

Habitat Survey of Guernsey, Herm and Associated Islands

2010



Environment Department
November 2010

Document title: Habitat Survey of Guernsey, Herm, and Associated Islands 2010
Status: Final Draft
Date: November 2010
Supervisor: Charles David Ph.D. D.I.C. B.Sc.
Author: Julia Henney M.Sc
Surveyors: Julia Henney M.Sc
Alexander Link
Client: States of Guernsey Environment Department
Checked by: Jamie Hooper B.Sc.
Environment Guernsey
Old Guernsey Tobacco Factory
La Ramée
St Peter Port
Guernsey
GY1 2ET
email gsybiorec@cwgsy.net
Tel. 01481 715799

Cover Picture: Semi-improved Marshy Grassland in the Ozanne Reserve, Vale.

All maps in this document are copyright © States of Guernsey, 2010

1 EXECUTIVE SUMMARY

- 1) A Habitat Survey of Guernsey, Herm & Jethou was conducted in Spring and Summer 2010 in compliance with the States Environmental Policy Plan and on behalf of the States of Guernsey Environment Department. The aim was to establish the extent of change in the habitat composition since the previous survey commissioned in 1999 by the IDC and to identify any particular key habitats which may be at risk. Field boundaries were also surveyed.
- 2) A new methodology incorporating aerial photography interpretation and ground surveying using pocket pcs was adopted. This increased the accuracy of the survey, and thus the reliability of the findings.
- 3) The findings are available as ESRI shapefiles in the Digimap system to planners and land managers.
- 4) After examining aerial photographs from 1996 and 2001 we are confident that the 1999 survey was at least 98% accurate
- 5) The most significant changes in Guernsey's habitats since the 1999 survey are as follows:
 - a. There has been an increase in woodland on Guernsey from 216ha (1,318vergees) to 379ha (2,313v). 60ha (366v) have changed classification following the succession of Dense Scrub to Semi-natural Broadleaved Woodland, and 51ha (311v) have been planted with broadleaved trees; the States of Guernsey Free Trees Scheme is largely responsible for this.
 - b. Scrub on Guernsey has increased from 234ha (1,428v) to 314ha (1,916v). This is following the abandonment of marginal land and the spread of scrub along the cliffs, the scrub replacing species-rich grasslands and heath.
 - c. Semi-Improved Grassland has decreased by 45% (a loss of 160ha (976v)), mainly due to the more strict classification definitions as opposed to there having been a marked increase in fertilizer use or ploughing of the land. However, this does mean that the previous data illustrating the proportion of Semi-improved Grassland were over-estimates, and so the abundance of semi-natural land is **much** lower than previously thought.
 - d. The abundance of other, rarer habitats, has also decreased, especially species-rich dry-grasslands contributing to an overall decline in Guernsey's biodiversity.
 - e. Many of these changes are caused by differences in land-management practices in the island over the last 100 years due to the changing economic circumstances.
- 6) 134ha (822v) of agricultural land which has been re-seeded or mown in order to extend domestic curtilage has been identified. This land is currently lost from use as farmland.
- 7) Land used for horses has been recorded for the first time as 234ha (1,428v). Generally horses are not employed in the agricultural industry, so this land is currently lost from farming use.
- 8) Phase 2 surveys were carried out on some difficult habitats to ensure repeatability of the survey in 10 years time.

CONTENTS

1	Executive summary.....	3
2	Introduction.....	7
2.1	Background to Project	7
2.1.1	Purpose of project	7
2.2	Scope of Report.....	7
2.3	The Bailiwick of Guernsey in the National Context.....	8
2.4	Historical Surveys of Guernsey	8
3	Methodology	11
3.1	Phase 1 habitat survey	11
3.1.1	Standard Phase 1 Methodology	11
3.1.2	Habitat classifications	12
3.1.3	Ensuring accuracy	17
3.2	Phase 2 habitat survey	18
3.2.1	Purpose of the Phase 2 habitat survey	18
3.2.2	Standard Phase 2 methodology.....	18
4	Results and Discussion	19
4.1	Guernsey	20
4.1.1	Woodland	20
4.1.2	Scrub	25
4.1.3	Dry grasslands.....	26
4.1.4	Marshy Grasslands.....	29
4.1.5	Tall herb and fern	31
4.1.6	Swamp, Marginal and Inundation	32
4.1.7	Open water.....	33
4.1.8	Coastland	36
4.1.9	Quarry (I2.1)	47
4.1.10	Miscellaneous.....	47
4.1.11	Boundaries.....	53
4.2	Herm	57
4.3	Phase 2 Habitat Survey	59
5.	DISCUSSION	61
5.1	The 1999 Survey.....	61
5.2	The causes and significance of habitat change.	62
5.3	Suggestions for policies to increase biodiversity or limit its loss.....	63
6	Conclusion	65
7	Acknowledgements	67
8	References	67
9	Appendices	69
	Appendix 1	69
	Appendix 2	72
	Appendix 3	74
	Woodland	74
	Scrub	86
	Dry Grasslands	89
	Marshy Grasslands.....	97
	Tall herb and fern	100
	Swamp	104

Open water	106
Coastland	109
Quarry 130	
Miscellaneous	132
Appendix 4.....	142
Appendix 5.....	143
Appendix 6.....	144
Appendix 7.....	145
Unimproved Grassland	145
Semi-improved Grassland	146
Improved grassland.....	147
Unimproved Marshy Grassland	148
Semi-improved Marshy Grassland	149
Dune Grassland.....	149
Coastal Grassland.....	151
Coastal Heathland	152

2 INTRODUCTION

2.1 BACKGROUND TO PROJECT

Environment Guernsey was commissioned by the States of Guernsey Environment Department in February 2010 to carry out a Phase 1 habitat survey of Guernsey and Herm in order to update the survey undertaken by the Island Development Committee (IDC) and as part of their Environmental Policy Plan. It is the second of a series of surveys intended to be repeated every 10 years, the first one having been conducted in the years 1998-1999.

The Survey was conducted from March to July 2010. The aim was to establish the extent of change in the habitat composition since the previous study conducted in 1999 and to provide a baseline from which to measure change in the next 10 years.

Phase 2 surveys of selected habitats were carried out from May to July, 2010. The aim of these surveys was to verify the habitat classifications of the different grasslands.

Guernsey has a total area of 6,344 hectares (38,711 vergées) and Lihou 15ha (92v), of which 4,287ha (26,159v) were surveyed. The intertidal zone surrounding the islands covers 1,107ha (6,755v), of which 1,080ha (6,590v) were surveyed. Herm has an area of 133ha (811v), and an intertidal zone 291ha (1776v), of which 131ha (799v) and 171ha (1,043v) were surveyed respectively. The terrestrial land included all natural and farmland areas and some large gardens but as in 1999 built-up areas, small gardens, roads and car parks etc were not surveyed. The intertidal zone surveyed was based on the mean high and low water marks.

2.1.1 PURPOSE OF PROJECT

In order to devise effective policy and planning decisions the knowledge of location, extent and distribution of species and habitats is essential. A Phase 1 habitat survey is one of the most appropriate means of gathering this data. Once gathered, it will also be used to guide the designation and review of Sites of Nature Conservation Importance (SNCIs), inform Environmental Impact Assessments (EIAs), provide statistical support for the case for the conservation of areas and can be used in educating the public of the case for conservation.

A key policy in the States of Guernsey's Environmental Policy Plan is to “*ensure healthier biodiversity and support specific species and habitats*”. The findings of this survey will highlight the key habitats at risk so policy can be devised to protect them in order to achieve this objective.

2.2 SCOPE OF REPORT

This report describes the findings of the habitat survey conducted on the islands of Guernsey, Lihou, Jethou and Herm and the surrounding islets and should be referenced to the ESRI shapefiles held on the States of Guernsey computers that contains all of the data gathered during the survey.

This report aims to provide some background to the habitats located during the survey and to discuss their current distribution with reference to historical data. In particular it will evaluate the changes over the past 11 years using the 1999 survey commissioned by the IDC as a point of reference. It will also discuss some of the causes and implications of these changes.

This report has been produced with the intention of indicating and classifying the occurrence of semi-natural habitats, it is not to be regarded as a definitive representation of the conservation value or interest of any piece of land, which should be considered when interpreting the results (JNCC, 2010).

2.3 THE BAILIWICK OF GUERNSEY IN THE NATIONAL CONTEXT

The Bailiwick of Guernsey is located roughly 30 miles from the coast of France and 70 miles from the English coast, sheltered in the Bay of St Malo. It includes the islands of Guernsey, Alderney, Sark, Herm, Jethou, Brecqhou, Burhou and Lihou, in addition to numerous small islets and reefs throughout its adjacent waters.

"The islands were formed over 8,000 years ago at the end of the last ice age when rising sea levels cut them off from the mainland" (Landwise Report, 2002). Thus they have been isolated much longer than England and Jersey. This, together with the maritime climate, has allowed a very distinct mix of floral and faunal communities to develop.

Guernsey has a very high population density, with roughly 62,000 inhabitants. Residential areas are spread throughout the island, as opposed to being concentrated in towns, and as such there are very few large expanses of natural land, and almost no land which has remained un-affected by the activities of man.

International business (banking, insurance along with fund, company and trust administration) and tourism are the main sectors of the economy but agriculture (the Guernsey cow is renowned worldwide) & horticulture, manufacturing, commerce and fisheries are also important.

2.4 HISTORICAL SURVEYS OF GUERNSEY

Gosselin's (1791) herbarium, held at La Société Guernesiaise Headquarters provides, a record of the plant species present in the late 18th Century, and by inference the habitats at the time (McClintock, 1982). This was updated by Babington's *Primitiae Florae Sarnicae* (1839). In the 19th Century various guidebooks were published the most important of these is Ansted and Latham *The Channel Islands* (1862), which provides qualitative, though not quantitative information on land use and the first attempt to provide comprehensive lists of the species found in the main islands. Cecil Smith's *The Birds of Guernsey* (1879) has a good description of the landscape in the mid 19th Century. Marquand's the *Flora of Guernsey and the Lesser Channel Islands'* (1901) contains notes on the flora he observed between the years 1888-1895. Though not a quantitative or spatial survey, the general introduction provides a very valuable impression of the nature of the landscape at that time. J.P. Warren's *Our Own Island* (1926) provides the first quantitative survey of habitats in the island, particularly valuable on the extent of farmland and the crops grown then. In 1950, a report by G. Dury was published that discusses the Land Utilisation Survey he obtained by studying aerial photographs taken in 1939. Unfortunately the report is biased towards cultivated land and so provides very little information on natural land. However, it still proves useful in providing comparisons of agricultural land and summarises the available statistics on land use from 1872-1939.

Land Use Consultants (1988) undertook a comprehensive survey of Guernsey's land use. They considered the Island-wide patterns of land-form, semi-natural vegetation, cultivation, development and cultural elements.

The first Phase 1 Habitat Survey of Guernsey was commissioned by the IDC. It was conducted through summer and autumn in 1998, the data was then digitized before being validated in summer 1999. It encompassed 3,908ha (23,846v) of Guernsey, 15.3ha (93v) of Lihou, and 968ha (5,907v) of the intertidal zone. Also 117ha (713v) of Herm, but not its intertidal zone nor any of Jethou. This survey adopted JNCC methodology and habitat classifications, both of which are discussed in more detail in subsequent sections of this report.

Also, the Société Guernesiaise has monitored the changes in Guernsey's natural History from its inception in 1882 to the present day, details of which can be found in their annual publication *Report and Transactions of La Société Guernesiaise*.



3 METHODOLOGY

3.1 PHASE 1 HABITAT SURVEY

3.1.1 STANDARD PHASE 1 METHODOLOGY

The methodology used by and large adheres to that described by the Joint Nature Conservation Committee (JNCC; 2010), there is however, one large deviation. Guernsey is fortunate in that it already has a digital mapping system in place using a set of orthorectified aerial photographs and complete polygonal coverage. By using ArcGIS software we were able to collect the data solely in digital form, whereas the standard protocol is to record the habitat classifications by penciling in on maps in the field, which may then be digitized at a later date. The methodology adopted for this study was a combination of aerial photography interpretation and ground surveying with habitats classified according to standard phase 1 methodology (JNCC, 2010)

The data was collated using ArcMap GIS (version 9.2; produced by ESRI), which allows multiple layers of information to be viewed over aerial photographs, these layers may be point data, e.g. a tree, polygon data, such as a habitat type, or a line feature, such as the boundaries. Additional information can be added to these in the form of target notes. In the field Arcpad software on pocket PCs was used to collect the data.

HABITATS

The most recent orthorectified aerial photograph (2009) Guernsey was overlaid with the polygonal land parcel layer, both obtained from Digimap. This layer was then edited so that each obvious habitat feature observable on the aerial photograph was matched to one or more polygons in the shape file. Each day a section of this data was exported to a pocket PC (PDA) and the parcels were classified directly in the field, using a drop-down list of the JNCC habitat classifications. Field notes were also collected using this system. Once the data was re-imported, it was verified to ensure that the land parcels were accurately classified, and any notes or alterations to the parcels that had been observed in the field but were not immediately visible from the air photograph were made. For inaccessible areas earlier air photos were often valuable: that taken in winter 1996 clearly distinguished scrub from Bracken and Coastal Grassland at that date, and the one taken in 2005 clearly picked out areas of gorse which were flowering at the moment the picture was taken.

BOUNDARIES

A similar procedure was carried out to survey the boundaries. The polygonal land parcel layer was turned into a polyline layer and edited so that each section of boundary was a single feature. Each day a section of this data was exported to a PDA and all the boundaries in that area visited and classified.

FIELD METHODS

Using the standard JNCC methodology, the scale of maps taken out into the field limits the minimum size of habitats that can be surveyed. When using a PDA this is no longer an issue and through use of Arcpad it was possible to zoom to a scale of 1:200 without losing too much clarity, thus allowing surveying in much greater detail.

The 'optimal season' for surveying is April-July, however, to ensure that the surveying could be completed in one season, the survey began in March. It began with areas containing high proportions of arable land in the centre of the island and areas with a large proportion of natural land or grasslands were left until later in the

season. If interesting areas were found before they could be classified accurately, they were flagged to be revisited later on in the Summer. The wet meadows are at their optimum for surveying in mid-Summer, so areas with a high abundance of these habitat types were left until the end of the survey. As this was not an issue for the boundaries, they were surveyed systematically by location.

3.1.2 HABITAT CLASSIFICATIONS

The habitats were classified according to those described by the JNCC (2010), with some variations (See Appendix 1). The classifications used in this survey are as follows:

WOODLAND AND SCRUB (A)

Woodland (A1)

The vegetation of woodland is dominated by trees more than 5m high when mature, forming a distinct, although sometimes open, canopy, whose cover is at least 30%. The dominant species, under storey and field layer were target noted. This category is further divided into broadleaved, coniferous and mixed woodlands.

Broadleaved woodland may be semi-natural or planted. Semi-natural Woodland (A1.1.1) includes all stands which did not originate from planting, or where the planted trees account for less than 30%. They consist of native species such as Pedunculate Oak (*Quercus robur*), Elder (*Sambucus nigra*) and Ash (*Fraxinus excelsior*) but also self-sown stands of introduced species, e.g. Sycamore (*Acer pseudoplatanus*) and Holm Oak (*Quercus ilex*).

Planted Broadleaved Woodlands (A1.1.2) are those with at least 90% broadleaved trees, and where at least 30% of those are planted. All obviously planted woodlands of any age are included. Previous aerial photographs were used to determine if areas were planted or semi-natural if it was not clear. However, woodland planted more than say 50 years ago may well appear to be semi-natural.

Coniferous Woodland (A1.2.2) comprises at least 90% conifers. As there are no conifers native to Guernsey and they seldom set viable seed, all coniferous woodlands are planted.

Mixed Woodland (A1.3.2) comprises 10-90% of either broadleaved or coniferous woodland.

A further category, Plantation Woodland (A1.5), has been included to encompass orchards.

Scrub (A2)

This is areas of vegetation dominated by shrubs, usually less than 5m tall, such as Gorse (*Ulex europaeus*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Brambles (*Rubus fruticosus*) and Sallow (*Salix cinerea*). Where it formed a mosaic with Bracken (*Pteridium aquilinum*); it was classed as Scrub if it was not possible to walk through the area because of the presence of Brambles (see Continuous Bracken, C1, for comparison). If growing on sand dunes, it was classed as Dune Scrub (H6.7) and, if Ericaceous (Heather) species were present, as Coastal Heathland (H8.5) or Dune Heathland (H6.6). JNCC and the IDC survey of Guernsey used the category 'Scattered Scrub' which included areas of Scrub within other habitats and was recorded as a point features. As a result, it was not possible to quantify its coverage and so was found to be of limited use, it was therefore omitted from this study.

Parkland/scattered trees (A3)

Parklands are areas of closely mown grassland with a tree cover of less than 30%. In Guernsey this consists mainly of large gardens or estates and appears as a highly manicured habitat.

Scattered Trees were incorporated into the survey as a layer of single points including all broadleaved trees, either planted or semi-natural, that are not already encompassed in a habitat classified as Woodland (A1.1) or Earthbank with trees (J2.8.4).

GRASSLAND AND MARSH (B)

The JNCC classifications divide grasslands into Acid, Neutral and Calcareous. However, in Guernsey, almost all grasslands (with the exception of Dune Grassland (H6.5) which may be calcareous due to shell fragments) are likely to be neutral. So for the purposes of this study dry grasslands were only divided by the degree of improvement; Unimproved, Semi-improved and Improved Grasslands.

It is difficult to distinguish between unimproved, semi-improved and improved grasslands as they form a continuum. In order to clarify this issue we adhered to the Grassland Trust's (2008) definitions, which classify the grasslands depending on diversity of forbs (broad-leaved plants) and abundance of grasses per m², with some alteration to take into account the reduced diversity of such plants found in Guernsey. Not only does this provide a more objective classification, but it also provides a definition that can be standardized for use in future studies, increasing comparability. A Phase 2 habitat survey of these grasslands was also performed (see section 3.2).

Unimproved Grassland (B1)

Land which has not been so intensively grazed or has not had sufficient applications of herbicide or fertilizer as to alter the sward composition significantly, or the effects of such treatment have disappeared is classified as Unimproved Grassland. The Grasslands Trust suggests that there will be at least 15 different species of broad-leaved plants per m², cover of Ryegrass (*Lolium perenne*) and White Clover (*Trifolium repens*) is less than 10%, and that cover of wildflowers and sedges (*Carex* sp.) is generally greater than 30%. Typically it is very species rich in both forbs, such as Primrose (*Primula vulgaris*), Violet (*Viola riviniana*), etc. and grasses.

Semi-improved Grassland (B2)

Semi-improved Grassland is an intermediate category between Improved and Unimproved Grasslands, it has a less diverse and natural sward than Unimproved Grassland, but is more diverse than Improved Grasslands and is still of some conservation value. There are between 8-15 different species of broad-leaved plants per m², less than 30% cover of Ryegrass (*Lolium perenne*) and White Clover (*Trifolium repens*), and the cover of wildflowers and sedges (*Carex* sp.) is generally greater than 10%.

B4 Improved grassland

Improved Grassland has been so heavily treated with fertilizer or herbicide, or so heavily affected by grazing or drainage, or have been reseeded so that most species diversity has been lost. There are less than 8 species of broad-leaved plants per m², more than 30% Ryegrass (*Lolium perenne*) and White Clover (*Trifolium repens*), and less than 10% cover of wild flowers and sedges (*Carex* sp.). The broad-leaved plants commonly found were Ribwort Plantain (*Plantago lanceolata*), Docks (*Rumex* spp.), and species of clover (*Trifolium* spp.).

B5 Marsh/marshy grassland

This category encompasses wet meadows or grasslands which are periodically flooded or waterlogged by fresh water (Landwise report, 2002). They have a high proportion of sedges (*Carex* sp.) and rushes (*Juncus* sp.), often with Ragged Robin (*Silene flos-cuculi*), Fleabane (*Pulicaria dysenterica*) and various species of orchids.

This category has been further divided into Unimproved and Semi-improved Marshy Grasslands. Unimproved Marshy Grasslands (B5.1) are generally not dominated by grasses, they have a high diversity of broadleaved plants often including Yellow Bartsia (*Parentucellia viscosa*), Marsh Bed-straw (*Galium palustre*) and various rarer sedges (i.e. *Carex nigra*, *C. punctata* etc). As with dry grasslands, these areas have not been so intensively grazed or drained, or have not had sufficient applications of herbicide or fertiliser as to alter the sward composition significantly, or that the effects of such treatment have disappeared.

Semi-improved Marshy Grasslands (B5.2) have been treated with fertiliser or herbicide, or affected by grazing or drainage so that the sward composition has been altered, but is still species rich. These areas will contain a higher proportion of grasses than Unimproved Marshy Grassland and will often be dominated in patches by Creeping Bent (*Agrostis stolonifera*), Galingale (*Cyperus longus*) and with scattered Reeds (*Phragmites australis*).

Marshy Grasslands which have been so heavily improved that they have lost most, if not all, the Marshy Grassland indicator species are classified as Improved Grassland (B4).

TALL HERB AND FERN (C)

Areas dominated by Bracken (*Pteridium aquilinum*) are classified as Continuous Bracken (C1). They often form a mosaic with Brambles (*Rubus fruticosus*) (see A2 for comparison). As with Scattered Scrub, JNCC includes a Scattered Bracken category, this is represented by a dot on the map and is difficult to compare statistically, so areas of Bracken large enough to classify are all included under Continuous Bracken.

Stands of perennial or biennial broad-leaved plants greater than 25cm tall e.g. Nettles (*Urtica dioica*), Docks and Sorrel (*Rumex* sp.), Hemlock Water-Dropwort (*Oenanthe crocata*) etc are classified as Tall Ruderal (C3.1).

SWAMP, MARGINAL AND INUNDATION (F)

Swamp (F1) is used to classify vegetation which is generally in Standing Water for a large part of the year, but may occasionally be found on substrates that are seldom immersed, as in the later stages of the serial succession to Marshy Grassland. This category includes single species stands of Reed (*Phragmites australis*). Water Dock (*Rumex hydrolapathum*) and Branched Bur-Reed (*Spartanium erectum*) are often found in this habitat.

OPEN WATER (G)

Standing Water (G1)

The JNCC categories give five categories of fresh water habitat. As in the 1999 survey we did not use these, but the Reservoir, some garden ponds and ponds with many ducks (such as that in Saumarez Park or the remains of the canal at La Mare de Carteret) would probably be included in category Mesotrophic (G1.2), while quarries with few ducks and ponds on the sand dunes at L'Ancrese would probably be Oligotrophic (G1.3). (Mesotrophic ponds have a high concentration of plant nutrients, and the water is usually turbid due to the growth of algae: Oligotrophic ponds have few nutrients and the water is usually clear).

We also used category G1.6 Brackish, saline water.

Running Water (G2)

This includes the above ground portions of streams and douts, which were mapped as line features.

COASTLAND (H)

Intertidal zone (H1)

The intertidal zone was defined using the mean high water mark and mean low water mark in the Digimap database (see section 2.1). It was divided into Intertidal Sand, Intertidal Shingle and Intertidal Rocks and Boulders. The sand, shingle and rocks above the high tide mark were classified separately to those in the intertidal range.

Saltmarsh (H2)

Saltmarsh occurs at areas which are periodically inundated with salt water. The vegetation is dominated by salt tolerant herbs, such as Sea Spurrey (*Spergularia maritima*), also Saltmarsh Rush (*Juncus gerardii*) and Glassworts (*Salicornia* spp) which are confined to this habitat.

Sand dune (H6)

Dune Slack (H6.4); found in the valleys or hollows between dune ridges where the water table is close to the surface for at least several months of the year leading to marshy vegetation. Indicator species include Silverweed (*Potentilla anserina*), Spike-rush (*Eleocharis palustris*) and many other species also found in Marshy Grasslands.

Dune Grassland (H6.5); located on all grasslands on flattened or consolidated dunes. There will be very little, or no Marram Grass (*Ammophila arenaria*). Red Fescue (*Festuca rubra*), Wild Thyme (*Thymus polytrichus*), Common Rest-Harrow (*Ononis repens*), Biting Stone-crop (*Sedum acre*), Lady's Bed-straw (*Galium verum*) and Wild Clary (*Salvia verbenaca*) are all commonly found here.

