CHAPTER 5. PLANTS AND HABITATS

5.1. SUMMARY

2016

In 2016 the plant community survey was carried out using the same field methods as had been used in 2013 and 2014.

The results of the 2016 survey indicates that there have been no major changes in the vegetation since 2014 that are definitely attributable to the rat removal project such as major change in plant community type, vegetation height or habitat structure.

Total species numbers on all three islands showed only insignificant changes (≤ 25%) since 2014; however there was a significant drop in species number on St Agnes in Coastal Grassland and on Foreshore habitats and on Gugh in the Scrub habitat, and a significant increase in species number in Coastal Grassland on Bryher.

Table 5.1. Summary of significant (> 25%) **change in the number of species in each habitat type on St Agnes, Bryher and Gugh between 2014 and 2016**

	Bryher 2014-16	Gugh 2014-16	St Agnes 2014-16
Heath	⇔	⇔	⇔
Scrub	⇔	⇩	⇔
Coastal grassland	⇧	⇔	⇩
Foreshore	⇔	⇔	⇩
Species total per island	⇔	⇔	⇔

2013, 2014 and 2016

There are no trends in the data that indicate that the rat removal has had a significant effect on the sampled vegetation communities either in the short term or the medium term. Vegetation communities are dominated by the same species as those before the rat removal and the changes in number of species in the habitats on each island is insignificant (ie ≤ 25%).

Summary of significant change in the number of species during the project 2013 and 2016 in each habitat type on St Agnes, Bryher and Gugh

	Bryher 2013-2016	Gugh 2013-16	St Agnes 2013-16
Heath	⇧	⇧	⇧
Scrub	⇧	⇧	⇔
Coastal grassland	⇧	⇔	⇔
Foreshore	⇧	⇔	⇔
Species total per island	⇔	⇔	⇔

The results of 2016 surveys indicate that there have been no major changes in the vegetation that are definitely attributable to the rat removal project such as major change in plant community type, vegetation height or habitat structure.

All the plant communities on Bryher show a significant (> 25%) increase in the number of plant species. On Gugh there has been significant increase in the species numbers on heath

and scrub but only an insignificant increase in coastal grassland and foreshore. On St. Agnes only the heath has shown a significant increase in species number.

There is a significant presence of self-sown seedling plants of the non-native seedling Pittosporum on St Agnes and Gugh, particularly in heathland, but a very low occurrence on Bryher. The removal of rats does not appear to have had a direct effect on the *Pittosporum* seedling success.

5.2. AIM OF THE SURVEY

The primary aim of the vegetation monitoring has not changed since the start of the project in 2013. The aim of the vegetation survey is to monitor the semi-natural vegetation communities present on St Agnes, Gugh and Bryher to identify and assess changes following the rat removal in the winter of 2013/2014; to achieve this the character and physical structure of the four main habitat types (scrub, heath, coastal grassland and foreshore) in 2013, 2014 and 2016 have been recorded, analysed and compared.

Changes in the plant community as a result of the rat removal were not expected to be immediately conspicuous in the data gathered in 2014. Additionally trends in the 2014 data that could be attributed to rat removal might have been masked by the effects of extreme weather such as drought, seaspray, coastal erosion, or changes in management such as cattle grazing; it was believed that longer term trends, if indeed there were any, would be identified from data gathered in 2016, ie after three full calendar years.

5.3. INTRODUCTION

The vascular plant species community in each of the four targeted habitat types was recorded with basic physical characteristics such as species abundance and vegetation height, together with the presence of non-native species.

Data collection methods followed those developed in the 2013 baseline survey with four tranches in May, June, July, and September 2016 for each of the four habitats on the three study islands of the project – Gugh, St Agnes and Bryher.

5.4. METHODOLOGY

The methods used to survey have been described in the report for 2013.

This report:

- examines the 2016 data
- assesses differences between 2014 and 2016
- assesses 2013, 2014 and 2016 together.

5.4.1. Fixed quadrats

The use of fixed quadrats for monitoring was rejected for several reasons: several of the habitats are occasionally grazed by cattle so that post marking for resurvey would certainly be problematic and there is a particular danger of damaging the extensive archaeological interest. Using expensive GPS equipment to relocate quadrats would be beyond the budget for the project. Additionally the frequency of survey over the project had a much higher risk

of surveyor effect on a fixed quadrat and the surrounding vegetation than from random quadrats.

5.4.2. Data analysis objectives

Data was gathered and analysed with the following objectives

- identifying changes in vegetation communities,
- identifying changes in physical structure (height) of vegetation
- identifying changes in community dominance and species number
- identifying presence of non-native *Pittosporum crassifolium* seedlings.

Vegetation communities

The plant communities on each of the four habitats have been investigated initially using a combined statistical and graphics technique which can display the level of similarity between two sets of species relative abundance data as smaller distance and the level of dissimilarity as greater distance on a graphical display as shown in Figure 5.1. The communities have been characterised by frequency of occurrence of each species (the method used for National Vegetation Classification/British Plant Communities system). This treatment provides an indication of the way the recorded vegetation communities group together and assists in identifying marked differences and changes over the project lifetime. The analysis could identify shifts in the community structure, as defined by species relative abundance, that moved the community away from the baseline 2013 data and potentially toward one of the other habitat types such as heath increasing in similarity to scrub or grassland.

Physical vegetation structure

Data on average and maximum heights of the vegetation within each quadrat was gathered to identify trends that could be related to removal of rat foraging activities such grazing on seasonal growth extension.

Community dominance and species number

The data have also been examined for changes over the three sample years in specific dominance within the habitats; the data used to indicate dominance has been relative abundance within the quadrats and frequency in the quadrat set for each sampling tranche.

The numbers of species within the dataset for each habitat has also been investigated for indications of increased species richness. Charts have been used as a simple method to indicate any trend in species numbers in each habitat on each island.

Presence of non-native *Pittosporum crassifolium* seedling

As an incidental result of the quadrat data gathering the occurrence of the non-native evergreen shrub *Pittosporum crassifolium* as seedlings in the various semi-natural vegetation communities became evident. The potential for colonisation of semi-natural habitats by *P. crassifolium* – in particular in the high value heath communities – was thought to be possibly linked to the foraging habits of the rats. Consequently data for that species was examined

more closely for trends. This may be an important nature conservation feature that responds to reduced seed mortality as a result of the rat removal.

