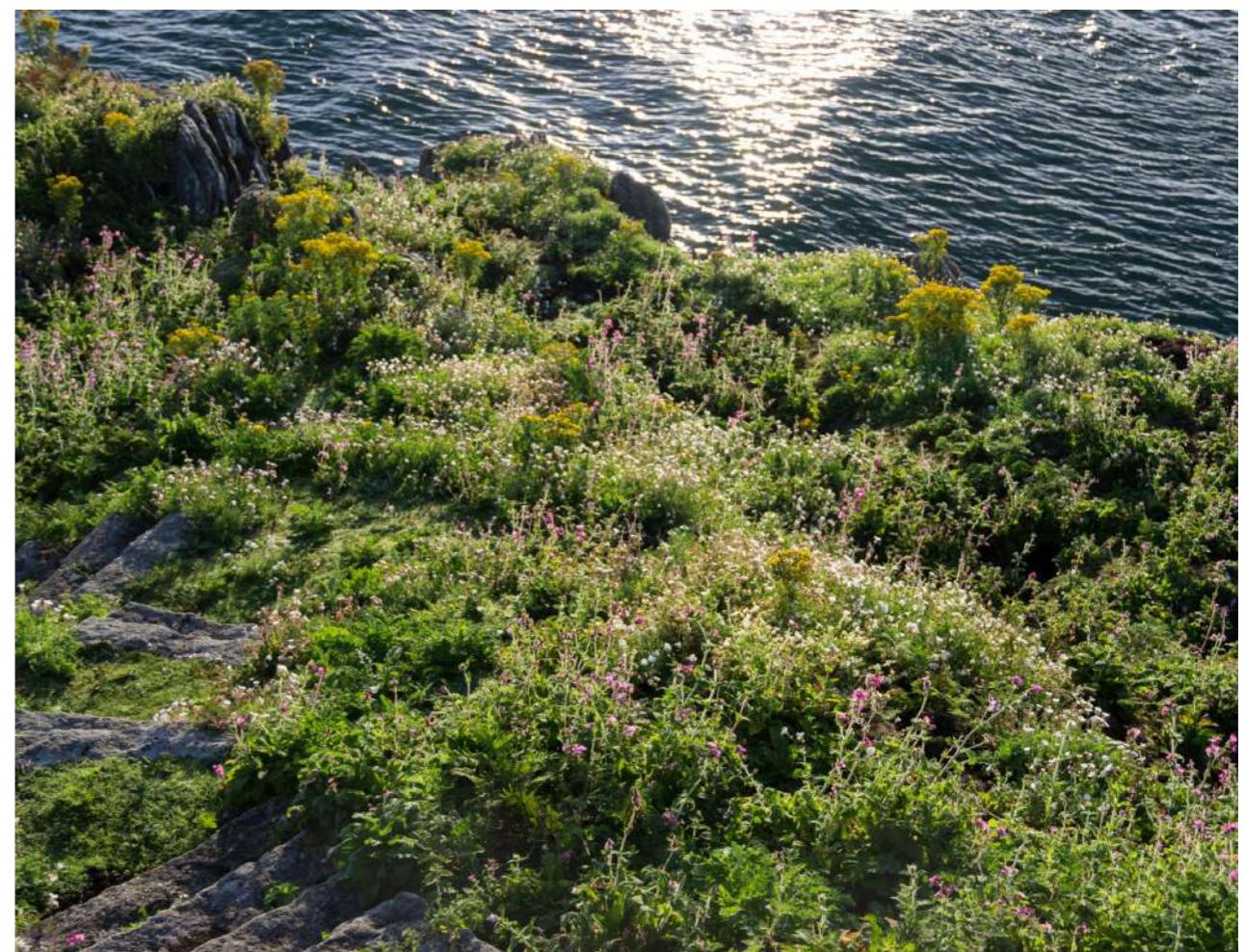
Change: increase in grass cover

Right: 25th August 2012.

Previously mown on 14th July.

Subsequently mown on 26th August and 9th October.

Change: absence of grasses, increase in sea campion and red campion



Toilet steps shearwater area continued



Left: 5th October 2013. Previously mown on 6th July and 23rd August.
Mown again on 10th October.
Change: increase in sea campion and red campion



Right: 18th September 2014. not previously mown that year, due to machine breakdown.
But was partly scythed and raked.
Change: increase in red campion



Left: 2nd August 2015. Previously mown on 21st May and 29th June.
Mown again on 7th August.
Change: increase in ragwort and bracken

Discussion of changes to “Toilet steps” Shearwater area

The number of treatments per year varied slightly. This site was unusual because it had a regular strimming treatment prior to the first mowing and lifting cuttings.

The first year of restoration consisted of one scything and raking event, and three mowing treatments. Then there were four treatments during 2011, three during 2012 and 2013. Only mown once during 2014, and then received 3 treatments during 2015.

The cover of grasses increased dramatically from 2010 to 2011 in response to the treatments, probably because the bracken litter was removed and the red campion was being cut frequently. However, the death of Yorkshire fog grass across the whole island (including areas that were not managed) was a significant event. Red campion cover rose again, which at the time was regarded as a good opportunity to crop more biomass in an efficient way. However, on this site, Sea campion also spread into the areas left bare by the grasses.

Most of the bare soil areas were created by rabbits and shearwaters digging burrows to create spoil heaps and furrows. The bracken and red campion was much less prolific than during the years when the site was strimmed, prior to restoration.

North Garden

Top photo was merged from two photos taken by Sandy McWilliams in 1994. The bottom image is of two merged photos taken on 6th June 2014.



Gully Bridge



The left photo was taken during the 1990s in late Autumn, showing dense bracken (rusty brown), and red campion on the path. The right photo was taken on 30th May 2014, having not been mown yet that season. The larger plants in the foreground are Marsh Marigold, and the grey/blue patch is Pennywort.