Dune Heath (H6.6); all heathland occurring on flattened or consolidated dunes. Bell heather (*Erica cinerea*) and Ling (*Calluna vulgaris*) are the best indicator species.

Dune Scrub (H6.7); all scrub located on Sand Dunes is included in this category, despite the absence of Sea Buckthorn (*Hippophae rhamnoides*) which is a characteristic species in the mainland, and distinguishes this category from Dense Scrub (A2).

Open Dune (H6.8); this category includes Fore dune, Yellow dune and Grey dune. Fore dunes are unstable, low ridges with very little plant cover. Sand Couch, (*Elymus juncea*) is a characteristic species. Yellow dunes are partially stabilised ridges dominated by Marram Grass (*Ammophila arenaria*). Grey dunes are stabilised ridges where Marram is still present, as are many lichens and mosses. They are distinguished from fixed dunes by being markedly hilly or undulating, and by the sand not being fully consolidated.

Frosted Orache (*Atriplex laciniata*), Sea Sandwort (*Honckenya peploides*), Sea Rocket, (*Cakile maritima*) Sea Couch (*Elytrigia atherica*), Marram (*Ammophila arenaria*), Sea Holly (*Eryngium maritimum*) and Sea Bindweed (*Calystegia soldanella*) are characteristic plant species.

Maritime cliff and slope (H8)

Maritime cliffs are divided into Hard Cliffs (H8.1), those formed from rock with less than 10% vegetation cover, and Soft Cliff (H8.2), those formed from soil or sand. Soft Cliffs are an important habitat for many invertebrate species, but difficult to map as polygonal features as they are generally nearly vertical. We have given a line layer showing where Soft Cliffs occur in the island.

Coastal Grassland (H8.4) contains maritime species such as Thrift (*Armeria maritima*), Autumn Squill (*Scilla autumnalis*), Sea Mouse-ear (*Cerastium diffusum*), Sea Campion (*Silene uniflora*), English Stonecrop (*Sedum anglicum*), Sheep's Bit (*Jasione montana*), with the dominant grasses being Red Fescue (*Festuca rubra*) and Cock's Foot (*Dactylis glomerata*).

Coastal Heathland (H8.5) communities in Guernsey contain Bell Heather (*Erica cinerea*) or Ling (*Calluna vulgaris*). Unlike the heaths in Jersey, Brittany and southwest England they contain very little Western Gorse (*Ulex galii*) which is extremely rare in the island.

ROCK EXPOSURE AND WASTE (I)

Other exposure (Rock, I1.4) this category encompasses all rock exposure less than 2m high, or at a slope of less than 60°. Vascular plant cover must be less than 10% (see also Hard Cliff, H8.1)

Quarries (I2.1) excluding water filled quarries which were classed as Standing Water (G1).

MISCELLANEOUS (J)

Cultivated/Disturbed Land (J1)

Cultivated/Disturbed Land is split into 4 categories; Arable Land (J1.1.1), Short-Term Leys (J1.1.2), Amenity Grasslands (J1.2) and Brownfield Sites (J1.5).

Arable Land includes land currently used for crop production or land left fallow but that will shortly be returned to crop production. Short-term Leys are grasslands that have been seeded, usually with Ryegrass (*Lolium* sp.) or Clover (*Trifolium* sp.) and are left for up to 7 years.

Amenity Grasslands are areas heavily mown, and often seeded, i.e. playing fields and domestic lawns which have lost most broad-leaved plant species.

This study also includes a Brownfield category, which is most similar to the Ephemeral/Short Perennial category defined by JNCC, it includes all industrial wasteland that has begun to become colonised by vegetation, but has not yet succeeded to Tall Ruderal (C3.1).

BOUNDARIES (J2)

Under standard Phase 1 Habitat Classifications outlined by the JNCC, Boundaries are incorporated as a sub-category of Miscellaneous (J), however as they have been studied more extensively during this survey, they have been included as a separate category.

Hedges are classified as either 'Native Species-rich' or 'Species Poor' based on the composition of the species within and beneath the hedge.

The 'Fence' category encompasses mostly wooden fences, wire fences below 1.5m were not classified.

Walls are divided into 'Mortared' or 'Dry Stone', where no mortar is used, but they are often filled with soil and other organic debris. Decaying Dry Stone Walls still visible within Earthbanks were target noted. Mortared Walls with a high diversity of mosses, lichens, ferns or other plants growing on the wall were also target noted. Only walls near to habitat parcels which were classified were surveyed, i.e. urban areas were excluded.

Ditches which are dry for the majority of the year were classified as 'Dry Ditches', otherwise they were classed as Stream (G2), Standing Water (G1), or Swamp (F1).

Earthbank; the previous study did not distinguish between the vegetation cover on the Earthbanks. It has been included in this study because the banks between the farmed land in Guernsey are an important reservoir of wild plants, invertebrates, birds and mammals: the grassland on many banks is the last area of Unimproved Grassland in many areas. We have therefore classified the banks in a similar way to the habitats present in the fields they divide.

Grass; predominately grass or low plants. If scrub or Bracken are present, they will be patchy at most.

Bracken; predominately Bracken (*Pteridium aquilinum*), usually forms a matrix with scrub, but it will dominate.

Scrub; dominant on at least one side or on the top of the Earthbank.

Trees; trees exceeding 5m in height, dense enough to form a canopy. If they did not form a complete canopy, they were noted as scattered trees.

The JNCC's category 'Sea Wall' (J3.5) doesn't apply to the sea walls of Guernsey, which are mostly large, mortared walls, and have not been mapped.

All Bare Ground (J4) that can be easily colonised by pioneer species was classified. This did not include land covered in tarmac or other substances that prevent colonisation.

Hottentot fig (*Carpobrotus edulis*; J6) is an introduced, invasive species which has huge impacts on the biodiversity of the areas which it colonises. It was included in this study to survey its current range and to allow its future spread to be mapped. If its area was too small to map, its presence was target-noted. Large areas of other introduced invasive plants such as Parrot's Feather (*Myriophyllum aquaticum*) or Japanese Knotweed (*Fallopia japonica*) were also target noted.

3.1.3 ENSURING ACCURACY

The largest cause of error in Phase 1 habitat surveys is observer error when assigning a definition to a habitat unit (JNCC, 2010), which varies depending on a variety of factors, such as time of year, experience of the observer etc. As only one surveyor was used to survey the habitats, and another one to survey the boundaries, there will be no error between surveyors. However, for a survey to be fully replicable, it is essential that the habitats are classified to strict definitions, and so surveyors must be trained as thoroughly as possible. The surveyors were trained before the survey by a supervisor, and worked as a team for the first 6 weeks, there were also further 'tutorials' on difficult classifications (mainly distinguishing different grassland types) throughout the survey period, and the supervisor regularly checked classifications to ensure accuracy. If there were any problems with classifications or identifications, they were dealt with as a team.

Aerial photographs were used along-side the field survey to increase the accuracy of the habitat classifications. The advantages were;

- More accurate divisions of the habitat parcels which reduces the boundary error, especially when mapping unbounded units
- They could be used to double check classifications
- They provided an overview of the area before surveying to highlight areas that might be missed from ground level, such as clearing in woodlands, or areas of broadleaved woodland within coniferous woodland, etc.
- It was also possible to use previous aerial photos to aid classification, for example, to see if an area of woodland was planted or semi-natural.
- They were also used to survey inaccessible areas, such as parts of the cliffs.

The accuracy of using aerial photography is restricted by the quality of the image; the most recent image used in this study was taken in June 2009, and had a resolution of 10cm and so allowed a very high level of accuracy.

To ensure that the classifications of grasslands were reproducible in a future survey, we carried out selective Phase 2 surveys (see section 3.2).

Access was restricted to some areas, mainly large estates such as Havilland Hall and sections of the cliffs in the south, particularly where these were very scrubby. In these areas most results were gained using aerial photos and what was visible from public footpaths, as such the classification of these areas is not as accurate as where site visits were possible.

Although every effort was made to ensure accuracy, the results gained are not 100% accurate, and the following restrictions should be noted:

- The survey is based solely on vegetation, no faunal communities were studied.
- Significant habitat changes may have occurred since the maps were produced.
- The majority of sites were only visited once.
- No species lists were produced, so rarities may have been overlooked. However, the records of La Société Guernesaise stored at the Guernsey Biological Records Centre were used to highlight important habitats and areas where rare plants grow.

3.2 PHASE 2 HABITAT SURVEY

3.2.1 PURPOSE OF THE PHASE 2 HABITAT SURVEY

A Phase 2 habitat survey was undertaken with the aim of double-checking the classifications of the different grasslands to confirm that they are significantly different from one another. This also means that future surveyors will know where the boundaries were drawn between different grassland types in this survey. The following grasslands were studied; Unimproved Grassland (B2.1), Semi-improved Grassland (B2.2), Improved Grassland (B4), Unimproved Marshy Grassland (B5.1), Semi-improved Marshy Grassland (B..5.2), Dune Grassland (H6.2) and Coastal Grassland (H8.4). Coastal Heathland (H8.5) was also surveyed.

3.2.2 STANDARD PHASE 2 METHODOLOGY

We followed the methodology outlined in the National Vegetation Classification System (NVC; Rodwell, 2006). A 4m² quadrat (2m x 2m) is placed on the ground, and the presence and relative abundance of the species within it are recorded using the DOMIN scale. The fields in which the samples were taken were selected as it was felt that they were most representative of the classification, the quadrats within these areas were chosen at random.

4 RESULTS AND DISCUSSION

Figure 1. The distribution of all land surveyed during the 2010 survey.



comparisons are still possible between the two surveys as categories which have been sub-divided can be grouped for interpretation. A total of 4287ha (26159v) of Guernsey and Lihou were surveyed and 1,107ha (6,755v) of the intertidal zone surrounding them. 133ha (812v) of Herm were surveyed, and 292ha (1,782v) of its intertidal zone, and 22ha (134v) of Jethou and 24ha (146v) of its intertidal zone were surveyed. These areas are highlighted in red in figure 1.

Figure 2. The distribution of all boundaries surveyed during the 2010 survey.



A total of 42 (Phase 1) habitat types have been located during this survey, compared to only 33 habitat types which were identified in 1999. Only one habitat type appears to have been lost from Guernsey; Dune Heath (H6.6, section 4.1.8). In addition to the 33 habitat classifications found in 1999 we have also included Arable Short-term Leys, Brackish Pools, Brownfield Sites, Hottentot Fig, Intertidal Sand, Marginal Vegetation, Plantation Woodland and Semi-improved Marshy Grassland categories. However, direct

12 categories of boundaries have been located, compared with only 7 categories included in the 1999 survey, as we have further divided Earthbanks by the dominant species growing upon them. A total of 1,193km of boundaries were surveyed; 1,175km in Guernsey and 19.2km in Herm. The boundaries surveyed are illustrated in red in figure 2.

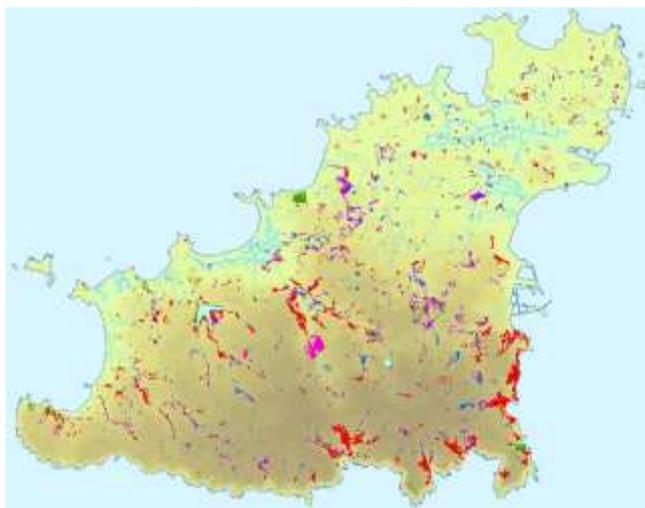
The results for habitats and boundaries will be discussed separately. The habitat classifications will be further divided by Island and then by terrestrial and intertidal zones.

4.1 GUERNSEY

The results for all habitat classifications located in Guernsey are included in Appendix 3.

4.1.1 WOODLAND

Figure 3. The current distribution of all woodlands. Red: Semi-natural Broadleaved, Purple: Planted Broadleaved, Green: Planted Coniferous, Blue: Planted Mixed, Pink: Orchards.



There are 379ha (2,315v) of woodland in Guernsey (excluding Parkland), equating to 8.85% of the area surveyed (a gauge of the 'greenspace' in Guernsey¹), and 5.98% of Guernsey's total surface area, excluding intertidal zones (6,344ha; 38,711v). This is an increase of 131ha (801v) from the 223ha (1,357v) of woodland identified in 1999, which accounted for 2.07% of the Island's total area. The figures for each category of woodland are contained in Table 1.

In recent history, very little of Guernsey has ever been wooded; Marquand (1901) describes Guernsey as being devoid of woodland "*at the present day... there are no longer either woods or copses, because land has become so valuable*

that it cannot be allowed to lie idle" and the Land Utilisation Survey (1950) indicates only very few scattered patches of forest, which mostly indicate coniferous plantations in the south. The distribution of woodland will have fluctuated with land management, so as areas of land fell into disuse, such as through the agricultural depression in 1830's, serial succession will have been allowed to transpire and the vegetation will have progressed from grassland, through scrub to Semi-natural Broadleaved Woodland. There have also been times in Guernsey's history when cider making was a profitable industry (Jee, 1983); the Duke of Richmond Map (1787) illustrates large areas of land being planted as orchards.

At the present time 6.0%% of Guernsey's terrestrial land is wooded; Semi-natural Broadleaved Woodland accounting for the largest proportion of woodland identified, and Plantation Woodland (orchards), the least (see table 1).

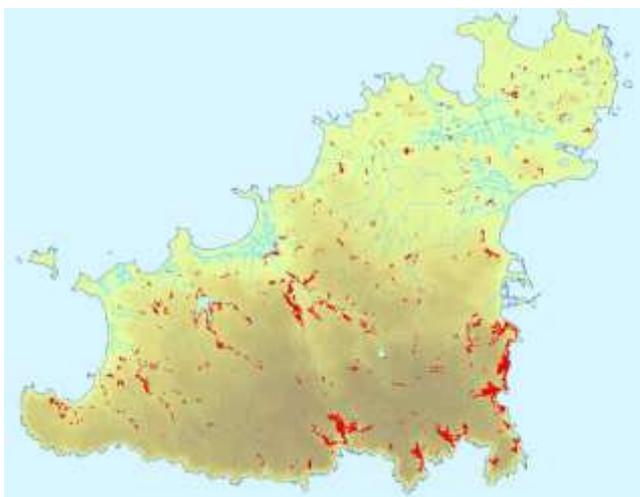
¹ The data have been divided by island, and the intertidal zone has been separated from the terrestrial habitats, so any figures of the total green space of an island refer to the amount of terrestrial land surveyed.

	2010			1999			Change	
	area (ha)	proportion of greenspace (%)	proportion of total land area (%)	area (ha)	proportion of greenspace (%)	proportion of total land area (%)	area (ha)	proportion of total land area (%)
Semi-natural Broadleaved Woodland	197.6	4.6	3.1	131.4	3.3	2.1	66.2	1.0
Planted Broadleaved Woodland	107.1	2.5	1.7	56.2	1.4	0.9	51.0	0.8
Planted Coniferous Woodland	26.1	0.6	0.4	20.9	0.5	0.3	5.1	0.1
Planted Mixed Woodland	34.9	0.8	0.5	8.4	0.2	0.1	26.4	0.4
Plantation Woodland	13.8	0.3	0.2	0.0	0.0	0.0	13.8	0.2
Total	379.4	8.9	6.0	216.9	5.5	3.4	162.5	2.6

Table 1. The amount of woodland identified in the current survey, and a comparison with the amount located in 1999. The proportion of greenspace is the percentage of all the terrestrial land surveyed (4,2867ha (26,157v) in 2010, 3,924ha (23,919v) in 1999), and the total land area is the percentage of all of Guernsey's (and Lihou's) terrestrial land, 6,359ha (38,800v).

SEMI-NATURAL BROADLEAVED WOODLAND (A1.1.1)

Figure 4. The current distribution of Semi-natural broadleaved woodland.



Guernsey's ancient woodlands began to be cleared for agriculture 4000 – 5000 BC, by burning and felling with polished stone axes (Jee, 1983), and Jane Gilmour believes that it is possible that by the Iron Age, all of Guernsey's ancient woodland had been lost (Gilmour, *pers comm.*) (as had 60% of that in England). Probably areas of regrowth woodland existed when the Parish system was set up, hence the names Forest & St Pierre du Bois, but this was cleared by the late Middle Ages if the pattern of clearances was similar to those in Britain. Evidence from old houses suggest that little local wood was used in their construction after 1600 (J. McCormack pers. Com). Of the current woodland, little pre-dates the Second World War, when many trees were cleared for fuel. Jane Gilmour believes that the oldest woodland may be that at the most north-western section of the Fauxquets Valley, which, although the oldest in Guernsey, still possesses only a depauperate selection of species when compared to woodlands of a similar size on the mainland or in Jersey.

A large proportion of the semi-natural broadleaved woodland is found along the cliffs in the south east of Guernsey. These woodlands have developed through succession following the abandonment of grazing. Sheep were commonly grazed on the cliffs from the middle ages until the early 19th century, when the previously thriving knitting industry declined during the Civil and Napoleonic wars (Jee, 1983), and at lower densities right

through to the war, after which the practice was abandoned and the scrub allowed to take hold. There are large expanses of woodland stretching from Havelet Bay to Fermain Bay and inland through the Fermain valley and a wood reaching inland through the Petit Bôt Valley. Other woodlands of note include those along the Moulin Huet and Saints Valleys, Talbot Valley, south of the Reservoir and along Quanteraine Valley.

The majority of the woodland in Guernsey is dominated by Sycamore (*Acer pseudoplatanus*), with some areas having a high presence of Pedunculate Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*). Elm (*Ulmus* spp.) was very abundant throughout the canopies of Guernsey's woodland until the late 1970's, when the mature trees were lost to Dutch Elm Disease. The shrub layers comprise predominately Holly (*Ilex aquifolium*) or Brambles (*Rubus fruticosus*) while the species present in the field layer vary. Most woodlands, notably at Les Val des Terres, Village de Putron, Fermain, Petit Bôt and the Fauxquets, are carpeted in Bluebells (*Hyacinthoides non-scripta*) during the spring (see figure 5). In shady areas, a diversity of ferns can thrive, such as Male Fern (*Dryopteris felix-mas*) and Broad Buckler Fern (*Dryopteris dilatata*). In more sunny glades, other species such as

Figure 5. A Semi-natural Broadleaved Woodland, dominated by Sycamore (*Acer pseudoplatanus*) and Bluebells (*Hyacinthoides non-scripta*) (Bluebell Wood, Village de Putron).

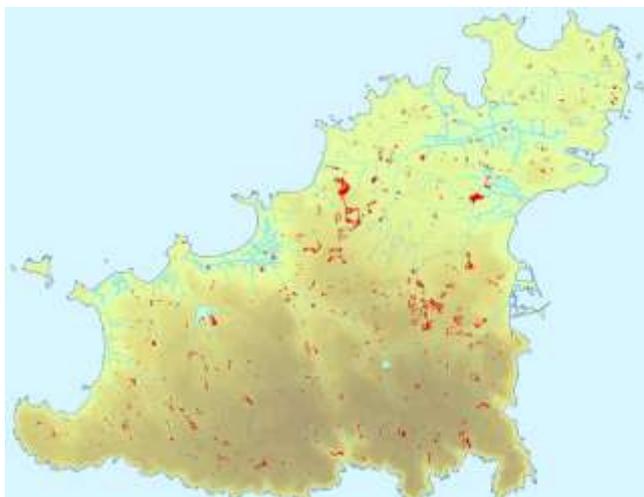


Primroses (*Primula vulgaris*), Common Dog-violets (*Viola riviniana*) and Red Campion (*Silene dioica*) can grow (Gilmour and David, *in prep.*).

197.58ha (1,205v) of Semi-natural Broadleaved Woodland were located during the current survey, this is an increase of 66.20ha (403v) from the 131.38ha (801v) identified during the IDC's survey in 1999. The most significant cause of this change is due to the succession from scrub to woodland of 28ha (170v) around the cliffs in the south and through the valleys. The changes in the amount and distributions of Semi-natural Broadleaved Woodland from 1999 to 2010 are discussed in further detail in Appendix 3.

PLANTED BROADLEAVED WOODLAND (A1.1.2)

Figure 6. The current distribution of Planted Broadleaved Woodland.



The composition of Planted Broadleaved Woodland in Guernsey varies considerably, from those of predominately native species, planted with conservation in mind (such as those planted by Environment Guernsey in some of La Société's nature reserves), to those of a diverse mix of exotic species planted solely for aesthetic purposes. The States of Guernsey implemented a Free Tree Scheme from 1992 – 2006, which encouraged land owners to plant trees; 180,000 trees over 800 sites across Guernsey, Herm and Sark. Unfortunately, little follow up work was carried out and so no data is available on the proportion of the planted

woodland which established.

107.13ha (653v) of Planted Broadleaved Woodland have been located during the current survey. This woodland is located predominately in small areas scattered throughout the island (figure 6). However, there are some larger areas, notably 8.91ha (54v) at Havilland Hall, 4.96ha (30v) by Carteret Quarry, 4.2ha (25v) at Saumarez Park and 3.13ha (19v) of newly planted woodland by The Bowl.

There has been an increase of 50.96ha (310v) from the 56.17ha (342v) located during the survey in 1999. The majority of this is newly planted woodland (25.38ha (154v) planted under the Free Tree Scheme between 1999 and 2004), however there is a proportion attributable to the reclassification of previously planted areas, such as the woodland at Saumarez Park, which was previously combined with the surrounding Amenity Grassland and classified as Parkland.

PLANTED CONIFEROUS WOODLAND (A1.2.2)

Figure 7. The current distribution of Planted Coniferous Woodland.

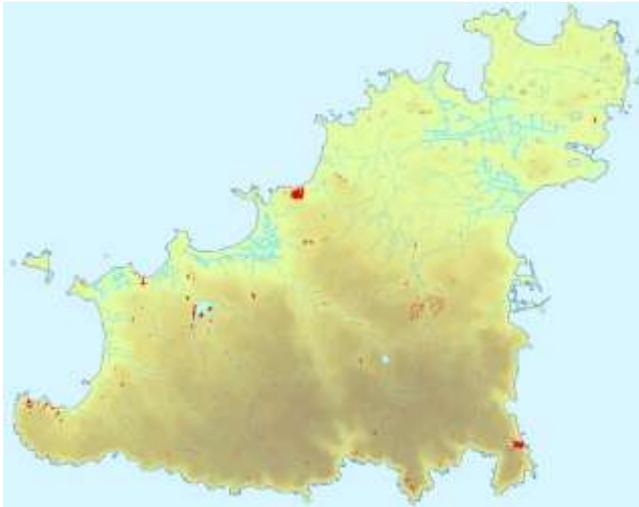


Figure 8. A Planted Coniferous Woodland, dominated by Monterey Pines (*Pinus radiata*), the understorey is carpeted with pine needles (Reservoir, St. Saviours).