5.5. RESULTS

5.5.1. Vegetation communities

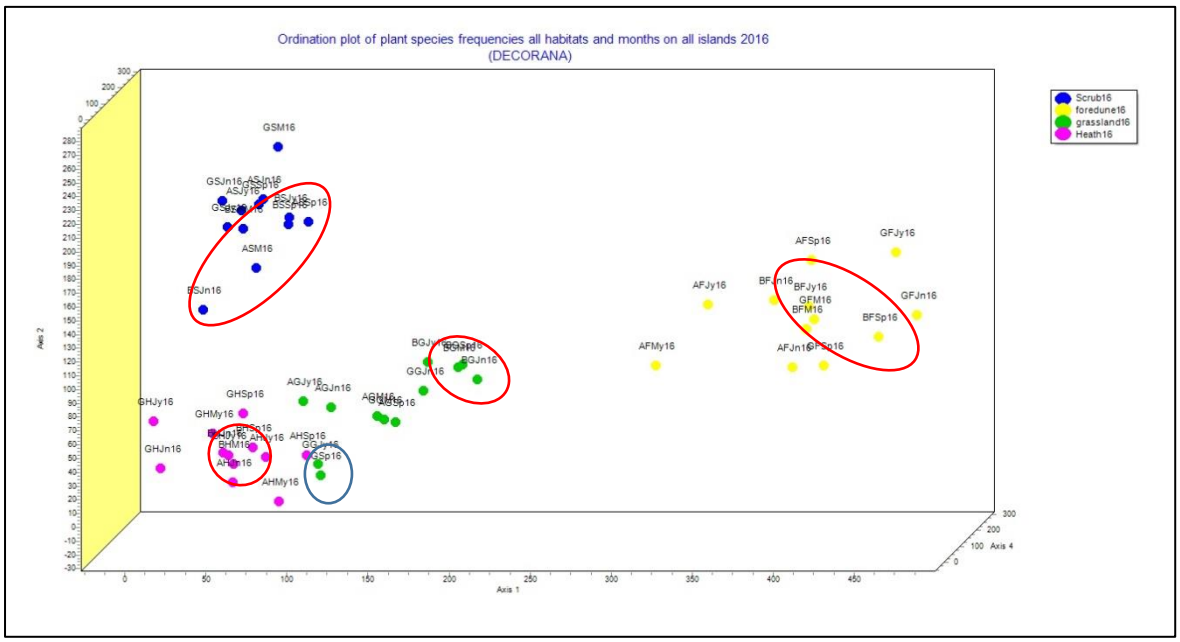
2016 data

The Figure 5.1 shows the graphical display of the similarity and dissimilarity levels between the quadrat species frequency data for 2016.

The display indicates that the four habitat types (heath, scrub, coastal grassland and foredune) support relatively discreet plant communities on all sample islands, particularly in the case of foredune (the yellow markers) and scrub (the blue markers), but that there was a degree of similarity in the heath and coastal grassland communities (the purple and green markers) on St Agnes and Gugh habitats, as indicated by the slight overlap in positioning of the markers for quadrat sets from the two islands (circled in blue). The Bryher data (indicated by the red circles) retained the highest level of similarity throughout the season in the coastal grassland and heath habitats but as with Gugh and and St Agnes there were characteristic seasonal changes throughout the four months in the foredune and scrub habitats.

The wide scattering of the foredune communities (yellow markers) for all islands in 2016 predictably reflects the dynamic nature of the habitat and the associated vegetation community throughout the season with growth responding to disturbance from sand movement, tidal effects and erratic nutrient levels.

Figure 5.1. DECORANA plot of plant community data (frequencies) from each habitat on each island for 2016 with plotted distance showing the levels of similarity/dissimilarity (GH = Gugh heath; GF = Gugh foreshore; GS = Gugh scrub; GG = Gugh grassland; B = Bryher, A = Saint Agnes etc)



The St Agnes sample exhibits this effect particularly; this island sample habitat receives full exposure to the prevailing weather patterns and the associated vegetation community is by necessity robust in response to disturbance. The effects of rat removal on foreshore are unlikely to be observable on this habitat.

The other three habitat types are less dynamic and the plot is interpreted as showing largely consistent vegetation communities in each habitat over the 2016 season; this can be attributed to stable habitat and low levels of disturbance.