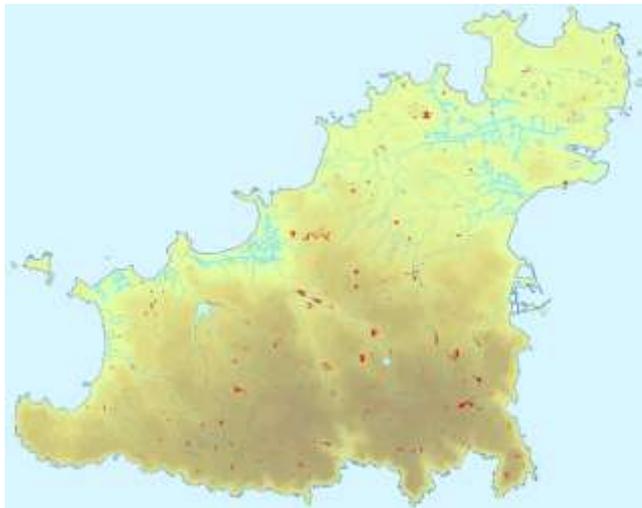
The cover of Planted Coniferous Woodland in Guernsey has increased from 20.93ha (127v) in 1999, to 26.05ha (158v). There are very large expanses at Le Guet (4.6ha; 28v), Le Pied du Mur (Pine Forest) (2.88ha; 17v), Havilland Hall (2.87ha; 17v; newly planted), Pleinmont (2.69ha; 16v) and around the Reservoir (2.55ha; 15v), illustrated in figure 7. The majority of these are dominated by Monterey Pines (*Pinus radiata*), with no shrub or field layer as these pines allow little sunlight to lower levels and acidify the soil with a carpet of needles so that very little is able to grow beneath them (illustrated in figure 8). There is one area of Corsican Pine (*Pinus nigra*) dominated coniferous woodland at the Pine Forest at Le Pied du Mur, which has a significantly different ecology as more light is able to penetrate beneath the canopy (unlike the photograph in figure 8). There are many other smaller areas of Planted Coniferous Woodland (mainly Monterey Pine) scattered throughout the island.

Despite being exotic species, coniferous woodlands still have some benefit to the biodiversity of the island; as well as providing nest sites for Long-eared Owls, their bark and root systems host a variety of rare fungi and subsequently the insects which feed upon them (Gilmour & David *in prep.*). These areas would add much to the biodiversity of the island if they were planted with the European natives Scot's Pine or Corsican Pine. The trouble is that

these areas of planted conifers have replaced much more ecologically diverse habitats.

PLANTED MIXED WOODLAND (A1.3.2)

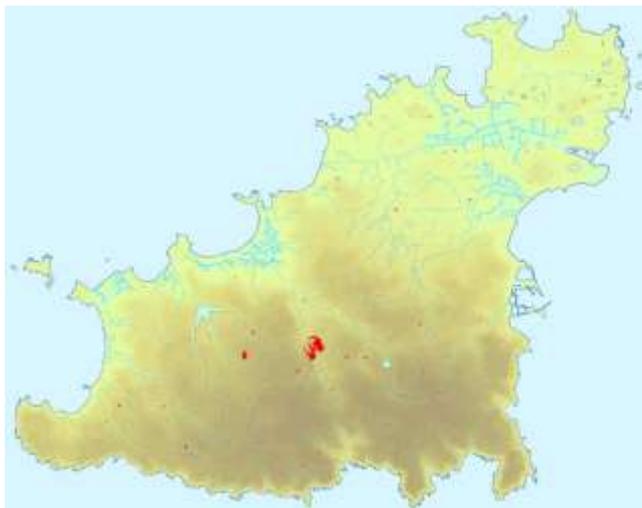
Figure 9. The current distribution of Planted Mixed Woodland.



The total area of Planted Mixed Woodland has more than quadrupled in the past 11 years; from 8.44ha (51v) to 34.88ha (212v). The largest single area is 1.2ha (7v) at Steam Mill Lane in St Martins, on the whole there are small patches scattered throughout the island (figure 9). The increase in the area of Planted Mixed Woodland located in this survey must be viewed with some caution; there appears to be a discrepancy with the views of the previous surveyors. Areas that were previously classified as Planted Broadleaved or Planted Coniferous Woodland have now changed classification, suggesting that the estimations of species composition has varied between the 1999 and the current survey (see appendix 3 for details). However, there are large areas of newly Planted Mixed Woodland, predominately in large gardens and estates.

PLANTATION WOODLAND (A1.5)

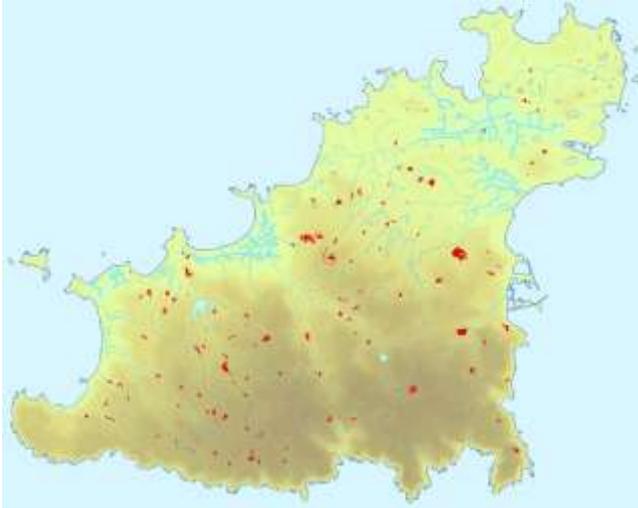
Figure 10. The current distribution of Plantation Woodland.



This category encompasses all of the orchards in Guernsey, which 200 years ago covered an extensive area. At present they cover 13.79ha (84v) (distribution is illustrated in figure 10), of which 8.4ha (51v) is located at Rocquettes cider farm in the Fauxquets Valley. This land is heavily managed and so the grassland beneath it is improved, and of little ecological value. However the trees themselves provide food for a number of pollinating insects. Other orchards of note include two planted by La Société Guernesiaise at Les Petites Capelles in St Sampson's and La Blanche Carrière in the Vale and a private one at Les Bordage, St Saviour's all of which have been planted with traditional varieties and are managed in an environmentally sensitive way.

PARKLAND (A3)

Figure 11. The current distribution of Parkland.



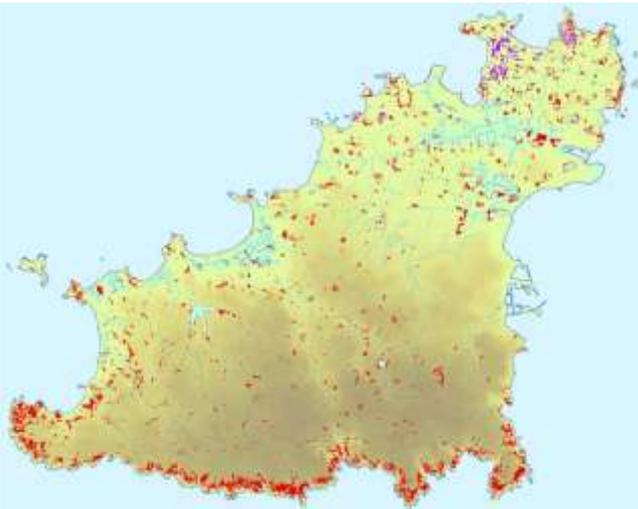
Parkland was omitted from the combined 'woodland' statistics because the cover of trees must be less than 30%, and so will not form a dense canopy, also the grassland beneath the trees is closely mown, and often has been reseeded, therefore will be very species poor. 55.94ha (341v) of Parkland were identified during this survey, this is an increase of 36.4ha (222v) from the 19.54ha (119v) classified as such in the 1999 survey. There are areas of Parkland scattered throughout the island, mainly in large gardens and estates; the largest areas classified were at Beau Sejour (4.69ha; 28v), St George (3.95ha; 24v) and Manoir Du Pierre Percee (2.45ha; 14v) (figure 11).

The majority of the new Parkland, was previously classified as Amenty Grassland. This land has either had scattered trees planted on it since the previous survey, or the land has been grouped with the adjacent woodland (if only sparse) and re-classified as Parkland.

4.1.2 SCRUB

DENSE SCRUB (A2.1)

Figure 12. The current distribution of Dense Scrub: red, and Dune Scrub: purple.



Dense Scrub is an intermediate stage in the succession from Bare Ground to woodland and will develop on any land where management has been abandoned, such as where grazing has ceased, or farming has stopped. Species such as Brambles (*Rubus fruticosus*), Gorse (*Ulex europaeus*), Blackthorn (*Prunus spinosa*), or Sallow (*Salix cinerea*) in wet areas become established and shade out the more delicate plants found in grasslands. In some areas its spread has been kept at bay through rabbit-grazing and trampling.

314.74ha (1,920v) of Dense Scrub have been located during the present survey, which equates to just under 5% of Guernsey's terrestrial land. Most of this land is located around the cliffs at the South of the Island, following round the inland cliff to Fort Grey, and also covering large areas at most of the headlands along the west coast and around the quarries in the north of the Island (see figure 12).

Dune Scrub (H6.7), in the Channel Islands, is indistinguishable as a habitat from Dense Scrub so this habitat should be referred to as well.

There has been an increase of 80.21ha (489v) since the IDC's survey in 1999, which located 234.53ha (1,431v) of Dense Scrub. This increase is mostly due to the succession of land following abandonment. However, there are areas of Dense Scrub isolated within other habitat types (predominately Semi-natural Broadleaved Woodland or Continuous Bracken) which the previous methodology was not able to identify. Some areas which were previously classified as Dense Scrub have succeeded to Semi-natural Broadleaved Woodland.

The spread of Dense Scrub is a major threat to the diversity of Guernsey, as it often develops on good quality coastal or sand-dune grassland and shades out the delicate and often rare plants which are found there.

SCATTERED SCRUB (A2.2)

As mentioned in section 3.1.2 on page 12, a Scattered Scrub category was included in the 1999 survey but has been omitted from the current survey.

A total of 4,192 points of Scattered Scrub were identified during the 1999 survey. The majority of the habitat units previously noted as containing Scattered Scrub are currently classified as Improved Grassland. 13.66% is currently classified as Dense Scrub, suggesting that the scrub is now occupying a large enough area to be classified separately as Dense Scrub.

4.1.3 DRY GRASSLANDS

Dry grasslands are the dominant habitat type of the island, covering almost 21% of Guernsey's terrestrial land. They are common throughout, with their only discernible distribution pattern being their scarcity in the urbanized areas. The dominant grassland from within this group is Improved Grassland (table 2) which is of significantly less actual or potential botanical conservation interest than Semi- or Unimproved Grasslands. 23.51ha (143v) of these grasslands are used as paddocks for horses (see page 50), of the remaining 1,330.38ha (8,117v) of Improved and Semi-improved Grassland, the majority are in use by the dairy industry either as pasture for the cows, or to be cut for silage and hay.

The amount of permanent grasslands has varied considerably over the years, but is significantly lower now than at the beginning of the last century. Permanent grass was approximately 2,400ha (14,650v) in 1900 (Dury, 1950) compared to 1,332ha (8,128v) in this survey.

	2010			1999			Change	
	Area (ha)	Proportion of greenspace (%)	Proportion of total land area (%)	Area (ha)	Proportion of greenspace (%)	Proportion of total land area (%)	Area (ha)	Proportion of total land area (%)
Improved Grassland	1138.1	26.5	17.9	1531.3	39.0	24.1	-393.3	-6.2
Semi-improved Grassland	192.3	4.5	3.0	351.8	9.0	5.5	-159.5	-2.5
Unimproved Grassland	2.05	0.05	0.03	3.11	0.08	0.05	-1.05	-0.02
Total	1332.4	31.1	21.0	1886.3	48.1	29.7	-553.8	-8.7

Table 2. The amount of dry grassland identified in the current survey, and a comparison with the amount located in 1999. The proportion of greenspace is the percentage of all the terrestrial land surveyed (4,2867ha (26,157v) in 2010, 3,924ha (23,919v) in 1999), and the total land area is the percentage of all of Guernsey's (and Lihou's) terrestrial land, 6,359ha (38,800v).

The majority of land that has remained as permanent grassland has been subjected to various improvements, such as applications of fertilizers, herbicides and pesticides and often re-seeding with high yield and drought tolerant varieties, such as Ryegrass (*Lolium* sp.). If the stocking densities of cattle are high they will have a significant effect on the diversity of the grassland through over-grazing, dunging events (especially if they have been treated with insecticides which persist in their dung) and trampling (often leading to poaching). Horses have a different, but also damaging affect on the grassland; being very selective grazers, they can eliminate species entirely from the sward, and encourage the growth of unpalatable ruderals, e.g. nettles (*Urtica diotica*) and docks (*Rumex* sp.) (Sutherland and Hill, 1995).

UNIMPROVED GRASSLAND (B1)

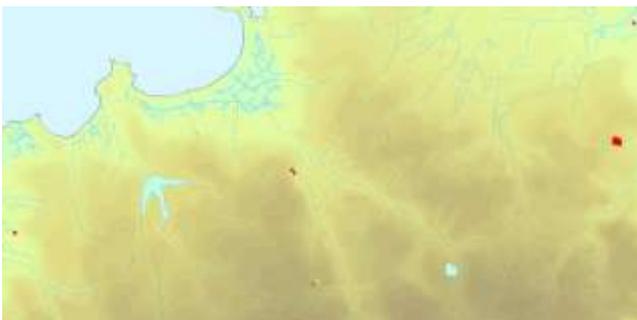
Figure 13. Abundance of Primroses (*Primula vulgaris*) in a section of Unimproved Grassland. This grassland has since been abandoned and become dominated by Bracken (*Pteridium aquilinum*).



There has been a decrease in the amount of Unimproved Grassland identified on Guernsey from 3.11ha (18v) during the 1999 survey to only 2.05ha (12v) during the 2010 survey. Unimproved Grasslands are arguably the most diverse habitats found on Guernsey (figure 13) and are home to species which are quickly out-competed by more aggressive species following improvement. It can take decades, if at all, for the grassland to revert to an unimproved state following the addition of fertilizers or herbicides, and so it is very important to protect the few remaining unimproved areas to prevent their degradation or succession to less diverse habitats.

The 2.05ha (12v) located during this survey are spread across 7 sites (highlighted in red in figure 14):

Figure 14. The current distribution of Unimproved Grassland.

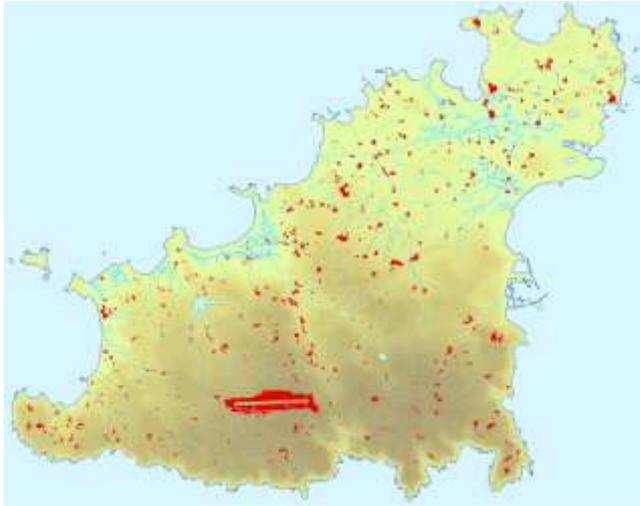


- 1.19ha (7v) at Candie Cemetery
- 0.2ha (1v 8 perches) in a field at Rue Des Vicheries
- 0.31ha (1v 35p) in a clearing in a Semi-natural Broadleaved Woodland at the top of the Fauxquets Valley
- 0.1ha (0v 24p) at an old greenhouse site in St Saviours
- 0.05ha (0v 12p) on a verge at Specsavers
- 0.19ha (1v 6p) at La Marais
- and a strip within a field in Kings Mills, which is an Earthbank that has degraded down to almost ground level

The only site which was also classified as Unimproved Grassland during the 1999 survey is Candie Cemetery. Of the remaining 2.10ha (12v) which was classified as Unimproved Grassland in 1999, 0.60ha (3v) has been abandoned and succeeded to either Tall Ruderal, Continuous Bracken, Dense Scrub or woodland, and 1.06ha (6v) has been 'improved' and now either classified as Amenity Grassland or Improved Grassland (for further details, see appendix 3).

SEMI-IMPROVED GRASSLAND (B2)

Figure 15. The current distribution of Semi-improved Grassland.

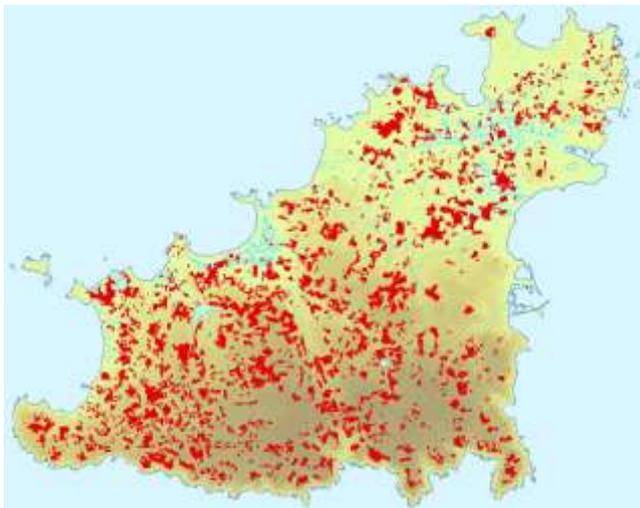


192.30ha (1,173v) of Semi-improved Grassland has been recorded in the current survey; this is a decrease of 159.51ha (973v) from the survey in 1999 when 351.81ha (2,146v) were identified, most of which has changed classification to Improved Grassland. Rather than there having been a marked 'improvement' in these areas through reseeding or the application of fertilizers, it is more likely that they have changed classification due to the more strict definition of Semi-improved Grassland (see section 3.1.2, page 13). Also of note are the 11.77ha (71v) of Semi-improved Grassland which have been lost to development (see appendix 3 for details).

The largest expanse of Semi-improved Grassland is the area surrounding the airport runway covering 49ha (299v). Unfortunately this is kept mown so that few plant species manage to flower and set seed. The remaining 142ha (866v) are scattered throughout the island (figure 15) including 3ha (18v) in the field directly north of Saumarez Park, 2.7ha (16v) in the land surrounding Vale Pond, and 2.7ha (16v) in a few fields just inland from Rocquaine Bay. 11ha (69v) are currently used for horses, 5.7ha (34v) are extensions to curtilage and 3.5ha (21v) are ex-bulb fields

IMPROVED GRASSLAND (B4)

Figure 16. The current distribution of Improved Grassland.



As alluded to above, Improved Grassland is the most abundant habitat in Guernsey, covering 17.90% of Guernsey's terrestrial land, and 26.55% of Guernsey's 'green space' (table 2). 1,138ha (6,944v) have been identified during the current survey, which is considerably lower than the 1,531ha (9,342v) located in 1999.

Improved grassland is common throughout the island, except the more 'urban' areas, such as St Peter Port, St Martins, and is only scattered throughout the lowlands in the north (figure 16). The largest continuous areas of Improved Grassland are 15ha (92v) at Barras Lane, 12ha (75v) at the Colin Best Nature Reserve (though this is becoming more and more species rich due to the Reserve's management) and 7.6ha (46v) at Les Vauxbelets.

Figure 17. An image of Improved grassland, illustrating the poor species diversity.

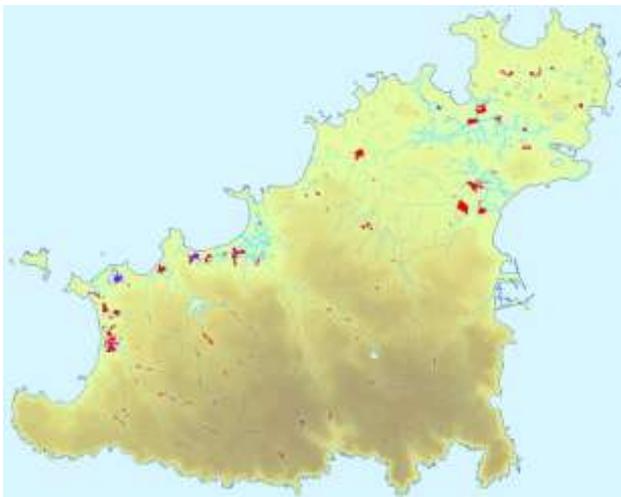


There has been a decrease of 393ha (2,400v) of Improved Grassland since the previous survey in 1999. This change is due to the re-classification of Arable Short-term Leys, some of which were previously grouped as Improved Grassland, and the conversion of Improved Grasslands to Amenity Grasslands as a consequence of properties extending their curtilage. 1.8ha (11v) at the Mignot Training Centre and at L'Aumone house have been lost to development.

As mentioned above, the majority of a grassland's floral and faunal communities are lost following improvement (illustrated in figure 17), so these areas are of less conservational value than the unimproved or Semi-improved Grasslands.

4.1.4 MARSHY GRASSLANDS

Figure 18. The current distribution of Unimproved (purple) and Semi-improved (red) Marshy Grasslands.



Marshy Grasslands develop on land which is waterlogged or periodically flooded with fresh water (Landwise Report, 2002), and as such, it is located on low lying land or in the base of valleys. Figure 18 illustrates the distribution of Unimproved and Semi-improved Marshy Grasslands identified across Guernsey during the current survey. They are found in small areas along most of the valley bottoms, and on the low-lying land around the western coast and in the north.

Historically, there would have been very large expanses of Marshy Grasslands behind many of the western bays, indicated nowadays by the place names e.g. La Grande Mare, La Mare de Carteret and La Claire Mare. These areas were

formed when bars of shingle and sand across the bays impeded drainage from the land allowing the freshwater to collect. Over time organic detritus built up, drying out these lagoons of freshwater and thus converting them to grasslands (Jee, 1983). Most of these 'Mares' have been drained and subsequently agriculturally improved or converted to arable land. Other areas have been lost to development, and in the case of La Grande Mare, converted to a golf course. They can also be lost through lack of management, which allows the establishment of Sallow (*Salix cinerea*) scrub and succession to woodland.

Despite these losses, Guernsey still boasts some very rich Marshy Grasslands, many of which are owned and/or managed by the Société Guernesiaise to ensure the preservation of their biodiversity. A collection of fields at La Claire Mare and Bridget Ozanne Reserve at Les Vicheries are internationally important examples of such grasslands.

The survey conducted in 1999 did not discriminate between Marshy Grasslands by the degree of their improvement so all wet grasslands were classified as Marshy Grassland. However, during this survey it was felt that it would be useful to divide the category into Unimproved and Semi-improved Grasslands, the data for which can then be grouped to allow comparison with the previous survey.

The total amount of Marshy Grassland identified during the present survey was 61ha (372v), this is a decrease of 30ha (182v) from the 91ha (554v) located during the survey in 1999 (table 3). Of the 91ha (554v) classified as Marshy Grassland in 1999, the present survey has identified 3.86% (3.5ha; 21v) as Unimproved Marshy Grassland (such as 1.0ha (6v) at La Claire Mare nature reserve and 0.84ha (5v) at Les Vicheries), 33.26% (30ha; 184v) as Semi-improved Marshy Grassland (such as 8.5ha (52v) at Le Marais and 3.3ha (20v) at Les Vicheries) and 23.98% (22ha; 132v) as Improved Grassland (regardless of moisture content of the soil).

	2010			1999			Change	
	Area (ha)	Proportion of greenspace (%)	Proportion of total land area (%)	Area (ha)	Proportion of greenspace (%)	Proportion of total land area (%)	Area (ha)	Proportion of total land area (%)
Marshy Grassland	7.99	0.19	0.13	90.74	2.31	1.43	-82.75	-1.30
Semi-improved Marshy Grassland	52.96	1.24	0.83	0.00	0.00	0.00	52.96	0.83
Total	60.95	1.42	0.96	90.74	2.31	1.43	-29.79	-0.47

Table 3. The amount of wet grassland identified in the current survey, and a comparison with the amount located in 1999. The proportion of greenspace is the percentage of all the terrestrial land surveyed (4,2867ha (26,157v) in 2010, 3,924ha (23,919v) in 1999), and the total land area is the percentage of all of Guernsey's (and Lihou's) terrestrial land, 6,359ha (38,800v).

UNIMPROVED MARSHY GRASSLAND (B5.1)

Figure 19. An image illustrating the rich diversity of Unimproved Marshy Grassland, Ragged Robin (*Lynchnis flos-cuculi*) and Southern Marsh Orchid (*Dactylorhiza praetermissa*) are particularly visible.



Of the 61ha (372v) of Marshy Grassland identified during the current survey, only 8ha (49v) were classified as Unimproved Marshy Grassland. These areas are located mainly around the coast, but there are also some areas inland, along the base of the valleys (highlighted in purple in figure 18). The largest expanse is 2.1ha (13v) at La Claire Mare nature reserve. There are also 10 fields at Les Vicheries which amount to 2.1ha (13v). 2.4ha (15v) are across 4 sites just inland from at Vazon Bay and 0.40ha (2v) just south of L'Ancrese. The remaining 1.02ha (6v) are inland, through various valleys in the south of the island.

SEMI-IMPROVED MARSHY GRASSLAND (B5.2)

53ha (323v) have been identified as Semi-improved Marshy Grassland during the present survey. These areas are distributed around the coast from Fort Grey to La Grande Mare, scattered inland through the valleys and along the side of streams inland and there are some larger areas in the north of the island, predominately through the Braye du Valle which was previously a tidal channel. There are 10.3ha (63v) in a group of fields at Le Marais in St Sampsons, 7.6ha (46v) at Les Vicheries and 2.7ha (16v) at the Scouts Headquarters at Les Mainguys. The distribution of Semi-improved Marshy Grassland is illustrated in red in figure 12.

4.1.5 TALL HERB AND FERN

BRACKEN (C1)

Areas dominated by Bracken (*Pteridium aquilinum*), generally have a low floral diversity, due to the shading effects of the Bracken. However, they do provide valuable shelter for small mammals, such as the Guernsey vole (*Microtus arvalis*) (Gilmour and David, *in prep.*).

CONTINUOUS BRACKEN (C1.1)

Figure 20. The current distribution of Continuous Bracken.



Continuous Bracken contributes to parts of all the semi-natural areas of Guernsey; the cliffs in the south, the valleys and the headlands (especially Fort Saumarez and Fort Le Marchant) (see figure 20). It is also very abundant on Lihou Island; accounting for 22.18% of its terrestrial land. There has been very little change in the total amount of land classified as Continuous Bracken; 104ha (632v) were identified in 1999 and 101ha (619v) in 2010, a reduction of only 2.2ha (13v). There has been some change in the distribution of this Bracken, for example, some areas have now been classified as Dense Scrub and some areas of Dense Scrub have now been classified as Continuous Bracken, this is mainly due to the greater ability to isolate small areas of a habitat within a matrix of various habitats (see section 3.1.3, page 17 for further details).

SCATTERED BRACKEN (C1.2)

As with Scattered Scrub (A2.2) and mentioned in section 3.1.2, a Scattered Bracken category was included in the 1999 survey but has been omitted from the current survey as it cannot be analysed spatially.

A total of 312 points of Scattered Bracken were identified during the 1999 survey, these points are located on habitat units, the sum area of which is just over 100ha (610v). The proportion of these units classified as

Continuous Bracken (C1.1) or Dense Scrub (A2) has increased suggesting that these areas have been abandoned and are succeeding to scrub.

TALL RUDERAL (C3.1)

If land is left without significant disturbance Tall Ruderal will develop on bare rich soil, usually as a stage in the succession to scrub. It is common on arable land which is left fallow for a year or more, or pasture which is left without grazing allowing species such as Nettles (*Urtica diotica*) and Docks (*Rumex spp.*) to colonise. 32ha (196v) of Tall Ruderal were classified during this survey, these are mainly small areas scattered throughout the island, the largest of which being 0.85ha (5v) next to Delancy Park .

There has been a decrease of 22ha (135v) of the total area of Tall Ruderal located across Guernsey and Lihou since the 1999 survey; which identified 54ha (330v). A large proportion of the Tall Ruderal located during the 1999 survey has either succeeded to Dense Scrub, such as 3.32ha at the Bridge Vinery, or has been cleared and returned to grassland.

This category by its very nature is transient, and so although there has been a 41% reduction in its abundance this is not seen as significant.

4.1.6 SWAMP, MARGINAL AND INUNDATION

SWAMP (F1)

Figure 21. The current distribution of Swamp.



15ha (93v) of Swamp have been classified during the present survey. The largest areas are 3.1ha (19v) at Le Grand Pré nature reserve, 2.8ha (17v) just north of The Bowl at St Sampson's Marais and 2.7ha (17v) at La Claire Mare nature reserve (as illustrated in figure 21). Swamp develops on land where the water table is very close to the surface of the ground, creating very wet conditions. However, it will succeed to woodland if not managed correctly. Swamp, like Marshy Grasslands, would at one time have been abundant throughout the Mares along the western coast. However, they too have largely been drained and subsequently converted to agricultural land or developed.

The majority of the Swamps in Guernsey are dominated, sometimes solely, by reeds (*Phragmites australis*; figure 22) and are seldom immersed. These areas are in the later stages of the seral succession from Marshy Grassland to Sallow (*Salix cinerea*) Scrub. In some areas the water table is much closer to the surface creating very wet conditions, such as at Vale Pond and Le Grande Pré nature reserves.

Figure 22. An area of Swamp dominated by Common Reed (*Phragmites australis*) (Le Grand Pré Nature Reserve, Vale).

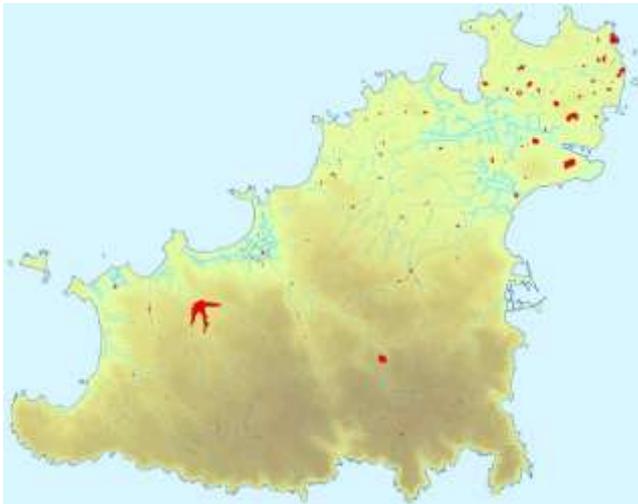


15ha (89v) were classified as Swamp during the survey in 1999, although there has only been a decrease of 0.70ha (4v 10p), there has been some change in the distributions of areas classified as Swamp; some areas identified in 1999 have succeeded to Sallow (*Salix cinerea*) scrub, and some areas of Marshy Grassland have now been classified as Swamp, following the establishment of Reeds (*Phragmites australis*).

4.1.7 OPEN WATER

STANDING WATER (G1)

Figure 23. The current distribution of Standing Water.



Standing Water was historically a very scarce habitat in Guernsey (Marquand, 1901). However, the extensive Quarrying for granite in the north for export during the 19th century, and up until the First World War, left an array of quarries which have filled naturally with water, or are topped up by the Water Board as reservoirs (e.g. Juas Quarry; Jee, 1983), making this habitat much more abundant. The largest single expanse of open water is held at the reservoir. This 13ha (77v) of Standing Water was contained in 1947 following the construction of the dam.

The ecology of Standing Water is dependent largely on the nutrient availability; most of the waterbodies in Guernsey will be eutrophic due to the natural enrichment from mineral salts within the catchment, but also due to agricultural runoff containing phosphates and nitrates from fertilizers (Sutherland and Hill, 1995). The majority of diversity will be found in the shallow waters, below which little light will be able to penetrate due to the abundant algae always found in eutrophic water bodies (Sutherland and Hill, 1995). These expanses of open water are important for many species of wildfowl, and are important for the biodiversity of the island because of the many plant and invertebrate species found in them.

The Standing Water found in the natural ponds around the North and West of the Island, such as the small ponds on L'Anresse Common, have a very different ecology to the reservoirs. Their size and depth fluctuates seasonally, some drying out entirely in the summer months. This dynamic allows terrestrial plants to colonise and set seed, which in turn are important sources of food for birds in the autumn (Sutherland and Hill, 1995).

Ponds are threatened by the rise in duck populations, which cause considerable damage to their structure, overfertilise the water, and feed on a variety of the ponds fauna and flora (Gilmour and David, *in prep.*).

45ha (277v) of Standing Water have been identified during the present survey (highlighted in red in figure 24), this is an increase of 3.8ha (23v) since the IDC's survey in 1999 which classified 42ha (254v). The main cause of this increase is the filling of St Andrews Reservoir (2.1ha; 13v). There are also quarries which have been converted to Standing Water since the previous survey (for details see appendix 3).

The 1999 survey included Brackish Pools in this category; however we have classified them separately, (see Brackish Pool section below).

BRACKISH POOL (G1.6)

Figure 24. An example of a Brackish Pool (Pulias Pool).



Brackish Pools are formed near the high water mark in areas which are periodically inundated with sea water, such as from wave action during high storms. Pulias Pool (figure 25) formed when a bank of shingle formed across what was previously Pulias Bay, and the Vale Pond was closed off at the reclamation of the Braye du Valle. Sea water is able to enter these pools at high tides through drainage pipes and leaks in the sea barriers. Brackish water bodies support a wide range of algae, and the invertebrates which feed upon them and are also important for eels and wading birds (Gilmour and David *in prep.*).

There are only 5 Brackish Pools; 1.6ha (10v) at the Vale Pond, 0.48ha (2v 37p) at La Claire Mare nature reserve, 0.28ha (1v 28p) at Pulias Pond, 0.05ha at Le Rousse and less than 0.01ha (2p) in a field at Bordeaux Harbour, totaling 2.5ha (15v). During the 1999 survey, Brackish Pools were combined in the Standing Water category.

RUNNING WATER (G2)

Figure 25. The current distribution of Running Water in Guernsey.



Man-made streams, known locally as 'Douits', and natural streams, particularly along the main valleys and the south coast are common in the island. However, there are no large streams or rivers; "rivers in Guernsey there are none; nor is there a stream of any kind that boasts of a name. Such natural drainage as there is, follows the fall of the land, branching off to the sea on the north-western and north-eastern shores" (Ansted and Latham, 1862). There were numerous small natural streams running through the base of the valleys, unfortunately, many of this have been culverted, reducing their ecological value (Gilmour and David *in prep.*). The drainage channels through fields are generally bordered by damp areas and so are colonized by marsh tolerant species, such as

Common Reed (*Phragmites australis*) and Galingale (*Cyperus longus*). Most douits, streams and drainage channels must, by law, be cut twice a year. However, where this practice is not upheld they dry out and become over-grown with scrub (Gilmour and David, *in prep.*).

During the current survey, 108km of Running Water were identified. These follow the contours of the valleys running from the plateaus in the south of the island to the sea. And there are various small streams criss-crossing through the north of the island (illustrated in figure 26)

Figure 26. A fast-flowing stream in a south coast valley (Petit Bôt)



Figure 27. A slow-flowing stream in the north of the island enters a culvert. (South of Rabbit Warren)



4.1.8 COASTLAND

INTERTIDAL (H3)

Figure 28. An intertidal area containing all 3 intertidal categories (Belle Grève Bay).



The intertidal zone is a very diverse mosaic of different habitats (figure 28), however they have been simplified for the Phase 1 methodology into 3 basic classifications based on the geology; Sand, Shingle and Rocks/Boulders. The intertidal zone surrounding Guernsey and Lihou covers 1,107ha (6,745v), of which 1,080ha (6,590v) was surveyed.

INTERTIDAL SAND (H1.1)

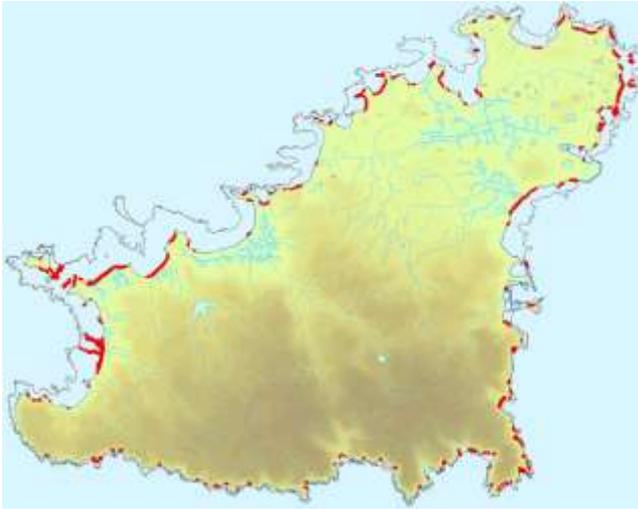
Figure 29. The current distribution of Intertidal Sand.



Guernsey boasts some beautiful sandy expanses, especially at low tide; Vazon Bay being one example. Due to the mobile nature of the Intertidal Sand, very few plants are able to survive there. There are some invertebrates which live in the sand, such as lug worms (*Arenicola* sp.), razorfish (*Ensis siliqua*) and sandhoppers (*Talitrus saltator*), as well as many other smaller interstitial invertebrates, all of which are important prey items for seabirds, such as oystercatchers. 249ha (1518v) of Intertidal Sand were surveyed, this accounts for just over 22% of all Guernsey's intertidal zone. This land is highlighted in red in figure 29.

INTERTIDAL SHINGLE (H1.2)

Figure 30. The current distribution of Intertidal Shingle.



As with sand, Intertidal Shingle is very mobile, and so large flora and fauna are unable to establish. However it does have an important role in protecting the coast from erosion and flooding. This is the scarcest of the 3 Intertidal categories, covering only 3.25% of the intertidal zone (36.44 ha; 222v) (figure 29).

INTERTIDAL ROCKS/BOULDERS (H1.3)

Figure 31. The current distribution of Intertidal Rocks/boulders.



There is an enormous variety of communities found on and between the rocks and boulders and a natural variation with the transect along the shore, due to the degree of exposure and risk of desiccation etc. From rocks covered in lichens, limpets and barnacles to the communities formed within the seaweeds which can form vast mats across the rocks. Rock pools also support a great diversity of both flora and fauna. The diverse and complex associations are so great that it is not possible to begin to discuss the importance of such areas.

795.01ha (4,851v) of Intertidal Rocks/Boulders were identified, which accounts for 71% of all

of Guernseys intertidal land (figure 31). Much more intensive surveys, such as a biotope survey (JNCC), are needed to better understand the nature of these habitats.

SALTMARSH (H2)

Figure 32. The current distribution of Saltmarsh.



Figure 33. Saltmarsh dominated by Glasswort (*Salicornia* spp.) (Colin Best Nature Reserve, L'Erée).



Saltmarsh was once a very abundant habitat in the lowlands of Guernsey. However, even before Marquand's review of the flora (1901) it had almost vanished. Before the Braye du Valle tidal channel was closed off in the early 1800's, Saltmarshes stretched from L'Islet right down to Braye Side traffic lights, the 'Salines', and another to the east, referred to as Saltpans, due to their use for the extraction of salt. The only remaining fragment of which is the Vale Pond, a Brackish Pool (Jee, 1983).

At present there are only 1.6ha (9v) of Saltmarsh (distribution is illustrated in figure 32), however, this has increased by 1.1ha (7v) since the IDC's survey in 1999 which recorded only 0.45ha (3v).

0.41ha (3v) of this change is due to the expansion of an area of Saltmarsh at L'Eree, from two small patches (0.22ha (1v) and 0.19ha (1v)) to one large expanse of 0.94ha, which is also the largest area of Saltmarsh remaining on the island.

There are also areas at Lihou, Rocquaine, Vazon, Pulias Pool and around the Vale Pond which contain Saltmarsh species.

SHINGLE (H3)

Figure 34. An example of a Shingle bank (Fontenelle Bay).



Shingle banks above the mean high tide mark are currently distributed along the west coast and the northern section of the east coast, also in some bays at the base of the cliffs in the south and south east (illustrated in figure 35). An important area is at Les Anguillières, covering 1.14ha (7v).

Previously, shingle banks have been lost due to the development of sea walls.

Figure 35. The current distribution of Shingle.



13ha (82v) of Shingle was recorded in 1999, this has increased by 21% to 16ha (100v) located during the current survey. However, as this is mainly land on the northwestern aspect of Pleinmont which was previously omitted, this is not deemed a significant change.

As with Intertidal Shingle (H1.2), Shingle above the mean high water mark are harsh environments for plants to establish themselves (figure 34); they are subject to exposure and constant movement, as well as disturbance from walkers, and there is very little substrate in which to set roots. However, some species have adapted to survive such conditions, such as sea kale (*Crambe maritima*). Shingle banks can

sustain important invertebrate populations (e.g. the scaly cricket (*Pseudomogoplistes vicentae*)) and are feeding and nesting sites for some birds (e.g. Ringed Plovers (*Charadrius hiaticula*) and Oystercatchers (*Haematopus ostralegus*)).

ROCK (H4)

Figure 36. The current distribution of Rock.



There has been a 25% decrease in the amount of Rock classified since the 1999 survey. It has reduced from 16 ha (97v) to 12 ha (73v), predominately due to the re-classification of Rock to Hard Cliff (H8.1) or to Shingle (H3), The current distribution of rock is highlighted in red in figure 36.

The ecology of Rock is very much like that of Hard Cliffs (H8.1); lichens are able to colonise the surface of the rocks and some plants are able to establish themselves in the thin substrate within the cracks (see figure 36).

SAND DUNE (H6)

Figure 37. The current distribution of Sand dunes. Dune Grassland: red, Dune Scrub: green, Open Dune: purple



“Before man began to involve himself in coastal defense, the sandy bays were backed by mobile dunes, whose sand was not fixed by vegetation but was free to blow with the wind” (Jee, 1983). Since then, sand dunes have been lost to development, extensions to curtilage, quarrying for sand and the development of sea walls. L'Ancrese common, once described as a “fine expanse of undulating sandy ground a mile and a half long” (Marquand, 1901) has now mainly been converted into a golf course. The L'Ancrese Golf Club was established in 1895 and a Links course, originally occupying only a small area of land directly south of L'Ancrese Bay now covers the majority of the common. The intensive management of the golf course has a profound effect on the grassland’s ecology; e.g. lowering the water

table, application of pesticides and herbicides, re-seeding the fairways and greens, and mowing them so regularly only disturbance tolerant grasses can survive, reducing the floral diversity (www.royalguernseygolfclub.com). There are some areas between the fairways which have not received the same intensive management and are small fragments of the good quality Dune Grasslands which would have covered the whole common. There are other small remnants of sand dunes along the west coast at Port Soif and Vazon Bay (figure 37)

	2010			1999			Change	
	Area (ha)	Proportion of greenspace (%)	Proportion of total land area (%)	Area (ha)	Proportion of greenspace (%)	Proportion of total land area (%)	Area (ha)	Proportion of total land area (%)
Dune Slack	0.47	0.01	0.01	2.86	0.07	0.07	-2.39	-0.06
Dune Grassland	84.36	1.97	1.33	74.29	1.89	1.73	10.07	-0.41
Dune Heath	0.00	0.00	0.00	1.27	0.03	0.03	-1.27	-0.03
Dune Scrub	27.37	0.64	0.43	27.28	0.70	0.64	0.09	-0.21
Open Dune	1.29	0.03	0.02	1.36	0.03	0.03	-0.07	-0.01
Total	113.49	2.65	1.78	107.06	2.73	2.50	6.43	-0.71

Table 4. The amount of Sand Dune identified in the current survey, and a comparison with the amount located in 1999. The proportion of greenspace is the percentage of all the terrestrial land surveyed (4,2867ha (26,157v) in 2010, 3,924ha (23,919v) in 1999), and the total land area is the percentage of all of Guernsey's (and Lihou's) terrestrial land, 6,359ha (38,800v).

Sand dunes develop in areas where sand blown by the wind is deposited when disturbed by an obstacle, such as strandline vegetation or detritus. The sand accumulates into an embryo dune, which is colonised by vegetation (e.g. Marram Grass (*Ammophila arenaria*); see Open Dune (H6.8)) stabilising the sand and allowing

it to develop into a larger dune. New dunes often form in front of these dunes, allowing them to establish further, and they succeed into Dune Grassland (H6.5) and often Dune Heath (H6.6). Each new dune forms a ridge, between which Dune Slacks (H6.4) may form.

DUNE SLACK (H6.4)

Figure 38. Silverweed (*Potentilla anserina*); a species commonly found in Dune Slacks.



In the lower areas between the dune ridges a table of impermeable salts can form and act as a barrier to water drainage allowing the water level to rise and wet conditions to develop. These marshy areas are known as Dune Slacks and are often the most diverse areas of a dune system (Sutherland and Hill, 1995). Due to the sandy substrate, these marshes may be much more calcareous than Marshy Grasslands (B5). The flora communities which colonise depend on whether the slack is permanently wet, or whether it dries out during the summer months. Species such as Silverweed (*Potentilla anserina*; figure 38) and Rushes (*Juncus* spp.) are commonly found.

Of the 42 habitat classifications identified on Guernsey, Dune Slack is the rarest with only 0.47ha (3v) having been located during the current survey, all of which is located along the North of the West coast from Vazon to L'Ancrese. Its abundance has decreased from 2.9ha (17v) to 0.47ha (3v) (a reduction of 84%) since the 1999 survey; however it appears that rather than the habitat having been degraded and lost, the previous surveyors were generous with the area classified as Dune Slack and so the previous data was an overestimate.

Since this survey was conducted, an area of Dune Slack at L'Ancrese common has been lost as the Horse Racing track has been re-aligned. This change has not been mapped so the current statistics don't reflect this loss.

DUNE GRASSLAND (H6.5)

Figure 39. An expanse of Dune Grassland (L'Ancrese Common) with Amenity Grassland of the Golf Course fairways to the left of the Martello towers and up Les Vardes Hill.



Dune Grassland develops on sand dunes which have become established and Marram Grass (*Ammophila aenaria*) is less dominant (compare with Open Dunes, H6.8; see figure 39). There is a great diversity of plants which colonise Dune Grasslands, such as Rest Harrow (*Ononis repens*), Sand Crocus (*Romulea columnae*) and Wild Thyme (*Thymus serpyllum*), which in turn support a great diversity of invertebrates, such as the snail *Theba pisana* amongst others and many species of rare insects.

84ha (515v) have been located during the present survey. The distribution of Dune Grassland follows the sandy bays from Vazon

Le Grande Havre, and all through L'Anresse Common up to Le Catelain (see figure 37) and a small area at Bordeaux. There has been a 14% increase since the 1999 survey, which located 74ha (453v). This increase is largely due to edge effects, largely with the classification of Amenity Grassland, Dune Scrub and Dune Grassland throughout L'Anresse golf course and to the loss of Dune Heath.

DUNE HEATH (H6.6)

Figure 40. The current classification of the land previously identified as Dune Heath (areas highlighted in blue) (section of L'Anresse Common).



In 1787, heath was found along “*the sandy lands in the north*” (Dury, 1950), since then through conversion to golf courses and succession of areas to Dense Scrub, all of this has been lost.

1.3ha (8v) of Dune Heath were identified in the 1999 survey but none has been located during the current survey. There are a few small, scattered patches of heather at L'Anresse Common, but all are too poorly established to classify. At present the land previously classified as Dune Heath is a mosaic of Amenity Grassland, Dune Grassland and Dune Scrub (illustrated in figure 40)

An area of Gorse (*Ulex europaeus*) has recently been cleared north of the Mont Cuet road. This has Heather (*Calluna vulgaris*) seedlings and Lousewort (*Pedicularis sylvatica*), an indication that this area may revert to Dune Heath if the scrub does not regrow.

DUNE SCRUB (H6.7)

This category has remained fairly stable with a reduction of less than 1% (from 27.37ha (167v 0p) to 27.28ha (166v 18p)). There are small patches around Vazon, Cobo and Port Soif but the majority of Dune Scrub is located across L'Anresse common (see Fig. 12) where its spread is restricted by rabbits which graze the Dune Grassland, and by management operations by the Vale Commons Council. Dune Scrub differs very little from inland scrub (Dense Scrub, A2.1). It is dominated by Brambles (*Rubus fruticosus* agg.), Gorse (*Ulex europaeus*) and Blackthorn (*Prunus spinosa*). In England, Sea Buckthorn (*Hippophae rhamnoides*) is common and can be used to distinguish between inland and Dune Scrub.

OPEN DUNE (H6.8)

Figure 41. Marram grass (*Ammophila arenaria*) dominating an area of Open Dune.