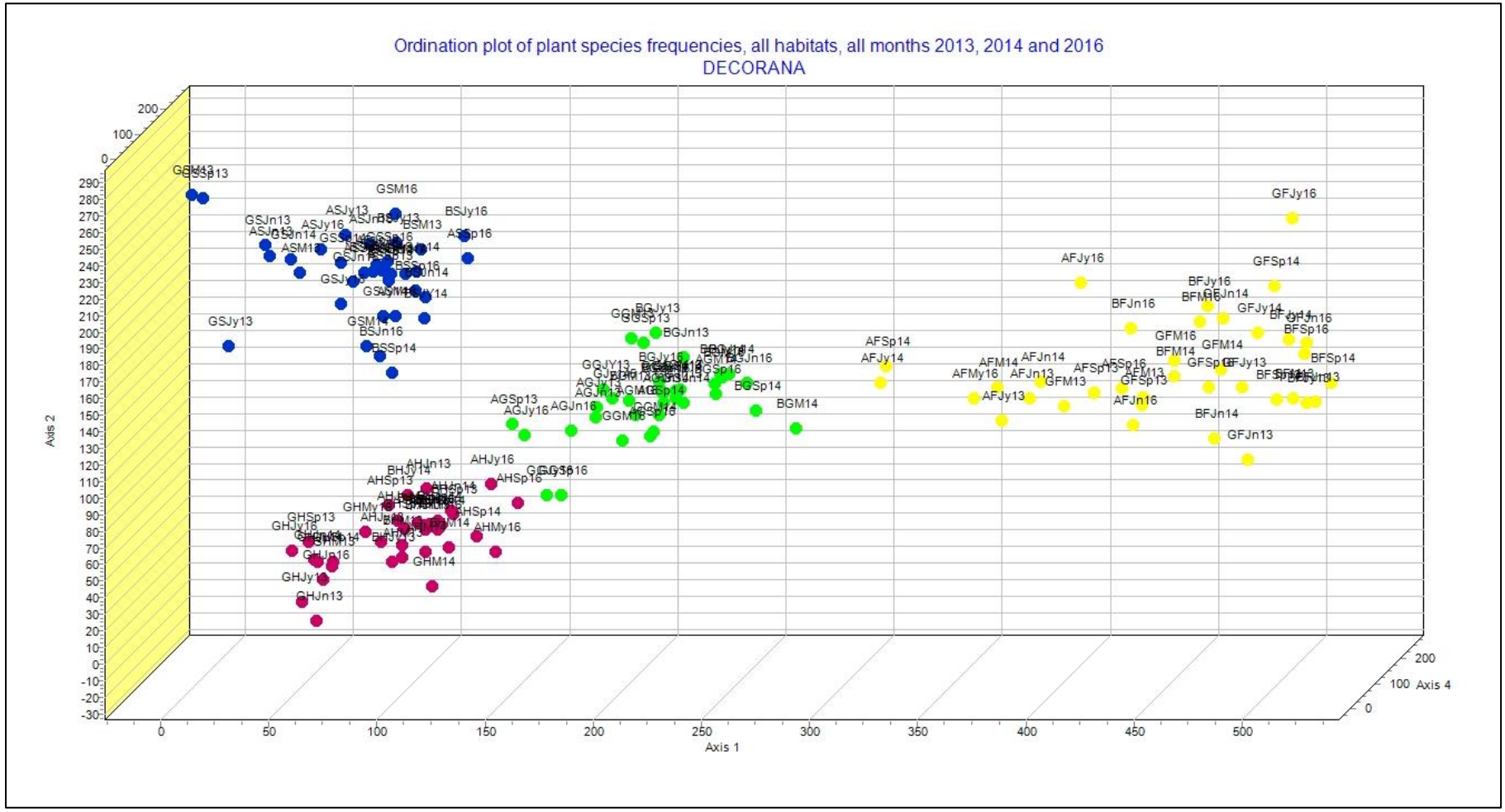
Conclusion

For 2016 there is no distinctive pattern in the ordination plot other than a grouping of data which reflects vegetation communities and habitat types which could be readily characterised by standard methods such as British Plant Community (NVC) types, based on similarity/dissimilarity.

Comparison between data from 2013, 2014, and 2016

The aim of this section is to analyse the complete data set to identify trends that could be attributed to the rat removal such as changes in vegetation height as a result of reduction in generalist foraging/grazing or reduced ruderal occurrences. Figure 5.2 displays the analysis.

Figure 5.2 DECORANA plot of plant community data (frequencies) from each habitat on each island for 2013, 2014 and 2016 with plotted distance showing the levels of similarity/dissimilarity (blue = scrub, yellow = foredune, green = coastal grassland, purple = heath)



5.5.2. Physical vegetation structure

2016

The mean heights and the maximum heights recorded in vegetation quadrats from the four habitats on each island in 2016 are shown in charts in Appendix 5.2.

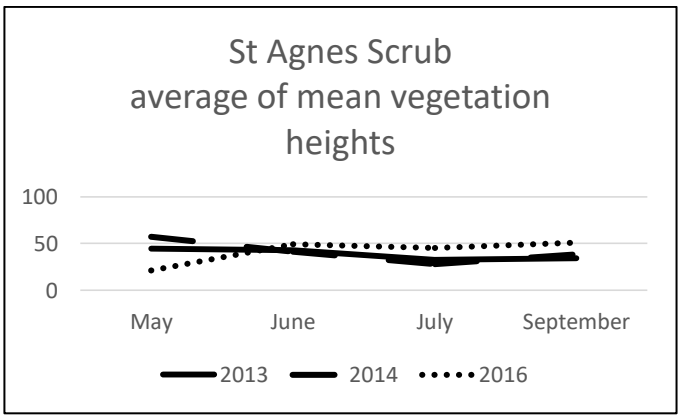
Comparison of height data with previous years

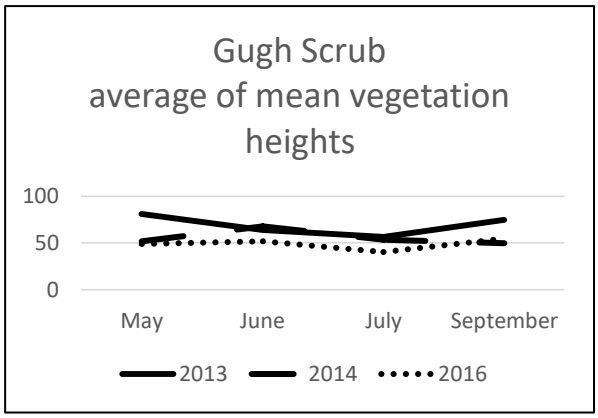
The data for mean heights are summarised in the Figures 5.3, a - m to investigate any conspicuous trends in the overall vegetation height.

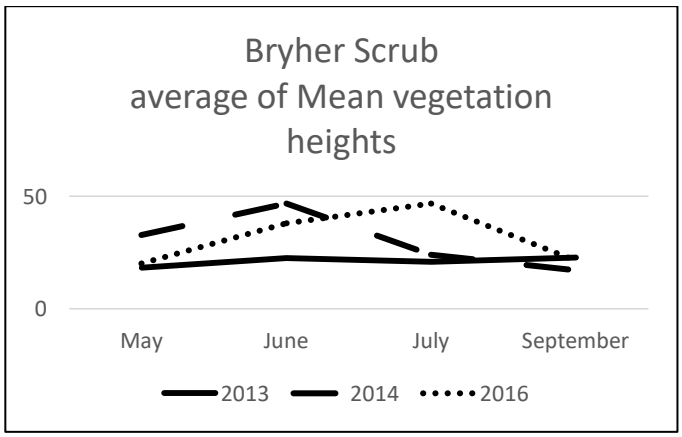
Scrub

The scrub communities showed a decrease in mean heights (and in most cases maximum heights) in July for 2013 and 2014 on all islands; this may be attributable to weather effects such as salt spray burning off tip growth or grazing removing the tender spring growth rather than effects from rats since the control stand on Bryher shows the same pattern, and the pattern is repeated in 2014 and in 2016 scrub communities on St Agnes and Gugh which again show a decrease in mean heights, indicating there is no link between loss of mean height and rat removal. Moreover in 2016 on Bryher (the control site) there was a peak in mean scrub heights which indicates that there are other factors rather than rat removal which are affecting scrub growth during the season.