Open Dune is the open area of dunes at the seaward side of a dune system. The sand has been partly stabilised by xerophytic grasses, such as Marram Grass (*Ammophila arenaria*) and Sand Couch (*Elytrigia juncea*), however the sand is still blown by the wind. These sections of the dunes are often referred to as 'yellow dunes' due to the abundance of sand visible between the Marram grass (see figure 41). Despite the harsh conditions on the Open Dunes, a variety of plants can survive there, such as Frosted Orache (*Atriplex laciniata*), Sea Rocket (*Cakile maritima*) and Sea Holly (*Eryngium maritimum*). These plants also support a variety of associated invertebrates (such as the cydnid bug (*Geotomus punctulatus*) which is rare in the UK and birds which feed on their seeds (Gilmour and David, *in prep.*).

1.3ha (8v) of Open Dune have been identified in Guernsey during the current survey, the largest expanses are 0.50ha (3v) at Vazon and 0.24ha (1v 18p) at Port Soif. There are also small areas scattered around Le Piquerel, Le Grande Havre and Baie de la Jaonneuse (see figure 37). Most of this habitat has been lost due to the construction of sea defenses or stabilization of the dune systems (Gilmour and David, *in prep.*). There has been a 5% increase in Open Dunes since the 1999 survey (which recorded 1.4ha (8v)), this is mainly due to the reclassification of areas previously classified as Dune Grassland. These areas do not appear to have become less stable and regressed to Open Dune, but rather were mis-classified during the 1999 survey.

MARITIME CLIFF AND SLOPE (H8)

HARD CLIFF (H8.1)

Figure 42. The current distribution of Hard Cliff.



There has been a 112% increase in the amount of Hard Cliff located in comparison to the 1999 survey. A proportion was previously classified as Rock (I1.4) and Coastal Grassland (H8.4) and has changed classification largely due to 'edge effects' and a greater ability to isolate small areas of habitats. However, 72% was previously not surveyed, this land is predominately on the southern aspect of Pleinmont.

The coastal cliffs are particularly important habitats for lichen communities (see figure 43); over 160 different species are found in the Hard Cliffs of Guernsey alone (Gilmour and David, *in prep.*). Despite the thin substrate on the rocks

Figure 43. Lichen communities colonising an area of maritime Hard Cliff.



and the near constant effects of salt spray some plants are able to establish themselves, for example Rock Samphire (*Crithmum maritimum*), Thrift (*Armeria maritima*) and Sea Campion (*Silene uniflora*) and the ledges provide nesting sites for many sea birds. This habitat is currently threatened by the spread of Hottentot Fig (*Carpobrotus edulis*; see section 4.1.10).

SOFT CLIFF (H8.2)

Figure 44. The current distribution of Soft Cliff.



Soft Cliffs are much more unstable than Hard Cliffs as they are more susceptible to the continual erosion due to the softer substrate (Sutherland and Hill, 1995; see figure 45). This soft substrate allows various invertebrates to burrow into the cliffs and create nest sites, such as solitary wasps and bees, as do sand martins (*Riparia riparia*) which rely on this habitat alone for nest sites. Again, this habitat is threatened by the spread of Hottentot Fig (see section 4.1.10)

Figure 45. Area of Soft Cliff, illustrating its unstable and fragile nature (Pleinmont).



As mentioned in section 3.1.2 the Soft Cliff category has been included as a linear layer; however some areas visible on the aerial photographs have also been mapped as a habitat layer. 2.45 ha (15v) less (49%) have been classified compared to the amount of Soft Cliff classified in 1999; 34% has been re-classified as Coastal Grassland and 18% as Dense Scrub. 5.7km of Soft Cliff have been identified in the linear layer. The distribution of both the linear layer, and the habitat polygons are illustrated in red in figure 44.

COASTAL GRASSLAND (H8.4)

The salt spray and exposure on areas in a close proximity to the sea has a large affect on the species present in Coastal Grasslands. Due to the location and intrinsic poor quality of the soil in coastal regions, there are areas which cannot be utilized for agriculture and so have remained unimproved. These areas are very diverse in both floral and faunal communities. Invertebrates such as the solitary bee *Andrena agilissima* and the shield bug *Eurydema oleracea* are confined to Coastal Grasslands (Gilmour and David, *in prep.*).

Coastal Grassland is the most abundant habitat type on Lihou, accounting for 38.63% of its total terrestrial land area. There are also areas of Coastal Grassland on other small islands off the coast. In Guernsey, there is a large amount along the cliffs in the south and along the rocky headlands up the west coast, and a thin strip just inland from the sea walls along the north of the east coast (see figure 46).

Figure 46. The current distribution of Coastal Grassland (red) and Coastal Heathland (purple).



There has been a 20% increase in the abundance of Coastal Grassland across Guernsey and Lihou since the 1999 survey. Two old quarries have been filled and converted to Coastal Grassland, which accounts for 3.9ha (23v) of the increase in Coastal Grassland. But the majority of this is due to the re-classification of a large amount of what was previously classified as Hard Cliff. These areas of Coastal Grassland were separated from the adjacent Hard Cliff using aerial photography, and so wouldn't have been easily located using

the previous methodology.

COASTAL HEATHLAND (H8.5)

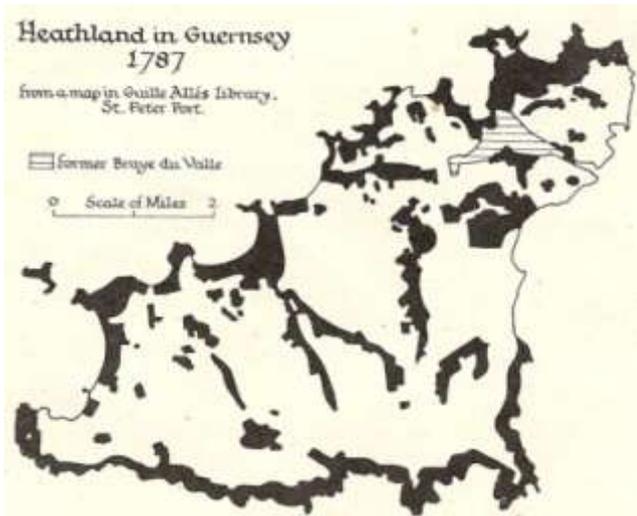
Figure 47. Ling (*Calluna vulgaris*), an indicator species of Coastal Heathland)



Coastal Heathland was once common around all of Guernsey's coast, it is identified by an abundance of Ling (*Calluna vulgaris*; illustrated in figure 47) and Bell Heather (*Erica cinerea*), often in a mosaic with Gorse (*Ulex europaeus*) and occasionally Western Gorse (*Ulex galii*). Figure 48 is a replication of a map included in Dury's description of land use (1950). It illustrates that in 1787 there was an abundance of heath along the south coast and in the valleys and low-lying areas. Heath remained frequent in 1901, as described in Marquands *Flora of the Channel Islands*; "the steep, stony cliff-sides, covered with heather, gorse and Bracken" However, it is suspected that most of the area

shown as heath in this figure would be classified differently now, probably as scrub, sand dune and various sorts of grassland (rough grazing).

Figure 48. Map of Heathland in Guernsey, copied from Dury's report on Land Use e Channel Islands (1950).



There is very little Coastal Heathland remaining in Guernsey (with only 1.6ha (10v) having been located), the little heathland that does remain is scattered in a few small patches along the south coast, especially around the south of Pleinmont Point (figure 49), and at Le Marchant and Doyle headlands, either side of Fontenelle Bay (figure 50). The reduction in grazing and subsequent succession to scrub is a major factor in the loss of heathlands, as probably, is the increase in nitrates deposited by rain since the war due to air pollution. During the 1999 survey, 2.7ha (16v) of Coastal Heathland were identified, so there has been a 42% decrease in its abundance in only 11 years. It appears that the most significant change is (as with previous declines) due to the expansion of Continuous Bracken and Dense Scrub, which is shading out the small patches of Heather.

Figure 49. The largest areas of Coastal Heathland remaining in the island are at Pleinmont.

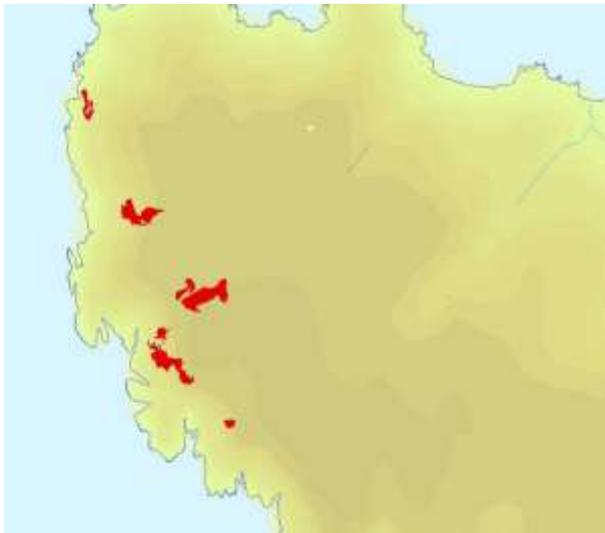


Figure 50. Small areas of heath at Fontenelle Bay



4.1.9 QUARRY (I2.1)

At present, there is only one active Quarry. Owned by Ronez, the Quarry at Les Vardes covers 5.8ha (36v), and was also an active Quarry during the 1999 survey. There has been a 75% decrease in the abundance of quarries since the 1999 survey; such as 8.8ha (36v) at Chouet headland, which has since been utilised as a refuse tip and is now all but filled in. They are largely now classified as Coastal Grassland or Bare Ground.

Historically, there have been a large number of granite quarries in the north. Following abandonment, these have filled naturally with water or are used as reservoirs (see Standing Water, G1)

4.1.10 MISCELLANEOUS

CULTIVATED/DISTURBED LAND (J1)

ARABLE (J1.1.1)

Figure 51. A recently ploughed Arable field.



At present, 333ha (2,030v) of the land in Guernsey is currently under cultivation². The main crops grown are potatoes, maize, and others used for fodder, such as beet. 7.8ha (48v) are small allotments for personal use³. Arable Land is located predominately in the upland plateau and becomes scarcer in the northern and more urban areas of the island (illustrated in red in figure 52). The largest expanse is 29ha (178v), across 31 fields just to the east of the airport.

The data for land under cultivation has been recorded for many years, so there are accurate

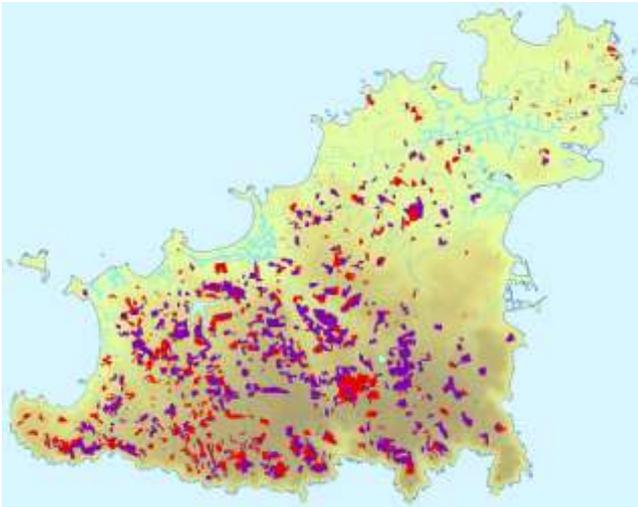
records of historic arable land use. Due to the logistical constraints of attaining food on an island, large areas of land used to be kept under cultivation. In 1939 the area under arable, root crops and bulbs was 1,033ha (6,303v) compared with only 333ha (2,030v) now (Dury, 1950).

Due to the rotational system widely implemented in Guernsey, Arable Land is often seeded with Ryegrass (*Lolium* sp.) and left as a Short-term Ley. Some areas of this were apparently classified as Improved Grassland during the 1999 survey, but have now been classified separately as Arable Short-term Leys. There appears to have been a 14% decrease in the amount of Arable Land, but this is most likely caused by this change in the categories, as opposed to having been taken out of arable rotation (see appendix 3 for further details).

² The current statistics for Arable Land include some small allotments and vegetable patches, as well as the large agricultural fields, but doesn't include any crops grown under glass, such as tomatoes and exotic varieties in greenhouses, or areas currently seeded with leys, which are classified separately (see Arable Short-term Ley section below).

³ Only including allotments within habitat units that were surveyed; most allotments in small gardens and in urban areas were omitted.

Figure 52. The current distribution of Arable Land (red) and Arable Short-term Leys (purple).



The management of land when under arable use strives to reduce the floral diversity in order to reduce competition with the crop plants and increase their yield leading to very depauperate areas of land. However, when an area of Arable Land is left fallow (of which 9.2ha (56v) were noted) weeds very quickly colonize, and as there is not enough time for any one species to become dominant these areas are often very diverse. Communities such as this can also be found around the edges of arable fields as long as herbicides aren't applied.

Large amounts of fertilizers are added to the soil in order to increase its productivity; Ansted and Latham 1862, " *the soil in the islands cannot properly be regarded as naturally rich (rich soils contain from 3 to 10 per cent. of organic matter). It has been made rich by its inhabitants, and is thus productive*". So even if the land is abandoned, and the intensive management ceased, the underlying soil will be so improved that the grassland communities which develop will be very species poor, and will take decades to become more diverse.

ARABLE SHORT-TERM LEY (J1.1.2)

Figure 53. An example of a Short-term Ley, comprised entirely of seeded Rye Grass (*Lolium* sp.).

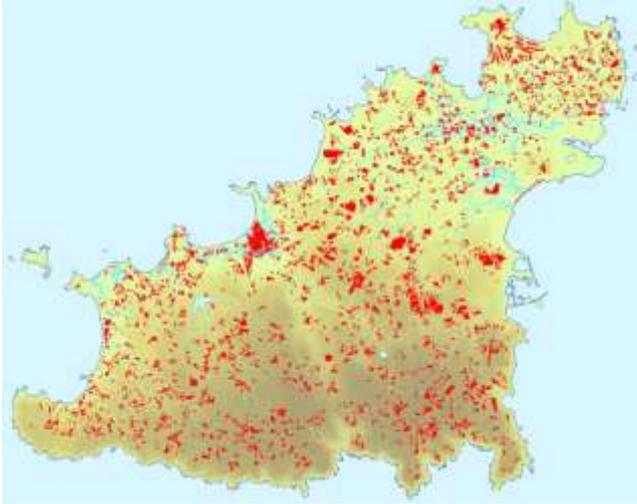


556ha (3,390v) of land in Guernsey have been identified as Arable Short-term Leys (illustrated in purple in figure 52), as mentioned above these areas would have previously been classified as Improved Grassland (B4) or Arable Land, depending on its stage in the rotational system. These areas are most often seeded with Rye-grass varieties (*Lolium* spp), which will out-compete almost all other species, and so the diversity of these areas is kept very low (figure 53). They are also often sprayed with herbicides and pesticides, further reducing their diversity. Some areas of permanent grassland have been ploughed and re-seeded in order to increase the sward's value to the cattle grazing

on it. This loss of permanent grassland is a contributing factor to the loss of the skylark and other native fauna in Guernsey (Gilmour and David, *in prep.*).

AMENITY GRASSLAND (J1.2)

Figure 54. The current distribution of Amenity Grassland.



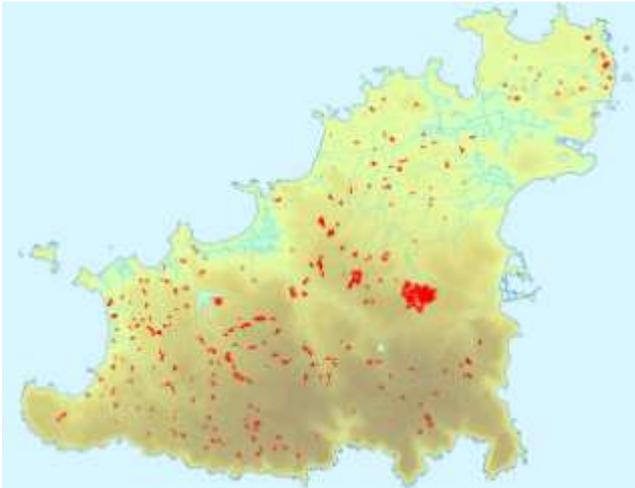
Amenity Grassland is abundant throughout the whole island (figure 54). The golf courses at Le Grande Mare, L'Ancrese and St Pierre Park stand out, as do the curtilages in large estates. During the present survey, 688ha (4,193v) of Amenity Grassland were located, this is a 22% increase from the 565ha (3,446v) identified in 1999. The majority of the land newly classified as Amenity Grassland was not previously surveyed so it is difficult to determine the net increase in Amenity Grassland across the whole of Guernsey.

The ecological value of Amenity Grassland depends largely on its management. Some of these areas will be very intensively managed;

broad spectrum herbicides may be applied, as well as being mown and reseeded very regularly and as such will have a very low floral diversity. However, if the grassland is not treated with herbicide, species such as daisy (*Bellis perennis*) and creeping buttercup (*Ranunculus repens*) are common; however species intolerant of regular disturbance will not be able to survive (Gilmour and David, *in prep.*).

EXTENSIONS TO CURTILAGE

Figure 55. The current distribution of land recently converted to Amenity Grassland in order to extend a domestic curtilage..



During this survey, the amount of land that was obviously agricultural land in the recent past, but has since been re-seeded or mown as a lawn, or in a few cases planted with trees either as a wood or as Parkland, in order to extend a domestic curtilage was noted. 134ha (822v), which accounts for just less than 2% of all Guernsey's terrestrial land, was recorded; this is illustrated in figure 55. This is likely to be an underestimate, as it was not possible to record all small areas. The loss of agricultural land to Amenity Grassland has both ecological and socio-economic impacts. Land owners wishing to extend their curtilages are generally able to pay more money for areas of land than farmers needing to make a profit out of the land, so large proportions of land are being

lost from agriculture. This puts additional strain on the farmers, who then may wish to increase the stocking densities on their remaining land.

Of the land currently noted as an extension to a domestic curtilage, 70% (88ha; 534v) is Amenity Grassland, 14% (18ha; 109v) is Improved Grassland and 4.8% (6.02ha; 37v) is Parkland (these data are included in appendix 4). In 1999 only 39% (47ha; 286v) of this land was classified as Amenity Grassland and 45% (54ha; 327v) was Improved Grassland. It is not possible to calculate what proportion of this land had already been

utilised to extend a curtilage in 1999, however it can be assumed that the land classified as Amenity Grassland would have been included in this category. It may also be assumed that the 6.4ha (39v; 5.5%) of land classified

Figure 56. An example of Amenity Grassland. The sward is mown very short and reseeding and applications of herbicide prevent any diversity of plants from establishing.



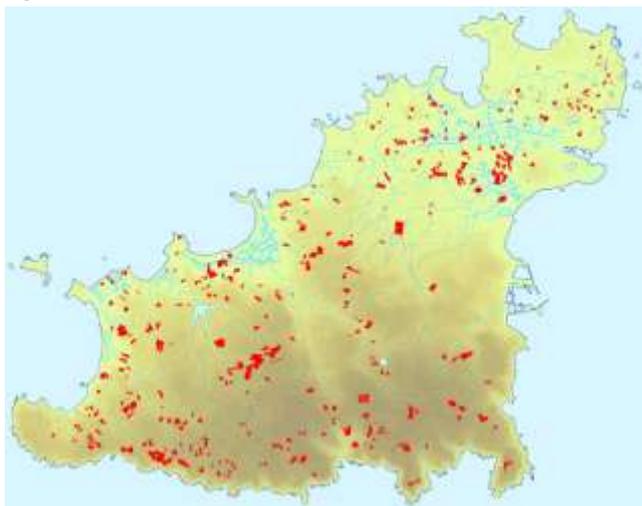
as Arable was not a curtilage. So the reduction of 4.6ha (28v) of Arable Land that is currently noted as an extension to a domestic curtilage can be assumed to have been lost from agricultural use within the past 11 years.

The 31% decrease in Improved Grassland is not as easy to define. Although it is probable that a proportion of this is agricultural land which has been converted to Amenity Grassland since the previous survey, it is not possible to calculate how much, especially given the difficulty in defining between improved and Amenity Grassland, which is heavily biased by the amount of time which has elapsed between mowing and surveying the land.

Although it is only possible to determine with some certainty that at least 4.6ha (28v) of land has been converted to an extension of curtilage within the past 11 years, it is most likely to be much closer to 78ha (475v; all 'extension to curtilage' land, minus the land previously classified as Amenity Grassland). The land included in this category is likely to be an underestimate, as only land obviously converted was included, the actual figure may be much higher. Despite the limitations to the current data, they do provide the basis from which future changes of land use can be calculated.

LAND USED FOR HORSES

Figure 57. The current distribution of land used for horses.



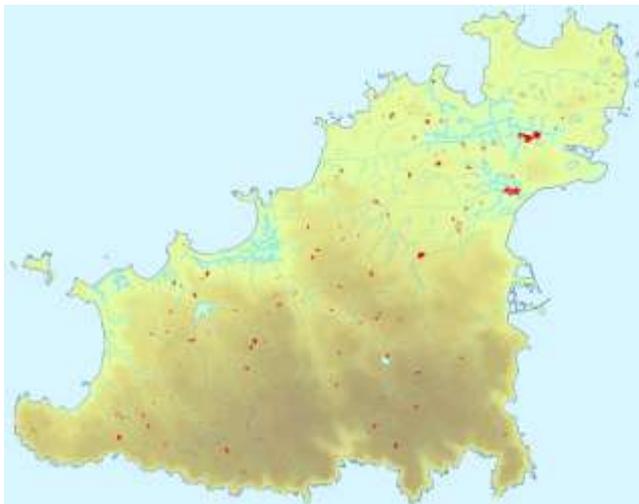
234ha (1,428v) of land is currently used for horses, this land is highlighted in red in figure 57. The amount of land used as pasture for horses was not recorded during the 1999 survey, so it is difficult to perform a direct comparison in the abundance of paddocks. However, it is possible to compare what the land currently used for horses was classified as during the 1999 survey. It should be noted that there is likely to be some margin of error due to the variations in dividing the habitat units.

Of the land currently classified as under use for horses, 87% (202ha; 1,234v) is classified as Improved Grassland and 4.9% (11ha; 69v) as Semi-improved Grassland (these data are included in appendix 5). This land in 1999 was classified as 66% (147ha; 897v) Improved Grassland and 18% (41ha; 248v) as Semi-improved Grassland. Although it is not possible to determine whether horses were present on this land during the previous survey, we can determine that 29ha (179v) of land currently used for horses was Semi-improved Grassland and has now been lost, there has been a loss of 2.5ha (15v) of Marshy

Grassland and 0.91ha (6v) of Coastal Grassland. This is most likely due to the 'improving' influence of horses on grassland. Their selective grazing is able to eliminate entire species from a sward, their dunging increases the nutrient content of the soil, especially when the horses are provided with supplementary feed, and traces of medical treatments, such as worming tables, which remain in their dung can damage invertebrate communities. Although these impacts are acute when stocking densities are high, if the land is managed correctly they may be used to maintain the diversity of an area. In fact, the most damaging impact on the diversity of the land used for horses was not deemed to be the activity of the horses, but by that of their owners. In some instances broad spectrum herbicides were applied in high doses in order to eliminate unwanted plants, such as Hemlock Water Dropwort (*Oenanthe crocata*), but also eliminated many other broad-leaved plants from the area. In one instance this led to the loss of the only examples of the Early Marsh Orchid (*Dactylorhiza incarnata*) found on the island in almost 100 years. Land is also often reseeded with a rye grass (*Lolium* spp.) mix in order to increase the nutrient content of the grass, which also significantly reduces the biodiversity of the grassland.

BROWNFIELD SITES (J1.5)

Figure 58. The current distribution of Brownfield Sites.

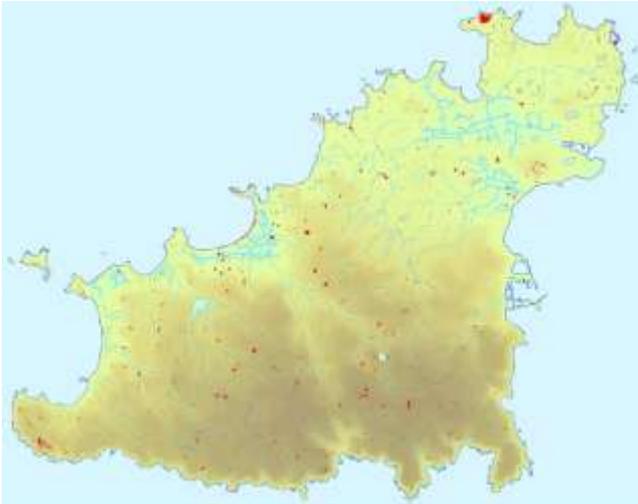


Brownfield Sites are abandoned industrial or commercial land and a very important habitat for ruderal plants; the primary colonizers but they are quickly out-competed by species which establish themselves in the later successional stages. 32ha (197v) were identified during the present survey. These include 4.8ha (29v) at the old Saltpans Vinery site and 3.2ha (19v) at the old Grand Marais Vinery site and adjacent land (figure 58). As most of this habitat is located on old vinery sites, it is expected that the abundance of this habitat will have increased rapidly following the decline of the growing industry and subsequent abandonment of greenhouses. This

category was not included in the 1999 survey. It is most akin to Ephemeral/Short Perennial (J1.3) in the JNCC habitat classifications (see Handbook for Phase 1 habitat survey for details; JNCC, 2010).

BARE GROUND (J4)

Figure 59. The current distribution of Bare Ground.



Hottentot Fig (*Carpobrotus edulis*), originally from South Africa, was introduced as a garden plant at some time before 1886 (McClintock 1975) and has subsequently escaped and is now extending along the cliffs in the south and the Coastal Grassland in the north of the island (see figure 60). It spreads across the ground, forming dense mats which out-compete all native species (see fig 61), it may also modify the soil conditions by reducing the pH and increased nitrogen and carbon levels (www.europealiens.org). Its spread was previously limited by heavy frosts, however as these frosts have become scarce it is now able to cover vast areas very quickly.

It has been included in this survey so that its current range can be mapped, and thus its future spread monitored. 4.1ha (25v) have been mapped during the current survey, however as it is also present on the near vertical faces of cliffs which were not able to be surveyed due to the angle of the aerial photographs, this is likely to be an underestimate.

This category included all Bare Ground that can be easily colonised by pioneer species. It is a very short-lived classification as unless there is constant disturbance species will establish and succession will take place. 41ha (253v) of Bare Ground have been classified during the current survey (distribution illustrated in figure 59) of which only 7.3ha (44v) was also classified as such during the 1999 survey which illustrates its transient nature. 47ha (289v) were identified during the IDC's survey in 1999. This is a decrease of 12% .

HOTTENTOT FIG (J6)

Figure 60. The current distribution of Hottentot Fig (*Carpobrotus edulis*).



Figure 61. Hottentot Fig covering an area at Fort Pezeries, this area has been cleared by the Guernsey Conservation Volunteers



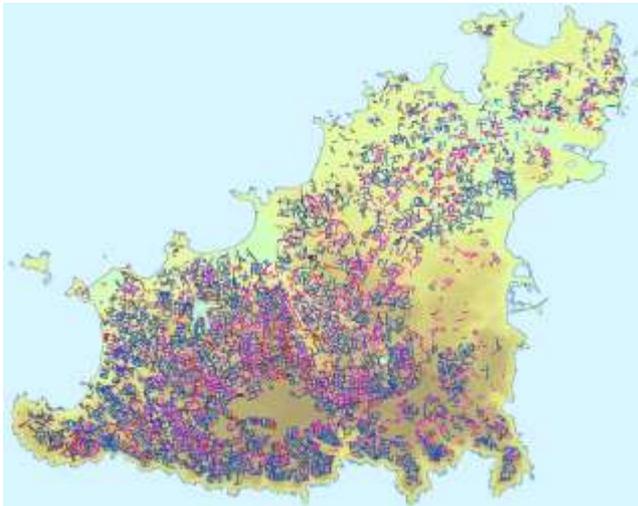
4.1.11 BOUNDARIES

Boundaries are critical in increasing the connectivity between fragmented natural and semi-natural land in Guernsey. They act as habitat corridors allowing dispersal and colonization of patches of land (Bennet, 1990). They are habitats for many invertebrates, small mammals and subsequently important for owls and passerines, and food sources for thrushes etc (Sutherland and Hill, 1995).

Although boundaries were also recorded during the 1999 survey, it is not possible to provide direct comparisons between the classifications of the boundaries as have been provided for habitats because only those which have been mapped in exactly the same position would yield results, thus the margin for error would be too high to draw any significant conclusions. Only the changes in the total proportions can be calculated.

EARTHBANKS

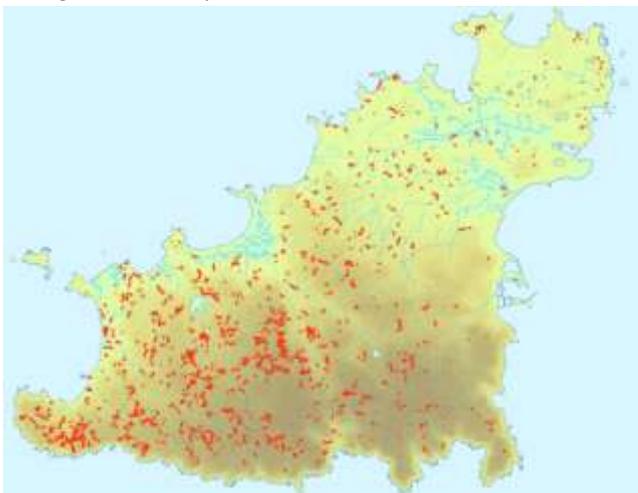
Figure 62. The current distribution of Earthbanks throughout Guernsey. Bracken – purple, Grass – red, Scrub – blue, Trees – pink.



826km of Earthbanks have been located during the current survey, which is an increase of 131km from the 695km located during the 1999 survey. Rather than there having been an increase in the presence of Earthbanks; these are boundaries which were previously not surveyed. Earthbanks are most densely situated in the uplands in the south of the island (see figure 62), this corresponds to the distribution pattern of fields, not surprising as their primary function is as field and farm boundaries. The current survey has further divided Earthbanks by the dominant vegetation type growing on them.

GRASS

Figure 63. The current distribution of grass-covered Earthbanks throughout Guernsey



77km of Earthbanks dominated by grass were located (figure 63). Grassy Earthbanks are considered to be reserves of Unimproved Grassland (B1), as most will not be treated with any fertilisers or herbicides (the exceptions are those bordering intensively farmed fields where the fertilisers and herbicides may drift on to them). They are very diverse habitats (figure 64), containing the majority of the island's populations of Red Campion (*Silene dioica*) and Primroses (*Primula vulgaris*) and many liverworts. They are now especially important

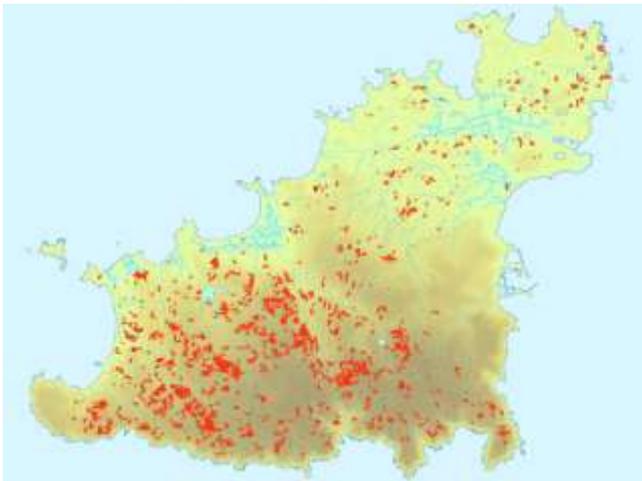
Figure 64. An Earthbank in St Saviours with a species-rich Unimproved Grassland habitat.



given the decline in land classified as Unimproved Grassland (B1) (see section 4.1.3).

BRACKEN

Figure 65. The current distribution of Bracken-covered Earthbanks throughout Guernsey



Roadside Earthbanks must by law be cut twice a year; in June and September. Due to this management, Earthbanks dominated by Bracken will sustain a much higher diversity than areas of land classified as Continuous Bracken (C1.1) as the plants in the field layer will not be shaded out. So it is assumed that a proportion of these Earthbanks will also contain species found in Unimproved Grasslands (B1). A total of 108km were located throughout the island, their distribution is illustrated in figure 65.

SCRUB

Figure 66. The current distribution of scrub-covered Earthbanks throughout Guernsey

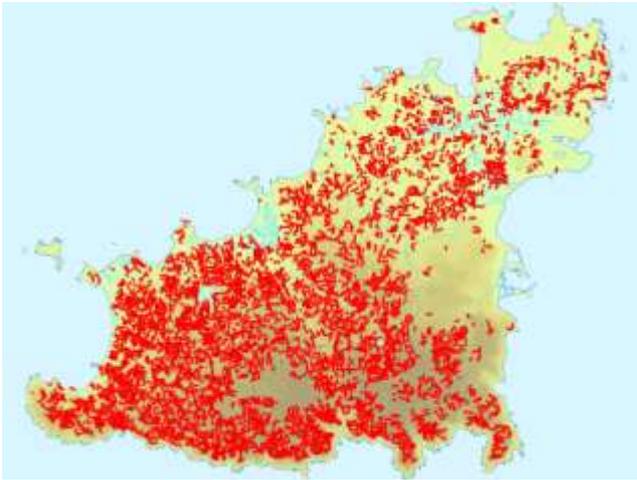


Figure 67. An Earthbank at Pleinmont with Gorse (*Ulex europeus*) dominated scrub.



503km of scrub dominated Earthbanks have been classified during the present survey (illustrated in figure 66). It is the most abundant boundary classification accounting for 42.5% of all boundaries surveyed. Scrub Earthbanks are most commonly dominated by Brambles (*Rubus fruticosus*), Blackthorn (*Prunus spinosa*) and Gorse (*Ulex europeus*; figure 67). They form a dense canopy preventing the growth of more delicate plants beneath them. Scrub was prevented from dominating internal banks by grazing. However, electric fences have often been erected to prevent this as few cows are now tethered, and it is a requirement of the Agri-environment scheme that field boundaries should not be grazed, so the abundance of scrub dominated Earthbanks is increasing.

TREES

138km of Earthbanks with a canopy of trees were located in Guernsey. Before the introduction of Dutch Elm Disease, Elms (*Ulmus* spp.) were the most common species found but now only scattered young and suckering Elms can be found (Gilmour and David, *in prep.*). At present, the most common trees are Sycamore (*Acer pseudoplatanus*) and Holm Oak (*Quercus ilex*). The diversity supported by these boundaries depends on the dominant tree species, for example Pedunculate Oak (*Quercus robur*) will support much more diverse floral and faunal communities than Holm Oak, as it is non-native.

DITCHES

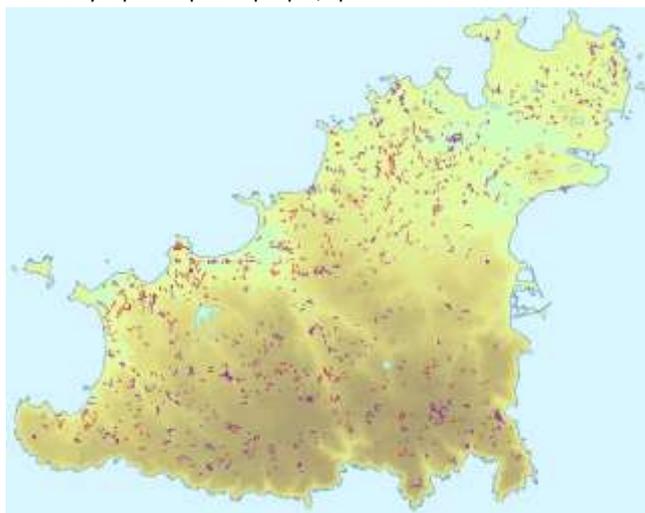
The scarcest boundaries in Guernsey are Ditches, only 1.3km were located during the present survey, as most will have water in them for a proportion of the year and so will be classified as stream or Swamp.

FENCES

51.56km of Fences were surveyed, as described in section 3.1.2; this category doesn't include wire fences less than 1.5m high. Fences were located mainly in the north of the island, but with a dense area at a stable on the plateau east of the Quanteraine Valley (3.11km). There has been a reduction of 34.34km of fences, from the 85.90km which were surveyed in 1999.

HEDGES

Figure 68. The current distribution of Hedges throughout Guernsey. Species poor– purple, species rich– red.

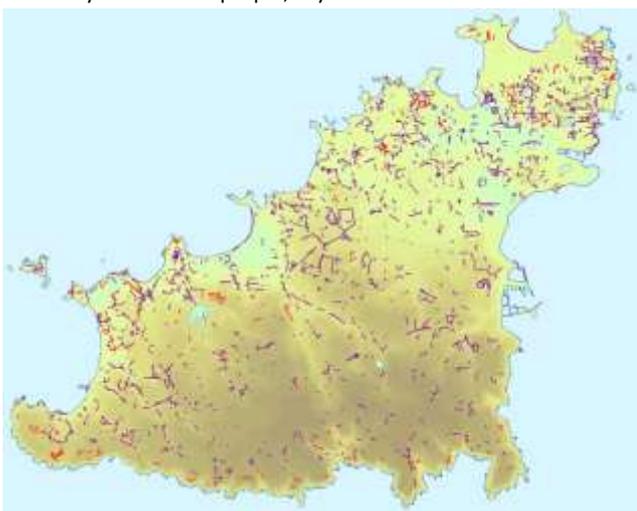


Hedges are separated into species poor hedges, and species rich hedges, their distributions are illustrated in figure 68:

- Species poor hedges are mainly along fields which are adjacent to gardens. There has been a reduction of 92km of species poor hedges located since the 1999 survey (65km, from 157km).
- Species rich hedges; 24km have been located, this is down from 31km in 1999. Species commonly found in species rich hedges are Hawthorn (*Crataegus monogyna*) and Beech (*Fagus sylvatica*)

WALLS

Figure 69. The current distribution of Walls throughout Guernsey. Mortared– purple, dry stone– red.



174km of Walls were classified during the present survey (illustrated in figure 69). This is an underestimate as the walls are concentrated in urban areas of the island which were omitted from this survey. The amount of Walls classified has remained fairly constant since the 1999 survey when 165km were identified. During this survey, Walls were further divided into Dry Stone and Mortared walls:

- Dry Stone; 29km. Debris and soil accumulates between the stones, allowing various plants to establish themselves.
- Mortared; 144km. The lime mortar commonly found between the stones of the walls provides habitats for many lime loving plants (figure 70), and an especially diverse community of ferns, e.g. Rustyback Fern

(*Asplenium officinarum*), Wall Rue (*A. ruta-muraria*) and Maidenhair Spleenwort (*A. trichomanes*).

Figure 70. Wall Pennywort, Maidenhair and Black Spleenwort in an old lime-mortared wall



4.2 HERM

A total of 29 habitat types were identified in Herm, the data for these are included in Appendix 4. Important habitats absent from Herm include Unimproved Grassland (B1) and Marshy Grasslands (B5).

Of the land above the high tide mark, Improved Grassland (B4) is the most abundant habitat type. It accounts for the dozen or so fields in the centre and south of the island, which are currently grazed by a small number of cattle. Although this grassland has been classified as improved, it should be noted that it is a good quality, and with a coastal influence. The current management of the land is much more ecologically sensitive than past management and as it is no longer being fertilized this is encouraging the diversity of these grasslands to increase, it is expected that if this management regime continues they will achieve a semi-improved status in the near future. The grassland surrounding the Seagull Campsite is mown on a regular basis and so has been classified as Amenity Grassland. However no herbicides or pesticides are applied to these areas, and so the grassland is still quite diverse and as such has a higher ecological value than intensively managed Amenity Grasslands.

The northern section of Herm is a low lying dune system which accounts for 17.14% of the island. As can be seen from the data in appendix 6, all five sub-categories of the sand dunes are present, and in a much greater proportion than in Guernsey (sand dunes account for only 1.79% of the land above Guernsey's high tide mark). There has been nearly a 200% increase in the amount of land classified as Dune Scrub (H6.7) since the 1999 survey. A large proportion of the Dune Scrub present was misclassified as Dense Scrub (A2.1) during the previous survey. Due to the intensive grazing by rabbits on the common, which maintains a short sward, the scrub has been prevented from encroaching over the surrounding areas, which has occurred extensively on Guernsey. The amount of Dune Slack (H6.4) on the common appears to have decreased by 45% since the previous survey, however this is due to a balance between an expanse on the western side of the common having been misclassified as Marshy Grassland in 1999 and an area of Dune Grassland on the eastern side of the common which was previously misclassified as Dune Slack, but is actually dry. The Dune Heath (H6.6) on the common is the only expanse located in the whole Bailiwick during the current survey and so, although only covering 0.16ha (0v 39p), it is of great importance. This heathland was not located during the 1999 survey but was classified as Continuous Bracken or as coastal heath or grassland.

The southern section of Herm is similar to the southern cliffs of Guernsey, with Dense Scrub (A2.1), Continuous Bracken (C1.1) and Coastal Grassland (H8.4) covering Hard Cliffs (H8.1). The cover of Continuous Bracken appears to have increased since the 1999 survey. Previous aerial photographs suggest that some large areas around the cliffs that were Dense Scrub have been cleared and subsequently colonized by Bracken.

6.2% of Herm is woodland; there is an area of Semi-natural Broadleaved Woodland (A1.1.1) just up from the harbour, dominated by sycamore (*Acer pseudoplatanus*), and lots of small patches of Planted Coniferous Woodland (A1.2.2) throughout; the total abundance of which has double since the 1999 survey.

The intertidal zone surrounding Herm is mainly sand at the north, mirroring the large expanses of sand dunes, and the steep cliffs in the south lead into steep rocks below the high tide mark. On the eastern aspect of the southern cliffs, there are a few inlets containing layers of Intertidal Shingle.

A species similar to Hottentot Fig is found in Herm; Angular Sea-fig (*Carpobrotus glaucescens*) is also an invasive non-native and has similar impacts on ecosystems as Hottentot Fig (*C. edulis*; J6). It has been located at 2 sites on Herm; Les Fontenelles and above Bishops Cave, covering a 0.03ha (0v 7p), although areas of vertical cliff faces will have been missed due to the angle of the aerial photographs.

The small island of Jethou, to the south west of Herm was also included in the present survey - it was omitted from the 1999 survey. This comprises 22ha (134v) of terrestrial land and 24ha (148v) intertidal land. Above the high tide mark, the land is mainly Coastal Grassland, with Continuous Bracken and some scattered Coastal Heathland and Dense Scrub. In the north there are 3.5ha of Planted Broadleaved Woodland. The coastal areas and the intertidal zone are dominated by rocks, with only small areas of sand and shingle.

(For more information on the ecology of the habitat categories included above, see section 4.1)

4.3 PHASE 2 HABITAT SURVEY

The average species diversity found in each of the 8 habitat categories surveyed are included in table 5 below. The raw data containing full species lists and frequencies are included in Appendix 7.

Habitat Classification	JNCC code	Species diversity
Unimproved Grassland	B1	22
Semi-improved Grassland	B2	16.5
Improved Grassland	B4	14
Unimproved Marshy Grassland	B5.1	23
Semi-improved Marshy Grassland	B5.2	13.2
Dune Grassland	H6.5	23.4
Coastal Grassland	H8.4	19
Coastal Heathland	H8.5	14

Table 5. The average number of species located in a 1m² quadrat

The diversity of species located differs with the level of improvement of a grassland; Unimproved Grasslands are most diverse, and Improved Grasslands the least. This data appears to highlight that the species diversity can be used as an indicator of quality of Dry and Marshy Grasslands. It also illustrates that the definitions of the grasslands used in this survey differed sufficiently, suggesting that we were correct in the definitions assigned. The species lists included can be used by future surveyors to aid identifications and increase repeatability.

5. DISCUSSION

5.1 THE 1999 SURVEY

Now that a second Phase 1 Habitat Survey has been carried after 10 years it is important to compare the two surveys so that trends in local habitats and biodiversity can be identified. To do this the two surveys have to be comparable and their accuracy known. The original Phase 1 Habitat Survey of the island was undertaken in 1998-1999 by the IDC. The present survey has shown a few problems with this survey. These can be categorized as follows:

- Some habitats were obviously misclassified. An example in Herm is the coding of the NE corner of the Common as Dune Slack. This presumably was a data entry error for Dune Grassland.
- Some problems are due to the opinions of the surveyors. Thus the Marshy areas on the Common in Herm were classified as Marshy Grassland in the 1999 survey, we have classified these as Dune Slacks as being more appropriate for wetlands in an area of sand dunes. Habitats form a continuum which will be divided by the recorder when classifying different habitats. The precise criterion for certain habitats may lead to variances occurring between recorders when making the decision where to divide an area. Some of the change in the amount of Coastal Grassland on the cliffs in Guernsey between the two surveys is probably due to the current survey classifying land as coastal grassland which had less than 50% of rock showing. The previous survey tended to classify such areas as Hard Cliff. The line between planted and semi-natural broad-leaved woodland is also hard to draw unless the recent history of an area is known.
- Certain areas were not surveyed in the previous survey. We ensured that we surveyed all the land surveyed in 1999, but we also surveyed areas that were missed in that survey totaling 368ha. This particularly included large gardens in the rural areas.
- The exact boundaries of particular habitats may differ between the two surveys. It is difficult to digitise the exact boundary of a habitat to the nearest metre. But such small differences can lead to a significant change in area with a habitat consisting of many scattered patches, e.g. Dune Scrub on L'Ancrese Common. We have referred to this phenomenon as "Edge effects".

However, if these points are borne in mind, the 1999 survey is a perfectly adequate base line to compare with the current findings, and the reasons for any changes from that survey not due to a real change in the habitat are usually obvious. Discrepancies due to misclassification are usually clearly seen by comparisons between aerial photographs of different dates. After examining the photographs taken in 1996 and 2001 we are confident that the 1999 survey was at least 98% accurate, i.e. less than 1 land parcel in 50 was misclassified. Appendix 3 compares the two surveys and brings out the real changes that have occurred over the last ten years.

To ensure repeatability of the survey in the future and to help the internal consistency of the current survey we have undertaken Phase 2 Habitat Survey of certain key habitats.

5.2 THE CAUSES AND SIGNIFICANCE OF HABITAT CHANGE.

If left unmanaged by man, most habitats would succeed to scrub or woodland as no native grazers exist today (introduced rabbits being the nearest equivalent) which would prevent or slow the succession.. The open habitats – grasslands and heath – in the island are nearly all maintained by the actions of man. The exceptions to this are the sub-tidal habitat and the extreme coastal fringe. Even the apparent ‘climax’ vegetation of woodland is very different to what would be expected due to the introduction of non-native species, the lack of large grazing mammals, and the fact that all woodland in the island is relatively modern and many woodland species have been lost. In fact, the grasslands of Guernsey, whether the orchid fields, the hedgebanks, or the coastal grassland and sand dunes are with the inter-tidal area the ‘jewels in the crown’ of local biodiversity and some areas are of international importance. Any loss is of significance. Other natural habitats are rare in the island, such as salt marsh , heath and swamp. These areas contain species found nowhere else and so are also of importance to the local biodiversity.

The economy of the island has changed considerably over the last century, and particularly since the war and the expansion of the finance industry. Before the war and up to about 1970 the island economy was dominated by tourism, agriculture and horticulture, and most areas of land were cultivated or used for grazing animals. Since the war the number of people with grazing animals and making even part of their living off the land has declined enormously. Consequently, marginal areas of land have been abandoned and these are developing from grassland through bracken then scrub to woodland. This is particularly obvious on the cliffs, but also in steep valley sides. In Guernsey, due to the lack of seed stock for many woodland plants and lack of associated woodland animals, the woodland that develops is particularly species poor, and the grassland that it replaces is often species rich, so this succession causes a net-loss in biodiversity. The ready availability of work in Guernsey has meant that there is a high demand for land for housing, gardens and amenity development. This has pushed up the price of land which has implications for the remaining farmers. They are under pressure to increase the profitability of their expensive land, and this also leads to loss of biodiversity as land is drained, fertilized and intensively managed.