Figures 5.3 a-c







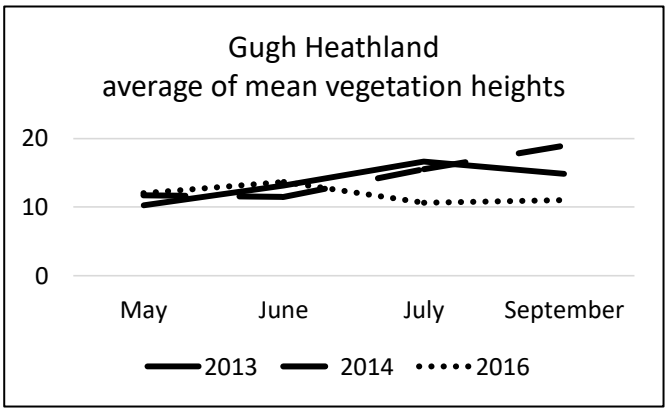
Heath

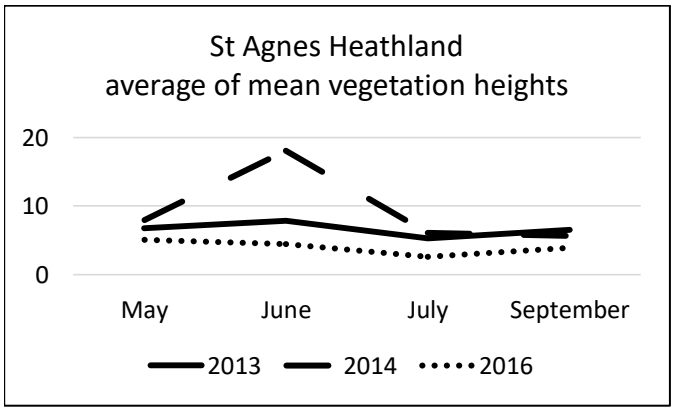
The mean heights of the heath communities on the control island of Bryher show a readily identifiable pattern where spring growth produces maximum heights in June, but there is a gradual decline in average height through the summer which probably relates to the combined effects of exposure and grazing (i.e. effects such as salt spray, desiccation, cattle and/or invertebrate grazing, with occasional taller growth of scattered grasses and broadleaved herbs), and loss of flowering spike height.

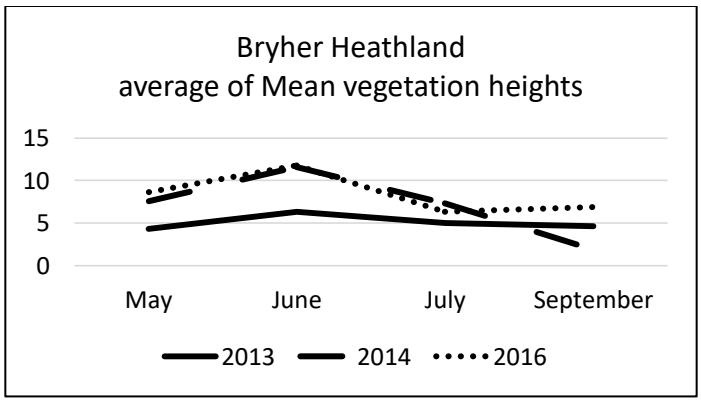
On Gugh however the gradual increase in the height of the heath through the season, indicated in 2013, was more pronounced in 2014. This was attributed to reduced grazing pressure as a result of the rat removal since heath vegetation is known to be a significant part of their diet. However in 2016 height of heath was fairly stable throughout the season so that the supposed effect of the rat removal on heath growth is not certain and other factors, possibly seasonal rainfall, appear to be acting as limiting factors.

St Agnes heathland shows no trend in increased sward height; the mean heights in 2014 indicate a spring flush in growth height that rapidly disappeared to return to the height range of the previous year. In 2016 growth followed a similar pattern to 2013; the lower level could again be attributed to other limiting factors.

Figures 5.3 d - f



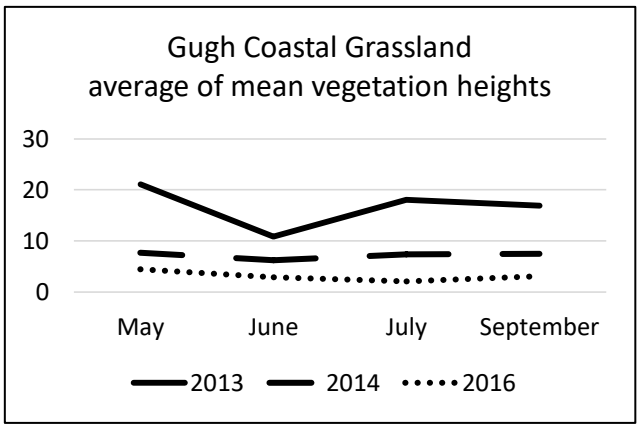


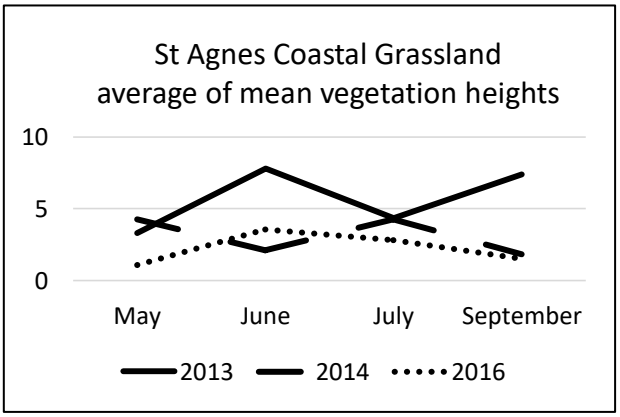


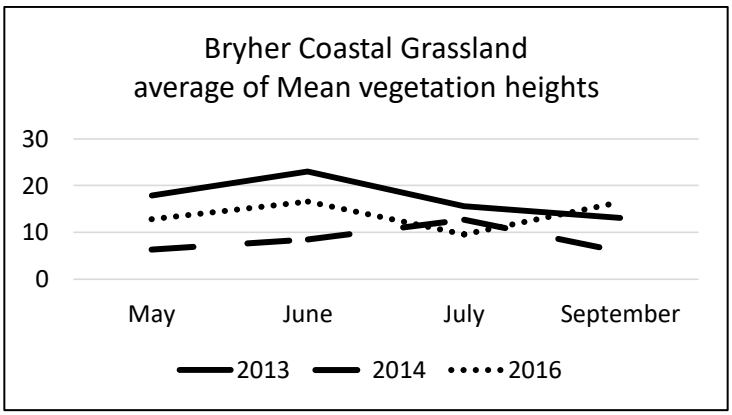
Coastal grassland

Mean heights of coastal grasslands across all three islands over the three years show no consistent pattern. However there was less variation in heights across all the islands in 2014 and 2016 when compared to 2013; this possibly indicates a less disturbed sward related to absence of rats, either as a direct effect from removal of, for example, grazing or digging, or an indirect effect via changes to other species. The peak in heights varies between June/July on Bryher and St Agnes whereas Gugh shows minimal variation. This lack of seasonal variation on the Gugh coastal grassland habitat is almost certainly because of the thin dry soils which limit the vegetation cover to an open low growing plant community of drought tolerant species.