Some people like to increase the size of their gardens, and extend their domestic curtilage, and this also causes problems for biodiversity. Some gardens are managed in a nature-friendly way, and these will almost certainly have a higher biodiversity than any improved farmland they replace. However, large areas, sometimes whole valleys, are managed by mowing to a lawn, and this is less biodiverse than the landscape it replaces. Extending the curtilage also has implications for farmers, who mostly do not own, but have to rent the land they farm, and this practice reduces the land available to rent. A similar problem is caused by horse-owners who need land to use as paddocks for their horses. Many of these paddocks are also managed very intensively by reseeding and using chemical inputs to control weeds and increase fertility. This land is also currently removed from the land available for farming as most horse owners are likely to be able to afford either to buy the land at inflated prices or to pay higher rents than farmers.

5.3 SUGGESTIONS FOR POLICIES TO INCREASE BIODIVERSITY OR LIMIT ITS LOSS

The Environment Department at the moment only has limited policies it can implement to reduce or reverse the loss of biodiversity without changes in the law. It is only responsible for managing relatively small areas of the island; though a large proportion of the natural and semi-natural land.

One of the most serious problems we have identified is the lack of grazing in many coastal habitats leading to a succession through bracken to scrub. Certain areas that were grazed until recently such as the coastal common between Portinfer and Port Soif have stopped being grazed because the tethered cattle were being worried by dogs. It would be possible to erect temporary fencing in such areas so that the cows need not be tethered, in which case they could defend themselves against dogs. Such measures have been adopted in Alderney allowing cattle grazing to be re-instated on Longis and Mannez Commons. Similarly, sheep grazing on the cliffs might be re-introduced if areas could be fenced. Small grants from the Environment Department for fencing, and a publicity campaign might encourage some people to take up managing grazing animals in such natural habitats.

If land is not to be grazed, the usual management technique is to cut the grass mechanically. It is vital in such cases to have some method of harvesting the cuttings, as is practised by the Environment Department in some environmentally sensitive areas, for if left they mulch the ground and eliminate many of the rare and delicate plants. It would be beneficial for contractors to rake and bale the cuttings in other areas of the coast which could then be removed easily for composting or used as a local source of animal bedding.

Grazing is a better technique for managing coastal and dune grasslands than cutting. This is for several reasons: Grazing animals do not graze all the vegetation at once, so that many insect and small mammal species are less affected than by a cut. Grazing animals also graze patchily, increasing the diversity of the habitat. Grazers create openings in the sward from their hoof marks and from trampling so that plants can reseed. Finally, grazing animals deposit dung, an important part of grassland ecology, supporting a variety of insects and fungi, which in their turn support numbers of other insects, and their predators, particularly birds and bats.

6 CONCLUSION

The most significant changes in habitat composition illustrated by this survey are as follows:

- a) There has been an increase in woodland on Guernsey from 216ha (1,318vergees) to 379ha (2,313v). 60ha (366v) have changed classification following the succession of Dense Scrub to Semi-natural Broadleaved Woodland, and 51ha (311v) have been planted with broadleaved trees, the States of Guernsey Free Tree Scheme is largely responsible for this.
- b) Scrub on Guernsey has increased from 234ha (1,428v) to 314ha (1,916v). This is following the abandonment of marginal land and the spread of scrub along the cliffs.
- c) Semi-improved Grassland has decreased by 45% (a loss of 160ha (976v)), mainly due to the more strict classification definitions as opposed to there having been a marked improvement of the land. However, this does mean that the previous data illustrating the proportion of Semi-improved Grassland were over-estimates, and so the abundance of semi-natural land is much lower than previously thought.
- d) The abundance of other, rarer habitats has also decreased, contributing to an overall decline in Guernsey's biodiversity.
- e) Many of these changes are caused by differences in land-management practices in the island over the last 100 years due to the changing economic circumstances.

134ha (822v) of agricultural land which has been re-seeded or mown in order to extend domestic curtilage has been identified. This land has been lost from agricultural use.

Land used for horses has been recorded for the first time as 234ha (1,428v). Generally Horse owners are not employed in the agricultural industry, so this land has also been lost from agricultural use.

Phase 2 surveys were carried out on some difficult habitats to ensure repeatability of survey in 10 years time.

The biodiversity of Guernsey has significantly declined, both historically, and quantifiably since the 1999 survey. The main causes of the recent loss of biodiversity are the abandonment of land and its succession to scrub or woodland, and related decline in rarer habitats with their associated species of plants and animals.

These findings may now be used to implement policy which may improve management of coastal areas to halt their conversion to scrub and to protect rare habitats to prevent their deterioration.

Some of the very features that give the Island its special character such as cliffs, coastlines, marais, valleys and dune areas are those which are most at risk from pressures such as development, and it is these areas which should be conserved to protect the natural heritage.

7 ACKNOWLEDGEMENTS

I am grateful to Charles David and Jane Gilmour for their support and training during the survey. The Commerce and Employment Department provided GIS layers of the current dairy farm land use and their classification by an English consultant.

8 REFERENCES

- Ansted, D. T., Latham, R. G. (1862). *The Channel Islands*. W H. Allen and Co., London.
- Babington, C. C. (1839). *Primitiae Florae Sarnicae*. Longman & Co., London.
- Bennet, A. F. (1990). Habitat corridors and the conservations of small mammals in a fragmented forest environment. *Landscape Ecology*, **4**: 109-122.
- British Trust for Conservation Volunteers (1996). *Sand Dunes a practical handbook*. BTCV, Doncaster.
- Ozanne, B. & David C.T (2004). Interesting Plants of Guernsey; *Carpobrotus edulis*, Hottentot Fig. [Online] [accessed 01/10/10]. Available on the World Wide Web: www.biologicalrecordscentre.gov.gg
- Drake, J.A. (2009). Handbook of Alien Species in Europe. *Invading Nature; Springer series invasion ecology, Volume 3*. Springer Science, available on the World Wide Web: www.europe-aliens.org
- Dury, G. (1950). *The Channel Islands*. In, *The Land of Britain. The Report of the Land Utilisation Survey of Britain*. Ed. Stamp, D. Geographical Publications LTD, London.
- Fuller, R.M. (1987). The changing extent and conservation interest of lowland grasslands in England and Wales: A review of grassland surveys 1930-1984. *Biological Conservation*, **40**: 281-300.
- Gilmour, K. J., David, C. T. (in preparation). *Red Data Book*. Biological Records Centre, Guernsey Island Development Committee (unpublished). Report of the 1999 Guernsey Habitat Survey.
- Jee, N (1983). *Landscape of the Channel Islands*. Phillimore & Co. LTD., Sussex.
- Joint Nature Conservation Committee (2010). *Handbook for Phase 1 habitat survey – a technique for environmental audit*. 3rd Edition. JNCC, Peterborough.
- Land Use Consultants (1988). *Land Use Survey of Guernsey, Preliminary Assessment*. LUC, London.
- Landwise Report implementing the Farm Biodiversity Action Plans, (2002), FWAG
- Marquand, E.D. (1901). *Flora of Guernsey and the lesser Channel Islands*. Dulau & Co., London.
- McClintock, D. (1975). *The wildflowers of Guernsey*. Collins, London.
- McClintock, D. (1982). *Guernsey's Earliest flora Flora Sarniensis* by Joshua Gosselin. The Ray Society, London
- Muir, R. (2008). *Woods, Hedgerows and Leafy Lanes*. Tempus Publishing, Gloucestershire.
- Rodwell, J.S. (2006). *National Vegetation Classification: Users' handbook*. Joint Nature Conservation Committee, Peterborough.
- Smith, C. (1879). *Birds of Guernsey and the neighbouring Islands: Alderney, Sark, Jethou, Herm; being a small contribution to the ornithology of the Channel Islands*. R. H. Porter, London. (Also available on project Gutenberg)
- Sutherland, W. J., Hill, D. A. (1995). *Managing Habitats for Conservation*. Cambridge University Press, Cambridge.
- The Grasslands Trust, (2008). *Glossary of Grassland Terminology*. [online] [accessed 1/03/10]. Available from the World Wide Web: www.grasslands-trust.org
- Warren, J. P. (1926). *Our own island*. Guernsey Press, Guernsey.

9 APPENDICES

APPENDIX 1

Variations of the standard Phase 1 habitat classifications, as defined by JNCC, 2010 (classifications in grey were not used, or not present in the survey area, classifications in green are additions for this survey. Descriptions of the classifications used in this survey are included in section 3.1.2, descriptions of habitats omitted can be found in the JNCC handbook, 2010.

A	Woodland and scrub	
1	Woodland	
	Broadleaved	- Semi-natural - Plantation
	Coniferous	-Semi-natural -Plantation
	Mixed	-Semi-natural -Plantation
	Plantation Woodland	
2	Scrub	-Dense/continuous -Scattered
3	Parkland/scattered trees	-Broadleaved -Coniferous -Mixed
4	Recently-felled woodland	-Broadleaved -Coniferous -Mixed
B	Grassland and marsh	
1	Acid grassland	-Unimproved -Semi-improved
2	Neutral grassland	-Unimproved -Semi-improved
3	Calcareous grassland	-Unimproved -Semi-improved
4	Improved grassland	
5	Marsh/Marshy Grassland	-Unimproved -Semi-improved
6	Poor Semi-improved Grassland	
C	Tall herb and fern	
1	Bracken	-Continuous -Scattered
2	Upland species-rich ledges	
3	Other	-Tall Ruderal -Non-ruderal
D	Heathland	
1	Dry dwarf scrub heath	-Acid -Basic
2	Wet dwarf scrub heath	
3	Lichen/ bryophyte heath	
4	Montane heath/dwarf herb	
5	Dry heath/acid grassland mosaic	
6	Wet heath/ acid grassland mosaic	
E	Mire	
1	Bog	-Blanket bog

			-Raised bog -Wet modified bog -Dry modified bog -Acid/ neutral flush -Basic flush -Bryophyte-dominated spring
2	Flush and spring		
3	Fen		-Valley mire -Basin mire -Flood-plain mire
4	Bare peat		
F	Swamp, marginal and inundation		
1	Swamp		
2	Marginal and inundation		-Marginal Vegetation -Inundation vegetation
G	Open water		
1	Standing Water		-Eutrophic -Mesotrophic -Oligotrophic -Dystrophic -Marl -Brackish
2	Running Water		-Eutrophic -Mesotrophic -Oligotrophic -Dystrophic -Marl -Brackish
H	Coastland		
1	Intertidal	-Mud/sand	-Shingle/cobbles -Boulders/rock
	Codings for intertidal:		-Zoster beds -Green algal beds -Brown algal beds
2	Saltmarsh		-Saltmarsh/dune interface -Scattered plants -Dense continuous
3	Shingle above high tide mark		
4	Boulders/rocks above high tide mark		
5	Strandline vegetation		
6	Sand dune		-Dune Slack -Dune Grassland -Dune Heath -Dune Scrub -Open Dune
8	Maritime cliff and slope		-Hard Cliff -Soft Cliff -Crevice/ledge vegetation -Coastal Grassland -Coastal Heathland
I	Rock exposure and waste		
1	Natural		
	Inland Cliff		-Acid/neutral -Basic
	Scree		-Acid/neutral -Basic
	Limestone pavement		
	Other exposure		-Acid/neutral -Basic

2	Cave Artificial	-Quarry	-Spoil -Mine -Refuse-tip
J	Miscellaneous		
1	Cultivate/disturbed land		-Arable -Arable Short-term Ley -Amenity -Ephemeral/short perennial -Brownfield -Introduced shrub
2	Boundaries Hedges	-Intact -Defunct -with trees	-Native species-rich -Species poor -Native species-rich -Species poor -Native species-rich -Species poor
	Fence Wall		-Dry stone -Mortared
	Dry ditch Boundary removed		
	Earthbank		-Grass -Bracken -Scrub -Trees
3	Built-up areas		-Caravan site -Sea wall -Buildings
4	Bare Ground		
5	Other habitat		
6	Carpobrotus edulis		

APPENDIX 2

Data for all habitats identified in Guernsey during the 2010 Habitat Survey, and the change in habitats since the 1999 survey.

Habitat Classification	Area (ha)	Area (v)	Proportion of Total area (%)	Proportion of Greenspace (%)
Terrestrial Land				
Improved Grassland	1138	6944	27	18
Amenity Grassland	687	4192	16	11
Arable Land s.t. ley	556	3392	13	8.7
Arable Land	333	2032	7.8	5.2
Dense Scrub	315	1922	7.3	4.9
Semi Natural Broadleaved Woodland	198	1206	4.6	3.1
Semi-improved Grassland	192	1172	4.5	3.0
Planted Broadleaved Woodland	107	653	2.5	1.7
Continuous Bracken	101	616	2.4	1.6
Dune Grassland	84	513	2.0	1.3
Coastal Grassland	74	452	1.7	1.2
Hard Cliff	59	360	1.4	0.92
Parkland	56	342	1.3	0.88
Semi-improved Marshy Grassland	53	323	1.2	0.83
Standing Water	48	293	1.1	0.75
Bare Ground	41	250	0.97	0.65
Planted Mixed Woodland	35	214	0.81	0.55
Brownfield	32	197	0.75	0.51
Tall Ruderal	32	196	0.75	0.50
Dune Scrub	27	167	0.64	0.43
Planted Coniferous Woodland	26	159	0.61	0.41
Shingle	16	99	0.38	0.26
Swamp	15	93	0.36	0.24
Plantation Woodland	14	84	0.32	0.22
Rock	12	73	0.28	0.19
Marshy Grassland	8.0	49	0.19	0.13
Quarry	5.8	36	0.14	0.09
Sand / Mud	4.3	26	0.10	0.07
Hottentot Fig	4.1	25	0.10	0.07
Soft Cliff	2.6	16	0.06	0.04
Brackish Pool	2.5	15	0.06	0.04
Unimproved Grassland	2.1	13	0.05	0.03
Coastal Heathland	1.6	10	0.04	0.02
Saltmarsh	1.6	9	0.04	0.02
Open Dune	1.4	8	0.03	0.02
Marginal Vegetation	0.66	4	0.02	0.01
Dune Slack	0.47	3	0.01	0.01
Total	4287	26158		
Intertidal Zone				
Intertidal Rock and Boulders	795	4851	74	13

Intertidal Sand	249	1518	23	3.9
Intertidal Shingle	36	222	3.4	0.57
Total	1080	6591		
Total	5367	32749		

Table 6. Data for all habitats identified on Guernsey and Lihou. Proportion is the percentage of the total area (6,359ha (38,802v) of terrestrial and 1,122ha (6,846v) of intertidal land) and proportion of greenspace is the percentage of the area surveyed (4,287ha (26,158v) of terrestrial and 1,080ha (6,591v) of intertidal land).

Habitat Classification	1999		2010		Change in Area	Change in % of GSY's land
	Area (ha)	%of land	Area (ha)	% of land		
Semi Natural Broadleaved Woodland	131.38	2.07	197.58	3.11	66.20	1.04
Planted Broadleaved Woodland (+orchards)	56.17	0.88	120.92	1.90	64.75	1.02
Planted Coniferous Woodland	20.93	0.33	26.05	0.41	5.12	0.08
Planted Mixed Woodland	8.44	0.13	34.88	0.55	26.44	0.42
Parkland	19.54	0.31	55.94	0.88	36.40	0.57
Dense Scrub	234.53	3.69	314.74	4.95	80.21	1.26
Unimproved Grassland	3.11	0.05	2.05	0.03	-1.05	-0.02
Semi-improved Grassland	351.81	5.53	192.30	3.02	-159.51	-2.51
Improved Grassland	1531.35	24.08	1138.08	17.90	-393.26	-6.18
Marshy Grassland	90.74	1.43	60.95	0.96	-29.79	-0.47
Continuous Bracken	103.63	1.63	101.42	1.59	-2.21	-0.03
Tall Ruderal	54.10	0.85	32.05	0.50	-22.05	-0.35
Swamp	14.54	0.23	15.24	0.24	0.70	0.01
Standing Water (+Brackish)	41.62	0.65	50.26	0.79	8.64	0.14
Saltmarsh	0.45	0.01	1.55	0.02	1.10	0.02
Shingle	13.45	0.21	16.31	0.26	2.86	0.04
Rock	15.97	0.25	11.99	0.19	-3.98	-0.06
Dune Slack	2.86	0.05	0.47	0.01	-2.39	-0.04
Dune Grassland	74.29	1.17	84.36	1.33	10.08	0.16
Dune Heath	1.27	0.02	0.00	0.00	-1.27	-0.02
Dune Scrub	27.28	0.43	27.37	0.43	0.09	0.00
Open Dune	1.29	0.02	1.36	0.02	0.07	0.00
Hard Cliff	27.57	0.43	58.50	0.92	30.93	0.49
Soft Cliff	5.02	0.08	2.57	0.04	-2.45	-0.04
Coastal Grassland	61.60	0.97	74.03	1.16	12.43	0.20
Quarry	23.22	0.37	5.83	0.09	-17.39	-0.27
Coastal Heathland	2.70	0.04	1.57	0.02	-1.12	-0.02
Arable Land (+ley)	388.81	6.11	888.29	13.97	499.48	7.86
Amenity Grassland	564.74	8.88	687.18	10.81	122.44	1.93
Bare Ground	47.39	0.75	41.48	0.65	-5.90	-0.09
Sand / Mud	0.00	0.00	4.25	0.07	4.25	0.07
Hottentot Fig	0.00	0.00	4.13	0.07	4.13	0.07
Brownfield	0.00	0.00	32.33	0.51	32.33	0.51
Marginal Vegetation	0.00	0.00	0.66	0.01	0.66	0.01
Total	3919	61.64	4287	67.42	475.03	5.77

Table 7. The change in the habitats located on Guernsey and Lihou between the 1999 and the current habitat surveys. Where % of land refers to the proportion of Guernsey's and Lihou's total terrestrial land area (6,359ha (38,802v))

APPENDIX 3

The determine how the distribution of each habitat category has changed since the previous survey, the land currently classified has been divided by its classification during the 1999 survey.

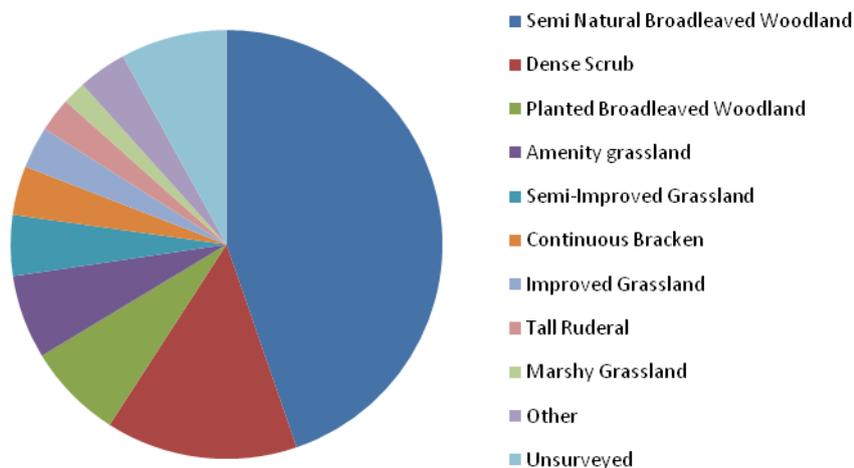
WOODLAND

SEMI-NATURAL BROADLEAVED WOODLAND

Habitat Classification	Amount (ha)	Proportion (%)
Semi Natural Broadleaved Woodland	88.38	44.73
Dense Scrub	28.39	14.37
Planted Broadleaved Woodland	14.26	7.22
Amenity Grassland	12.47	6.31
Semi-improved Grassland	9.06	4.58
Continuous Bracken	7.31	3.70
Improved Grassland	6.21	3.14
Tall Ruderal	5.08	2.57
Marshy Grassland	3.48	1.76
Other ⁴	7.20	3.64
Total	181.85	92.04

Table 8. The classification in the 1999 survey of the land currently identified as Semi-natural Broadleaved Woodland. 'Proportion' refers to the percentage of the total, 197.58ha of land, classified as Semi-natural Broadleaved Woodland

Figure 71. The classification in the 1999 survey of the land currently classified as semi-natural broadleaved woodland.



⁴ All classifications which account for less than 1% of the change in classification are grouped as 'Other'

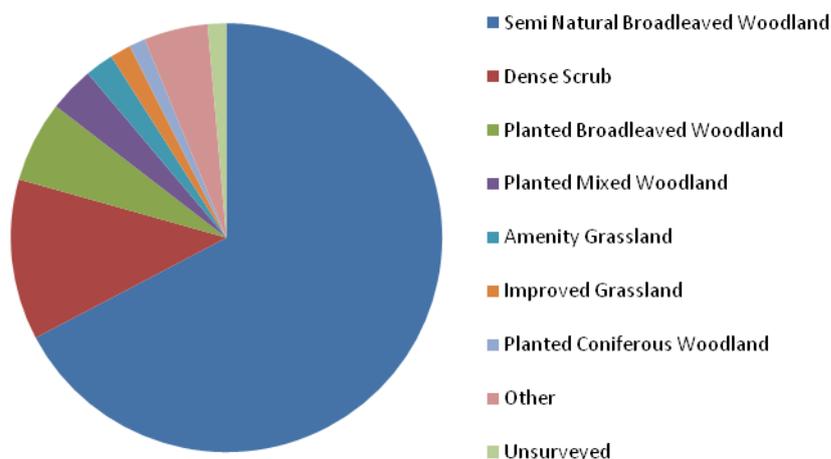
As Figure 71 illustrates, a large proportion of land has remained as Semi-natural Broadleaved Woodland (44.73%, 88ha). 14.37% (28ha) has succeeded from Dense Scrub to woodland following abandonment, this land is mostly found around the southern cliffs (especially north of St Martins Point) and through the valleys. 6.31% (12.47ha) was previously classified as Amenity Grassland. These areas are mostly small, and are woodlands adjacent to gardens which have expanded. Quite a few are on large estates where woodlands have been classified separate to the grasslands, where as in 1999, they were too small to separate using their methodology and so were target noted as scattered trees. 7.22% (14.26 ha) was Planted Broadleaved Woodland, which may have become so well established as to appear semi-natural. 4.58% (9.06ha) has succeeded from Semi-improved Grassland to woodland, most of which is at the Talbot Valley, where the woodland has expanded and there are also areas of Continuous Bracken (3.7%, 7.31ha), improved grassland (3.14, 6.21ha) and Tall Ruderal (2.57%, 5.08ha) which have succeeded to woodland.

Table 9 contains the data describing what the land identified as Semi-natural Broadleaved Woodland in 1999 has now been classified as. These data are illustrated in figure 72.

Habitat Classification	Amount (ha)	Proportion (%)
Semi Natural Broadleaved Woodland	88.38	67.27
Dense Scrub	15.92	12.12
Planted Broadleaved Woodland	8.03	6.11
Planted Mixed Woodland	4.45	3.39
Amenity Grassland	2.81	2.14
Improved Grassland	2.04	1.56
Planted Coniferous Woodland	1.60	1.21
Other	6.30	4.80
Total	129.54	98.60

Table 9. The current classification of the land identified as Semi-natural Broadleaved Woodland in the 1999 survey. Proportion refers to the percentage of the total, 131.38ha of land, classified as Semi-natural Broadleaved Woodland in 1999.

Figure 72. The current classification of the land identified as semi-natural broadleaved woodland in the 1999 survey.