Figures 5.3. g-i



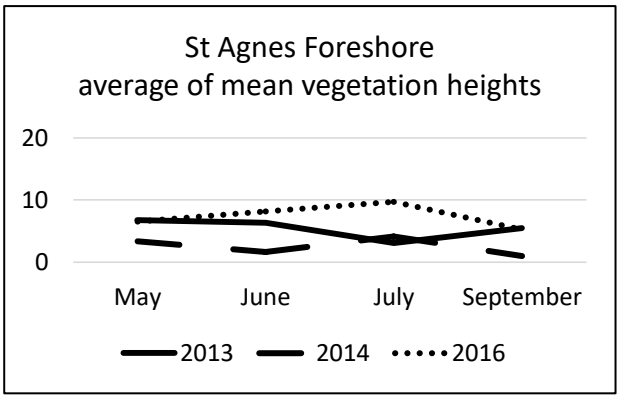


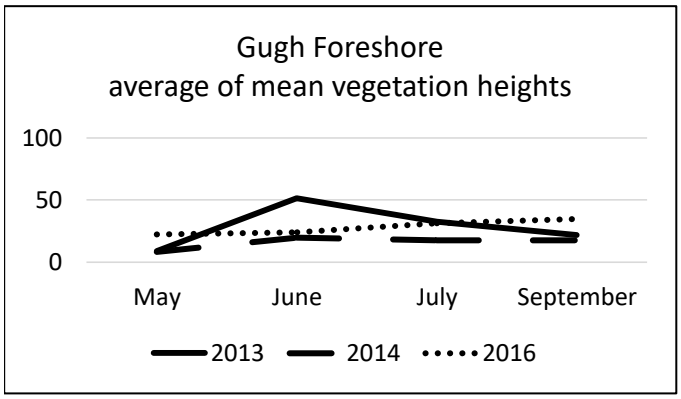


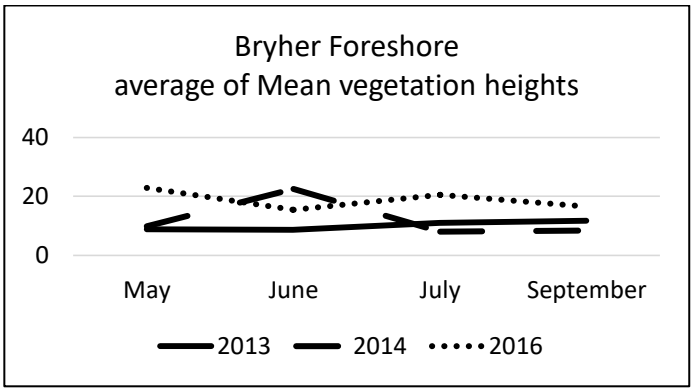
Foreshore

Foreshore vegetation mean heights are variable and almost certainly reflect the open, exposed, dynamic nature of the habitat and associated vegetation. However it is noticeable that on Gugh the mean height varied much less in 2014 and 2016 than in 2013 whilst the Bryher foreshore community was more variable in 2014. There is no immediately apparent link between the trend in a more even sward height on St Agnes and Gugh and the removal of the rats although the trend is reversed on Bryher, the control island. However the foreshore on all islands was subject to severe storms that reworked the soils and habitat.

Figures 5.3 k - m







Conclusion

Despite the interim conclusion that the removal of rats had allowed a sustained increase in heath vegetation height through the summer of 2014 the results from 2016 indicate that the effect was probably due to another limiting factor since the pattern was not replicated in 2016. Overall there has been no significant change in the height of the scrub, heath or coastal grassland during the 2013 to 2016 period on St Agnes and Gugh that would be attributable to the removal of rats

5.5.3. Community dominance and species number

2016

The quadrat data show a dominance of the plant communities by characteristic species for the habitat in the three more stable habitat types: ericoid shrubs on heathland, Red Fescue and maritime herbs on the coastal grassland and Bramble and European Gorse on the scrub. The foreshore communities had no constant species; this is typical of the habitat and more detailed analysis of the species data showed that the most frequently occurring species Sea Sandwort *Honkenya peplioides* and Marram *Ammophila arenaria* on the sandy shore and Rock Samphire *Crithrum maritimum* on the rocky shore are all characteristic of the most seaward habitat on each sample area.

Table 5.1. Species constant within the sample quadrats for all islands during 2016

	Constant species				
Habitat	**Bryher**		**Gugh**		**St Agnes**
Heath	*Calluna vulgaris* *Erica cinerea* *Lotus corniculatus*		*Calluna vulgaris* *Erica cinerea*		*Calluna vulgaris* *Erica cinerea* *Lotus corniculatus*
Scrub	*Ulex europaeus*		*Rubus fruticosus agg.*		*Ulex europaeus*
Coastal Grassland	*Armeria maritima* *Festuca rubra*		*Lotus corniculatus* *Festuca rubra*		*Agrostis sp.* *Festuca rubra* *Lotus corniculatus*
Foreshore	No Constant		No Constant		No Constant
Species total per island	48		65		54

The changes in number of constant species, and the loss or gain of constant species, do not show a conspicuous trend that can be attributed to a particular ecological factor. but there has been a significant decrease in species number on particular habitats on Gugh and St Agnes since 2014 which is masked by the species totals.

There has been a small shift in the species occurring infrequently or in low abundance; listed in Table 5.2. below are species that were recorded in quadrats for the first time in 2016 and those previously recorded but not recorded in 2016.

T**able 5.2. Changes in species recorded in quadrats in 2016**

Species newly recorded in 2016	**Species recorded previously but not in 2016**
Aira sp	*Chamaemelum nobile**
Bellis perennis	*Epilobium montanum**
Juncus sp	*Hypochoeris radicata*
Mentha sp.	*Leontodon hispidus*
Sedum sp	*Ranunculus ficaria*
Silene uniflora	*Senecio jacobaea**
Taraxacum sp.	*Sonchus asper**
Umbilicus rupestris	

Of the species recorded previously but not re-recorded in 2016 there are four *Chamaemelum nobile*, *Epilobium montanum*, *Senecio jacobaea*, *Sonchus asper* (marked in the table with asterix *) that have ruderal characteristics whereby they are able to exploit local disturbance. However the contribution of the species to the communities was at a low level so their presence/absence and disappearance is deemed insignificant and not attributable to the rat removal.

5.5.4. Comparison of species data from 2013, 2014 and 2016

Table 5.3. shows the species count summaries for each of the habitats on the islands for the three surveyed years, and the species that have been classed as ‘constants’ in the plant communities.

Figures 5.4, 5.5. and 5.6. show the number of plant species in 2013, 2014 and 2016 for each island habitat in chart form. Trend lines show the change in number of species per habitat over the three years.

From 2013 to 2014 on Bryher and St Agnes there was a significant increase (>25%) in the number of species recorded within each habitat. There was an increase in the number of species in all habitats on all islands except for an insignificant decrease within the coastal grassland habitat on Gugh.

From 2014 to 2016 within the coastal grassland and foreshore habitats there was a significant decrease in the number of species recorded on St Agnes. It is thought that the decrease within the foreshore habitat may be due to recording error (based on the uncharacteristically high number of species recorded in 2014). Over the same time period there was a significant increase in the number of species recorded within the coastal grassland habitat on Bryher.

On St Agnes within the heathland from 2013 to 2014 there was an increase in the number of constant species followed by a decrease in 2016 to below the 2013 level. Within the scrub the constant species did not change from 2013 to 2014 but in 2016 there was a decrease in the constant species recorded. Within the coastal grassland from 2013 to 2014 there was an increase in the number of constant species recorded, but again in 2016 there was a decrease, the number returned to that recorded in 2013. The foreshore habitat on St Agnes is shown as decreasing in constant species between 2013 to 2014 and in 2016 no constant species were recorded. Overall constant species showed a decline in 2016 on St Agnes.

On Gugh within the heathland across the three years the number of constant species remained the same. Within the scrub from 2013 to 2014 there was no change in the number or species composition of the constant species recorded. In 2016 there was a decrease in the number of constant species recorded with a loss of European Gorse as a constant, indicating an opening of the scrub cover and reversal of successional scrub development. Within the coastal grassland from 2013 to 2014 there was an increase in the number of constant species recorded but from 2014 to 2016 the number of constant species decreased. Within the foreshore there were no constant species recorded across the three years on Gugh. Overall Gugh remained more stable than St Agnes, with no change in the heathland or foreshore habitats.

On Bryher within the heathland there was an increase in constant species from 2013 to 2014 but a decrease in 2016 to a value lower than recorded in 2013. Within the scrub there was an increase in the number of constant species recorded in 2013 to 2014, from 2014 to 2016 there was a decrease in the number of constant species recorded. Within the coastal grassland from 2013 to 2014 the number of constant species remained the same. There was a decline in the number of constant species recorded in 2016. Within the foreshore from 2013 to 2014 there was a decrease in the number of constant species recorded; there was a further decrease in 2016 with no constant species recorded. Overall 2016 showed a decline in the number of constant species recorded on Bryher.

TABLE 5.3. SUMMARY TABLE OF SPECIES NUMBER AND DOMINANCE IN HABITAT COMMUNITIES FROM PLANT QUADRAT SURVEYS

Habitat	Bryher						Gugh						St Agnes					
	2013		2014		2016		2013		2014		2016		2013		2014		2016	
	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species	No. of species	Constant species
Heath	16	Erica cinerea Lotus corniculatus Calluna vulgaris Hypochaeris radicata	30	Erica cinerea Lotus corniculatus Calluna vulgaris Hypochaeris radicata Festuca rubra	28	Calluna vulgaris Erica cinerea Lotus corniculatus	16	Erica cinerea Calluna vulgaris	26	Erica cinerea Calluna vulgaris	22	Calluna vulgaris Erica cinerea	24	Erica cinerea Lotus corniculatus Calluna vulgaris Potentilla erecta	34	Erica cinerea Lotus corniculatus Calluna vulgaris Potentilla erecta Festuca rubra Pedicularis sylvatica	35	Calluna vulgaris Erica cinerea Lotus corniculatus
Scrub	16	Rubus fruticosus agg Ulex europaeus Holcus lanatus	36	Rubus fruticosus agg Ulex sp. Anthoxanthum odoratum Holcus lanatus Festuca rubra Hypochaeris radicata Rumex acetosa	39	Ulex europaeus	18	Rubus fruticosus agg Ulex europaeus	31	Rubus fruticosus agg Ulex europaeus	23	Rubus fruticosus agg.	19	Rubus fruticosus agg Ulex europaeus	30	Ulex europaeus Festuca rubra	24	Ulex europaeus
Coastal Grassland	15	Lotus corniculatus Festuca rubra agg Armeria maritima	32	Lotus corniculatus Festuca rubra agg Armeria maritima	41	Armeria maritima Festuca rubra	35	Lotus corniculatus Festuca rubra agg Daucus carota agg.	33	Lotus corniculatus Festuca rubra Armeria maritima Plantago coronopus Rumex acetosa	36	Lotus corniculatus Festuca rubra	26	Lotus corniculatus Festuca rubra agg Armeria maritima	38	Lotus corniculatus Festuca rubra agg Plantago lanceolata Plantago coronopus Armeria maritima Agrostis sp. Tripleurospernum	27	Agrostis sp. Festuca rubra Lotus corniculatus

																		inodorum		
Foreshore	9	Honkenya peploides Elytrigia juncea Calystegia soldanella	18	Honkenya peploides	20	No Constant		18	No constant	20	No constant	18	No Constant		16	Crithrum maritimum Elytrigia juncea	37	Elytrigia juncea	13	No Constant
Species total per island	47		64		67			56		60		58			48		65		54	

Figure 5.4

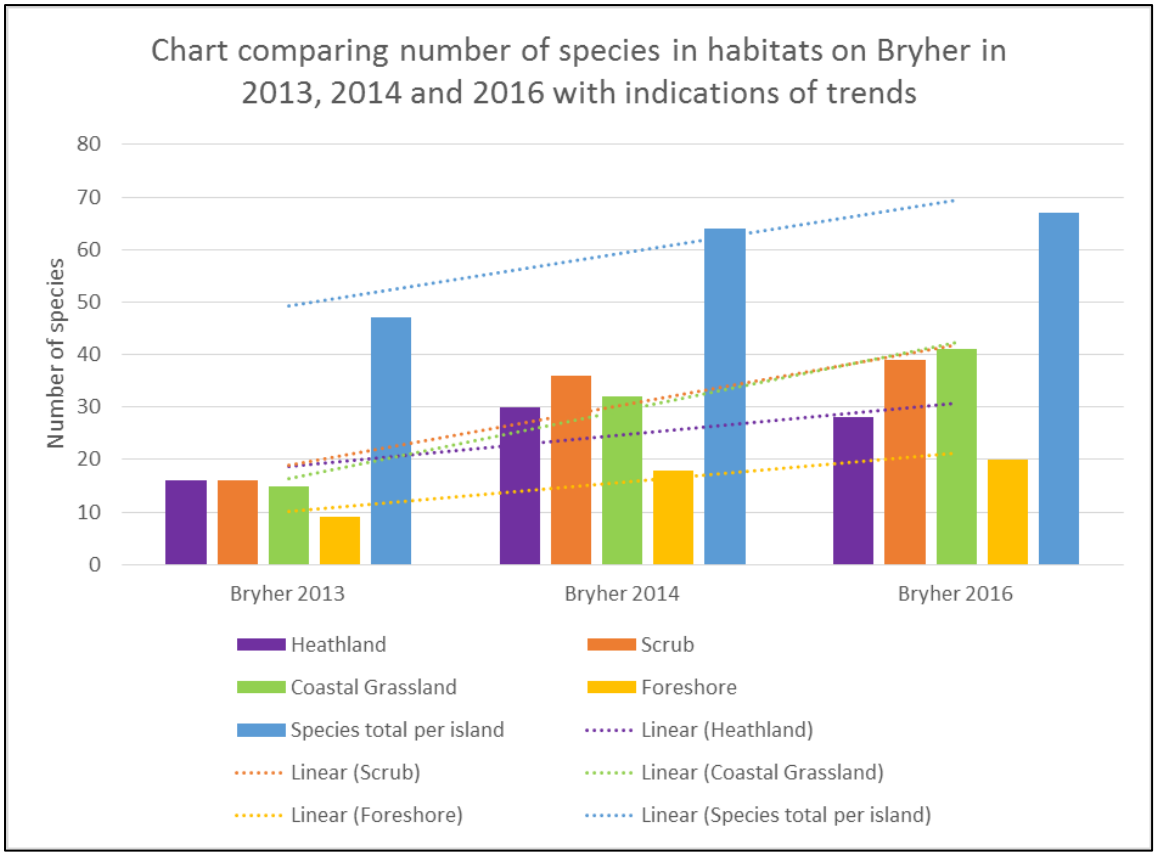


Figure 5.5

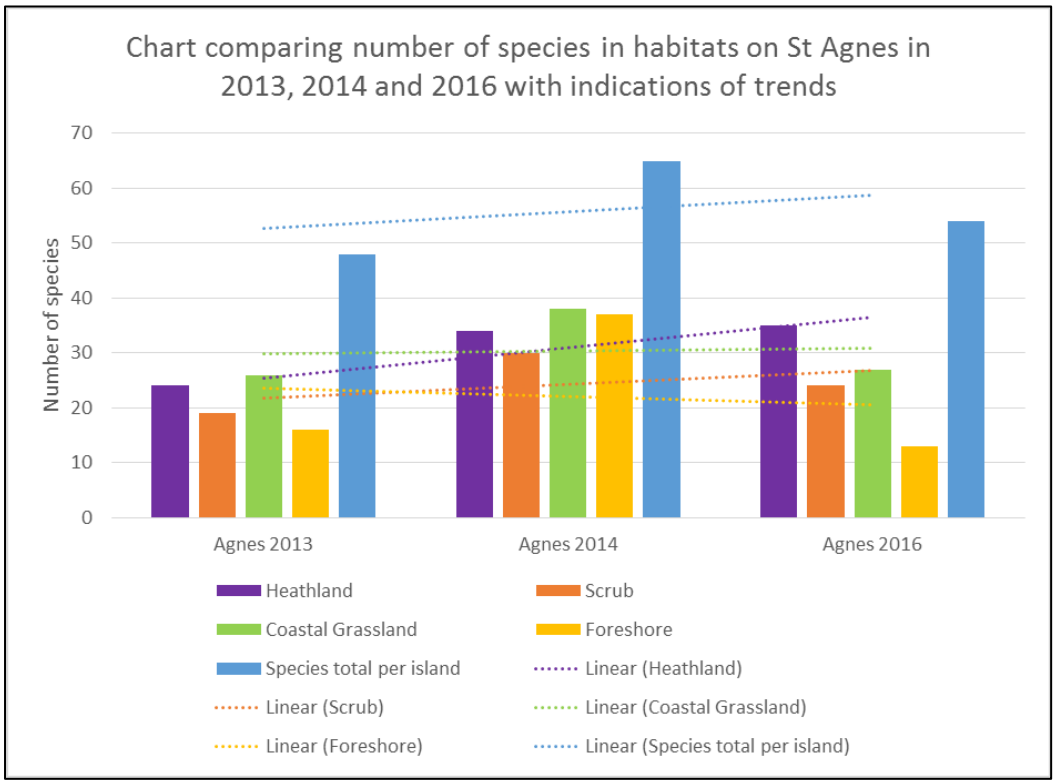
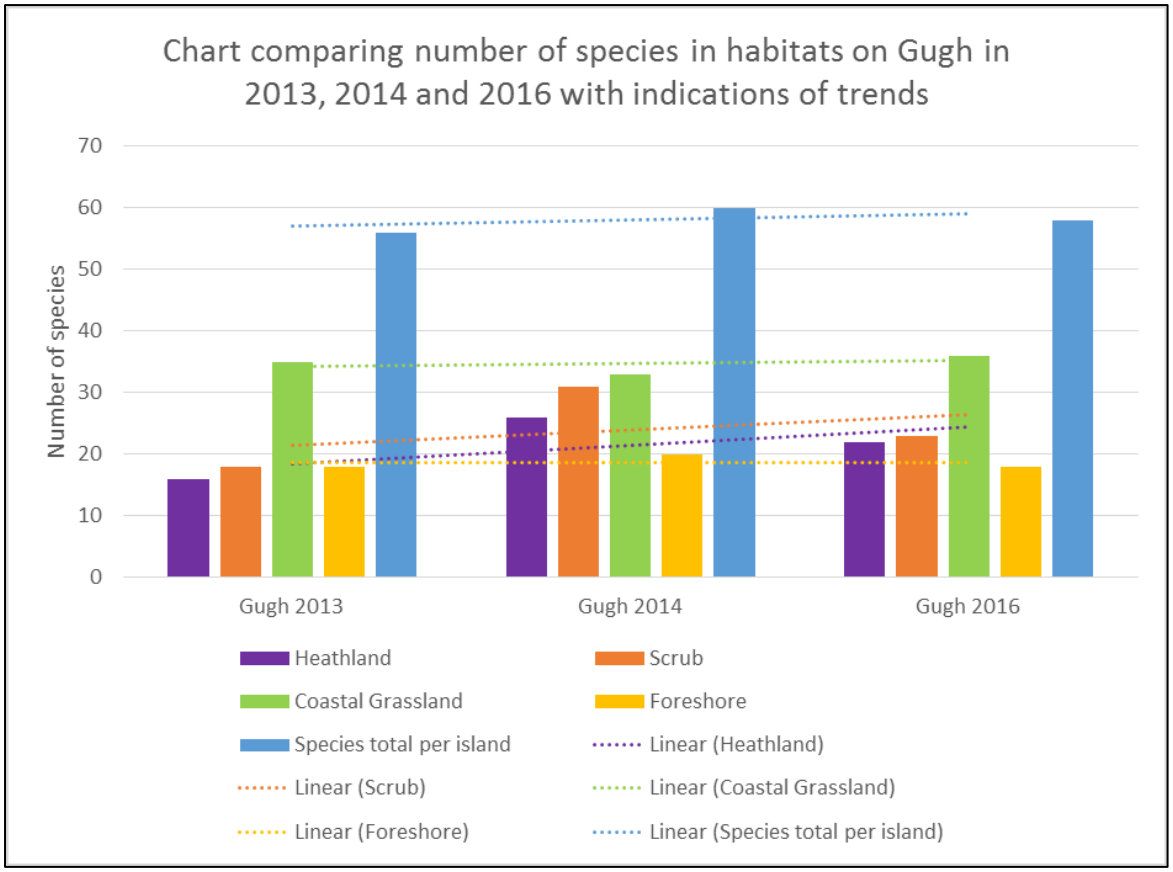


Figure 5.6



Over the course of the three years there is a slight trend of increase in species number in the sample quadrats on all islands but on Gugh and St Agnes this includes a peak in 2014 which was followed by a slight decrease in 2016, whereas on Bryher there was a peak in 2016.

5.5.4. Presence of *Pittosporum crassifolium* seedling

2016

In 2016 Pittosporum plants were recorded in scrub, heathland and coastal grassland on St Agnes and Gugh but the species was not recorded in quadrats on Bryher; it was much more frequent in heath habitat than in coastal grassland or scrub and was not recorded in foreshore habitat.

The data indicate a significant continuing presence of self-sown *Pittosporum* in the semi-natural habitats on St Agnes and Gugh, particularly in heathland, although there is a general trend of decrease in frequency through the growing season.

Table 5.4. summarises the occurrence of *Pittosporum* seedlings in each of the habitats on the three study islands, as recorded in the survey quadrats.

Table 5.4. *Pittosporum* occurrence in survey quadrats from study islands in 2016

Island	Month in 2016	Habitat	Quadrat occurance (no./20)
St Agnes	May	Heathland	4
	June	Heathland	3
	May	Scrub	2
	September	Scrub	1
Gugh	May	Grass	1
	May	Heath	6
	June	Heath	2
	July	Heath	2
	September	Heath	1
	May	Scrub	1
	June	Scrub	1
Bryher	All months	All Habitat	0

2014 – 2016

From 2014 to 2016 there is an observable decrease in *Pittosporum* records in July and September. There was also a notable decrease in the scrub on Gugh in July.

Table 5.5. Occurrence of Pittosporum on habitats on all islands, all months in all survey years

Island	Month	Habitat	2013 quadrat occurrence (no./20)	2014 Quadrat occurrence (no./20)	2016 Quadrat occurrence (no./20)
St Agnes	May	Heathland	0	6	4
		Scrub	0	0	2
	June	Heathland	0	5	3
		Coastal grassland	1	0	0
	July	Heathland	0	2	0
		Scrub	0	1	0
		Coastal Grassland	0	1	0
	September	Heathland	0	5	0
		Coastal Grassland	0	1	0
		Scrub	0	0	1
		Total	1	21	10
Gugh	May	Heathland	2	5	6
		Coastal Grassland	9	0	1
		Scrub	0	0	1
	June	Heathland	2	3	2
		Scrub	1	1	1
	July	Heathland	3	1	2
		Scrub	1	4	0
		Grassland	0	2	0
	September	Heathland	0	2	1
		Total	18	18	14
Bryher	June	Heathland	0	1	0
		Total	0	1	0

Comparing the three islands *Pittosporum* was most frequently recorded on Gugh each year although on St Agnes there was a peak of occurrence in 2014. Bryher has had the lowest record of *Pittosporum*, with one record in 2014.

Pittosporum would not be expected to survive the extreme conditions of the foreshore but clearly it can tolerate the exposure on open heathland, coastal grassland, and, on Gugh in particular, has become a permanent part of the plant community. However there appears to be a turnover in individual plants, with not all seedlings surviving the first year and the general trend in the medium term is for decrease in the number of occurrences on St Agnes and Gugh after a local increase on St Agnes following rat removal.

There is no clear difference between the trends on Gugh and St Agnes on the one hand and Bryher on the other and so there does not appear to be a direct relationship between its presence and the presence of rats.

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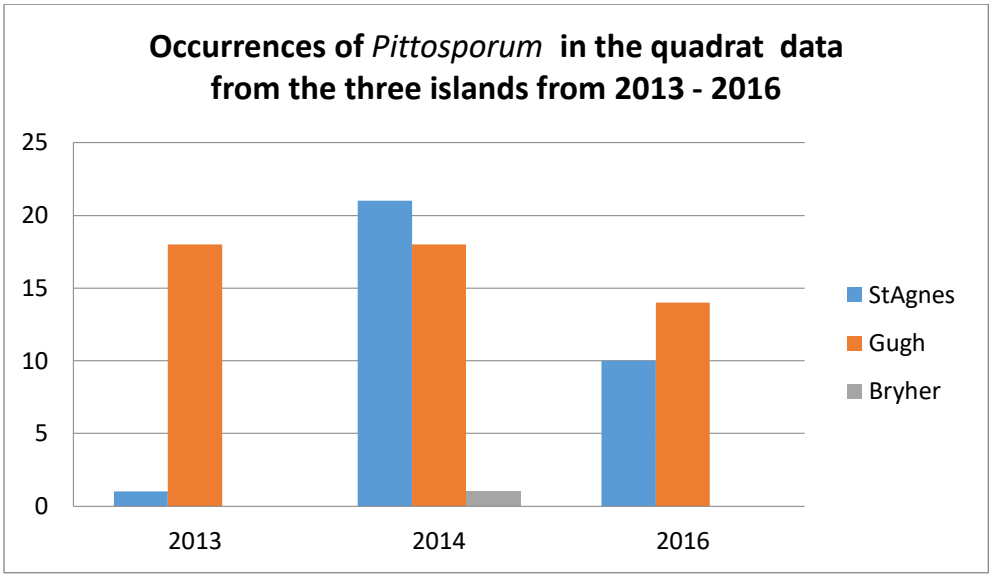
Figure 5.5.6. Chart comparing the number of occurrences of *Pittosporum* in the quadrat sets on each island from 2013, 2014 and 2016



5.6. CONCLUSION

There are no trends in the data that indicate that the rat removal has had a significant effect on the sampled vegetation communities either in the short term or the medium term.

The foreshore vegetation is typical of an exposed site showing a lack of constant species and variable community structure – any effects from rat removal would be masked by this dynamic structure which in itself would make any direct effect from rat presence or absence almost certainly insignificant in the long term.

It is concluded that the small (ie insignificant ≤ 25%) changes are due to

- 'normal' stochastic events such as storm damage on foreshore habitat on all three islands
- short term management practices ie winter grazing by ponies on Bryher
- cattle grazing on St Agnes relating particularly to coastal grassland