As figure 72 illustrates, the majority (67.27%, 88.38ha) of the Semi-natural Broadleaved Woodland identified in 1999 has remained as such. 12.12% (15.92ha) has been classified as Dense Scrub, mainly comprising of areas

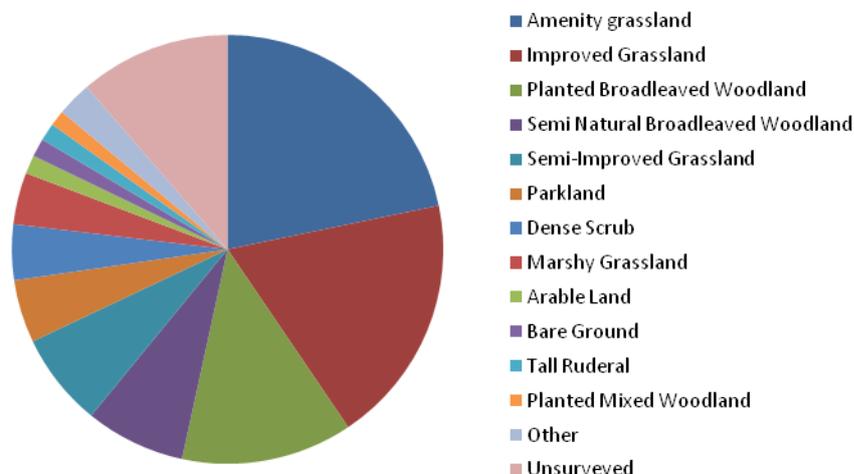
within woodlands which could be located and classified using aerial photographs. 6.11% (8.03ha) has now been classified as Planted Broadleaved Woodland, some of which may have been mis-classified, either in this survey or the previous one. On the whole, it is divided between small areas scattered across the island. There is one large area, covering roughly 1.25ha (about 1%), near to Carteret Quarry which, after having re-examined previous aerial photographs, it appears half may be planted, and half semi-natural. 3.39% (4.45ha) has now been classified as planted mixed woodland, the largest area of which (1.8ha) is in the Talbot Valley where an area has been planted with coniferous species, mainly Monterey Pines (*Pinus radiata*). 2.14% (2.81ha) has now been classified as Amenity Grassland, the majority of which is found around the edges of polygons, and so is of little significance however there is an area by the Le Friquet Garden Centre of 0.5ha which has been cleared to allow the extension of a neighbouring garden. 1.56% (2.04ha) is now improved grassland; this change is largely due to the spatial errors occurring as a result of differential mapping of habitat boundaries; hereafter referred to as 'edge effects'. No large areas of Semi-natural Broadleaved Woodland appear to have been cleared however some small areas appear to have been mis-classified in the previous survey.

PLANTED BROADLEAVED WOODLAND

Habitat Classification	Amount (ha)	Proportion (%)
Amenity Grassland	23.27	21.72
Improved Grassland	20.18	18.84
Planted Broadleaved Woodland	13.76	12.84
Semi Natural Broadleaved Woodland	8.03	7.50
Semi-improved Grassland	7.55	7.05
Parkland	5.09	4.75
Dense Scrub	4.50	4.20
Marshy Grassland	4.17	3.89
Arable Land	1.50	1.40
Bare Ground	1.47	1.37
Tall Ruderal	1.43	1.34
Planted Mixed Woodland	1.26	1.17
Other	2.79	2.61
Total	95.00	88.67

Table 10. The classification in the 1999 survey of the land currently identified as Planted Broadleaved Woodland. 'Proportion' refers to the percentage of the total, 107.13ha of land, classified as Planted Broadleaved Woodland.

Figure 73. The classification in the 1999 survey of the land currently classified as planted broadleaved woodland.



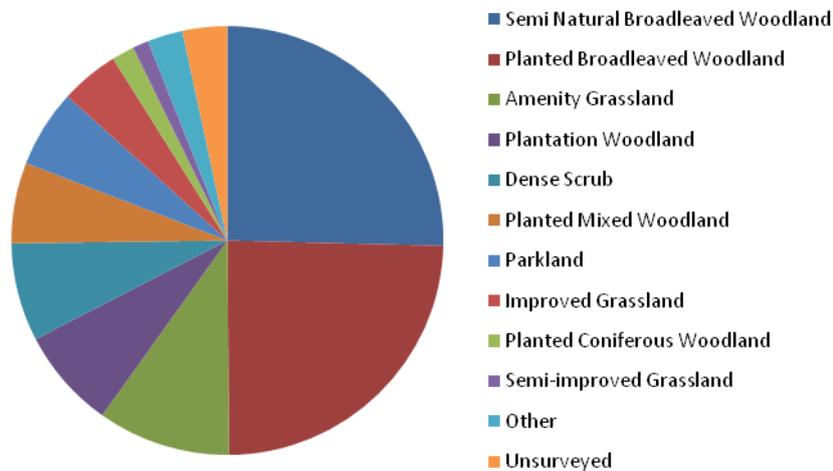
Of the 107.13ha located during this survey only 12.84% (13.76ha) was also classed as Planted Broadleaved Woodland during the previous survey (Table 10, and illustrated in Figure 73). The largest woodland which has remained as such is an area of 1.42ha around the reservoir, most other Planted Broadleaved Woodlands are small, and scattered throughout the island. The majority (21.72%, 23.27ha) of the Planted Broadleaved Woodland identified during this survey was land previously classified as Amenity Grassland. This appears to be mainly areas of large estates that have been planted recently, such as 1.9ha at Havilland Hall. 18.84% (20.18ha) was previously improved grassland, roughly 6ha of which is also at Havilland Hall, 2.4ha is a newly planted field at the Bowl and 2.9ha at the Home Farm north of Saumarez Park. A large amount of areas around the edges of fields appear to have been recently planted, notably some around St George. 7.50% (8.03ha) was previously classified as Semi-natural Broadleaved Woodland, as has already been discussed on page 71. when evaluating the change in Semi-natural Broadleaved Woodland. 7.05% (7.55ha) was previously Semi-improved Grassland, which on the whole comprises of several small areas scattered throughout the island, with an exception of an area at Cocagne, where some of the reclaimed land at Bordeaux Tip has been planted with trees. A large proportion of this change can also be attributed to ‘edge effects’ On large estates, where the trees have become dense enough to classify as woodland, what was once Parkland has now become classified separately as planted woodland and Amenity Grassland, this accounts for the change of 4.75% (5.09ha) from Parkland to Planted Broadleaved Woodland. 4.2ha of which is at Saumarez Park, and the remainder at Candie Gardens and Castle Carey. 4.50ha of Dense Scrub (4.2%) has been planted as broadleaved woodland. This comprises many small areas, such as approximately 0.6ha at Carteret Quarry Reservoir, and 0.4ha at Le Grande Mare golf course. 3.89% (4.17ha) was previously classified as marshy grassland, this includes roughly 1ha at Le Grande Pré, 0.47ha by Le Grande Mare golf course, and some scattered sections following a stream in St Pierre du Bois. 12.13ha (11.33%) was previously unsurveyed, and so has no prior classification.

Habitat Classification	Amount (ha)	Proportion (%)
Semi Natural Broadleaved Woodland	14.26	25.39
Planted Broadleaved Woodland	13.76	24.49
Amenity Grassland	5.59	9.96
Plantation Woodland	4.25	7.56
Dense Scrub	4.15	7.39
Planted Mixed Woodland	3.42	6.09
Parkland	3.29	5.86

Improved Grassland	2.46	4.38
Planted Coniferous Woodland	0.95	1.69
Semi-improved Grassland	0.67	1.20
Other	1.48	2.64
Total	54.29	96.65

Table 11. The current classification of the land identified as Planted Broadleaved Woodland in the 1999 survey. 'Proportion' refers to the percentage of the total, 56.17ha of land, classified as Planted Broadleaved Woodland in 1999.

Figure 74. The current classification of the land identified as planted broadleaved woodland in the 1999 survey.



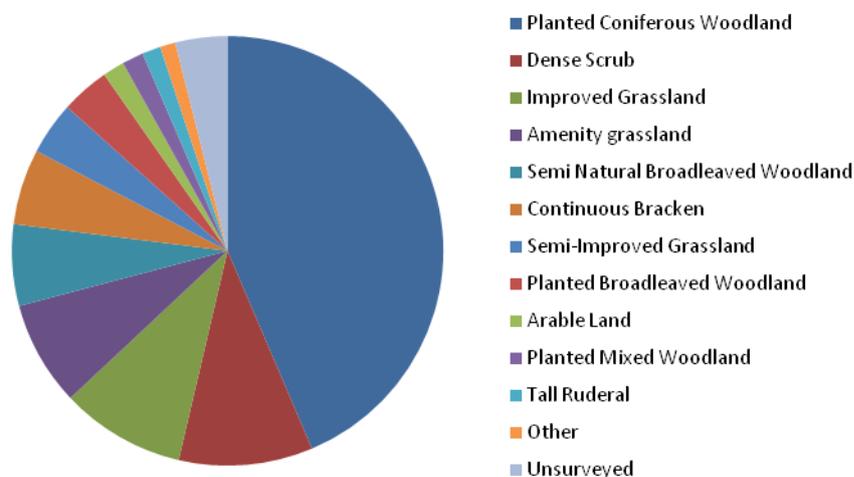
Of the 56.17ha of Planted Broadleaved Woodland classified in 1999, 24.49% (13.76ha) is still classified as such in this survey. 25.39% (14.26ha) has now been classified as Semi-natural Broadleaved Woodland; this may be because they are so well established as to no longer appear to be planted. The largest areas of which are scattered around the southern section of the reservoir, between the Fauxquets and Talbot Valleys, some larger areas inland from Fort Grey, and some at Fermain Valley. 9.98% (7.56ha) is now classified as Amenity Grassland, some of this is attributable to extensions of curtilage, where the woodland has been cleared and converted to gardens, but for the most part it appears to be 'edge effects'. The 4.25ha (7.56%) of Plantation Woodlands are orchards which have been re-classified since the previous survey. 7.39% (4.15ha) is now Dense Scrub, this appears to be mainly due to the classification of areas within woodlands which are made visible by aerial photographs, and so will have been missed on the previous survey. 6.09% (3.42ha) is now classified as planted mixed woodland. Unlike most other changes, none of this area can be attributed to 'edge effects'. It comprises of various small areas scattered throughout the island where the opinion of the surveyors differed with regards to the percentage composition of broadleaved and coniferous trees. A change from classification as Planted Broadleaved Woodland to Parkland of 3.29ha (5.86%) is also due to differing opinions of the surveyors; areas of woodland have been grouped together with adjacent Amenity Grassland and classified as Parkland. 2.46ha (4.38%) is now improved grassland; 0.6ha of which was newly planted in 1999, and only a very few trees established, so it was subsequently classified as improved grassland with a target note referring to the few scattered trees. The remaining 1.86ha can be attributed to 'edge effects'.

PLANTED CONIFEROUS WOODLAND

Habitat Classification	Amount (ha)	Proportion (%)
Planted Coniferous Woodland	11.36	43.61
Dense Scrub	2.62	10.04
Improved Grassland	2.44	9.35
Amenity Grassland	2.05	7.88
Semi Natural Broadleaved Woodland	1.60	6.12
Continuous Bracken	1.48	5.70
Semi-improved Grassland	1.03	3.97
Planted Broadleaved Woodland	0.95	3.64
Arable Land	0.43	1.63
Planted Mixed Woodland	0.42	1.61
Tall Ruderal	0.36	1.39
Other	0.30	1.15
Total	25.03	96.09

Table 12. The classification in the 1999 survey of the land currently identified as Planted Coniferous Woodland. 'Proportion' refers to the percentage of the total, 26.05ha of land, classified as Planted Coniferous Woodland.

Figure 75. The classification in the 1999 survey of the land currently classified as planted coniferous woodland.



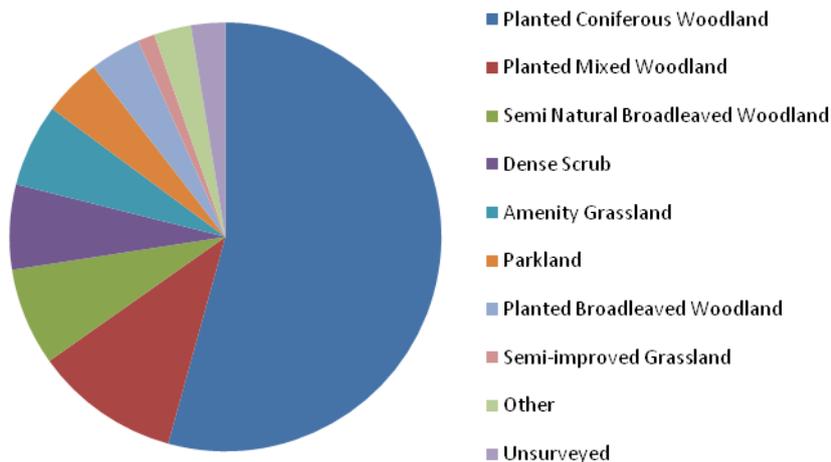
Of the 26.05ha of coniferous woodland identified as such during the 2010 survey, 43.61% (11.36ha) was already classified as such during the 1999 survey. This includes the large areas at Le Guet, around the reservoir, Pleinmont and at Le Pied du Mur which were all planted before 1990. A large majority of the remaining 56.39% can be attributed to 'edge effects'. This will be either where the woodlands have expanded slightly, or where the boundary for the edge of the woodland drawn by the surveyors has differed slightly. Of the 10.04% (2.62ha) which was previously classified as Dense Scrub, there are areas at Le Guet (0.46ha) and Pleinmont (0.48ha) where the woodland has become more dense and shaded out the scrub. There is a large section of coniferous woodland which has recently been planted on improved grassland at Havilland Hall which accounts for a proportion of the 9.35% (2.62ha) of Planted Coniferous Woodland that was previously classified

as improved grassland. Equally, some small sections of gardens have been planted with conifers which accounts for a small proportion of the 7.88% (2.05ha) which was previously classified as Amenity Grassland. Of the 1.60ha (6.12%) previously classified as Semi-natural Broadleaved Woodland, only 0.45ha is not due to 'edge effects'; which is an area at Pleinmont where the conifers weren't classified separately to the broadleaved woodland surrounding them during the previous survey. There are 1.48ha (5.7%) which were previously identified as Continuous Bracken, of which there are 0.4ha at the reservoir and 0.8ha at Le Pied du Mar which have been recently planted, the remaining 0.28ha are attributable to 'edge effects'. 1.03ha of Semi-improved Grassland has now been classified as Planted Coniferous Woodland, of which only 0.4ha, to the east of the reservoir, has actually been planted.

Habitat Classification	Amount (ha)	Proportion (%)
Planted Coniferous Woodland	11.36	54.28
Planted Mixed Woodland	2.28	10.91
Semi Natural Broadleaved Woodland	1.54	7.37
Dense Scrub	1.34	6.40
Amenity Grassland	1.31	6.24
Parkland	0.91	4.37
Planted Broadleaved Woodland	0.80	3.82
Semi-improved Grassland	0.27	1.27
Other	0.58	2.79
Total	20.39	97.44

Table 13. The current classification of the land identified as Planted Coniferous Woodland in the 1999 survey. 'Proportion' refers to the percentage of the total, 20.93ha of land, classified as Planted Coniferous Woodland in 1999.

Figure 76. The current classification of the land identified as planted coniferous woodland in the 1999 survey.



Of the 20.93ha classified as Planted Coniferous Woodland in 1999, 54.28% (11.36ha) has remained as such. 10.91% (2.28ha) has been reclassified as planted mixed woodland. This change appears to be due to different estimations of species composition by the surveyors, which affects the woodlands classifications. 7.37% (1.54ha) is now Semi-natural Broadleaved Woodland, and 6.4% (1.34ha) Dense Scrub. There are various small

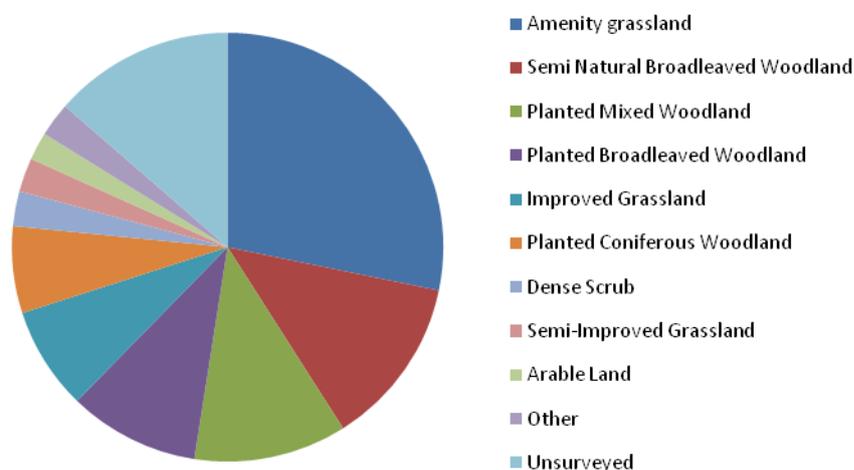
patches of both of these classifications which were found within coniferous woodland using aerial photography, and so weren't easily separated using the previous methodology. 6.24% (1.31ha) is now classified as Amenity Grassland. 0.2ha of which is due to the clearing of a woodland to extend a garden. The remaining change of 1.11ha is due to 'edge effects'.

PLANTED MIXED WOODLAND

Habitat Classification	Amount (ha)	Proportion (%)
Amenity Grassland	9.85	28.23
Semi Natural Broadleaved Woodland	4.45	12.77
Planted Mixed Woodland	4.00	11.47
Planted Broadleaved Woodland	3.42	9.81
Improved Grassland	2.70	7.75
Planted Coniferous Woodland	2.28	6.54
Dense Scrub	0.92	2.63
Semi-improved Grassland	0.89	2.55
Arable Land	0.73	2.10
Other	0.89	2.56
Total	30.14	86.42

Table 14. The classification in the 1999 survey of the land currently identified as planted mixed woodland. 'Proportion' refers to the percentage of the total, 34.88ha of land, classified as planted mixed woodland.

Figure 77. The classification in the 1999 survey of the land currently classified as planted mixed woodland.



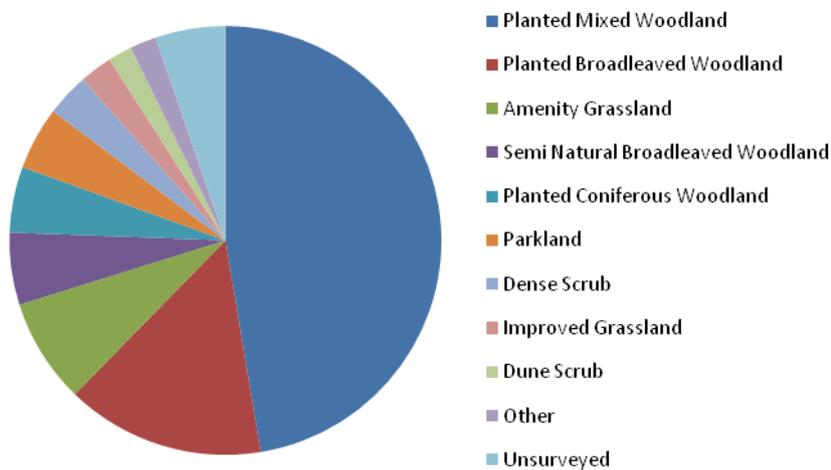
Of the 34.88 ha classified during this survey, only 11.47% (4ha) was classified as such in the previous survey. 28.23% (9.85ha) was previous Amenity Grassland, where some large gardens have been planted. It also appears that some areas may have been misclassified, and lots of areas have changes due to 'edge effects'

Habitat Classification	Amount (ha)	Proportion (%)
Planted Mixed Woodland	4.00	47.38
Planted Broadleaved Woodland	1.26	14.89
Amenity Grassland	0.67	7.89
Semi Natural Broadleaved Woodland	0.46	5.44

Planted Coniferous Woodland	0.42	4.96
Parkland	0.40	4.74
Dense Scrub	0.27	3.25
Improved Grassland	0.21	2.44
Dune Scrub	0.15	1.80
Other	0.17	1.98
Total	8.00	94.76

Table 15. The current classification of the land identified as planted mixed woodland in the 1999 survey. 'Proportion' refers to the percentage of the total, 8.44ha of land, classified as planted mixed woodland in 1999.

Figure 78. The current classification of the land identified as planted mixed woodland in the 1999 survey.

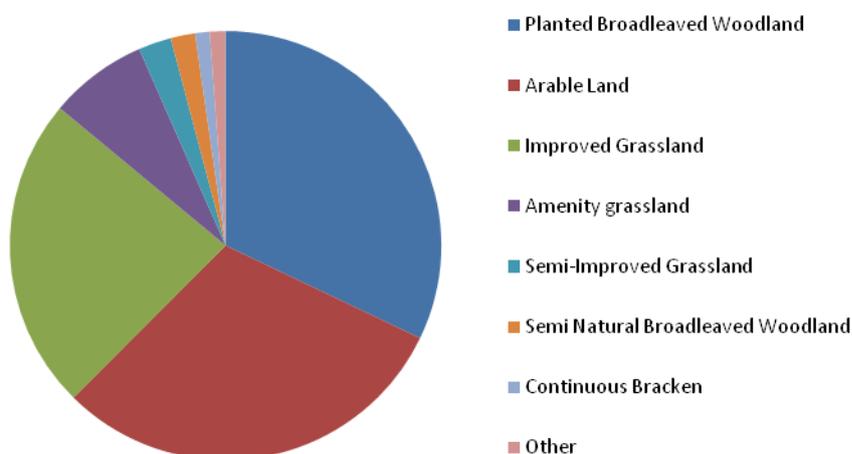


PLANTATION WOODLAND

Habitat Classification	Amount (ha)	Proportion (%)
Planted Broadleaved Woodland	4.25	30.79
Arable Land	4.01	29.09
Improved Grassland	3.12	22.63
Amenity Grassland	0.98	7.07
Semi-improved Grassland	0.33	2.36
Semi Natural Broadleaved Woodland	0.24	1.75
Continuous Bracken	0.14	1.05
Other	0.16	1.13
Total	13.22	95.88

Table 16. The classification in the 1999 survey of the land currently identified as Plantation Woodland. 'Proportion' refers to the percentage of the total, 13.79ha of land, classified as Plantation Woodland.

Figure 79. The classification in the 1999 survey of the land currently classified as plantation woodland.



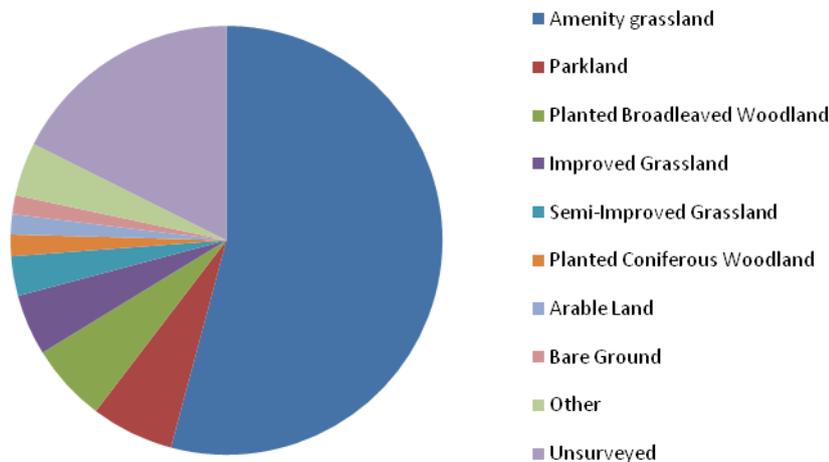
The survey in 1999 classified orchards as Planted Broadleaved Woodlands, however, only 30.79% (4.25ha) of the Plantation Woodlands were previously classified as Planted Broadleaved Woodland, 2.88ha of which is at Rocquettes Cider Farm. 29.09% (4.01ha) was previously arable land, 3.9ha of which is at the Rocquettes Cider Farm, and was planted when they expanded their orchards, as well as 1.2ha of previously improved grassland and 0.26ha of Amenity Grasslands. The remaining arable land changed classification due to edge effects, as opposed to being planted as with the majority of the 1.92ha of improved grassland.

PARKLAND

Habitat Classification	Amount (ha)	Proportion (%)
Amenity Grassland	30.29	54.15
Parkland	3.46	6.19
Planted Broadleaved Woodland	3.29	5.89
Improved Grassland	2.57	4.60
Semi-improved Grassland	1.67	2.98
Planted Coniferous Woodland	0.91	1.63
Arable Land	0.84	1.51
Bare Ground	0.80	1.43
Other	2.26	4.04
Total	46.10	82.42

Table 17. The classification in the 1999 survey of the land currently identified as Parkland. 'Proportion' refers to the percentage of the total, 55.94ha of land, classified as Parkland.

Figure 80. The classification in the 1999 survey of the land currently classified as parkland.

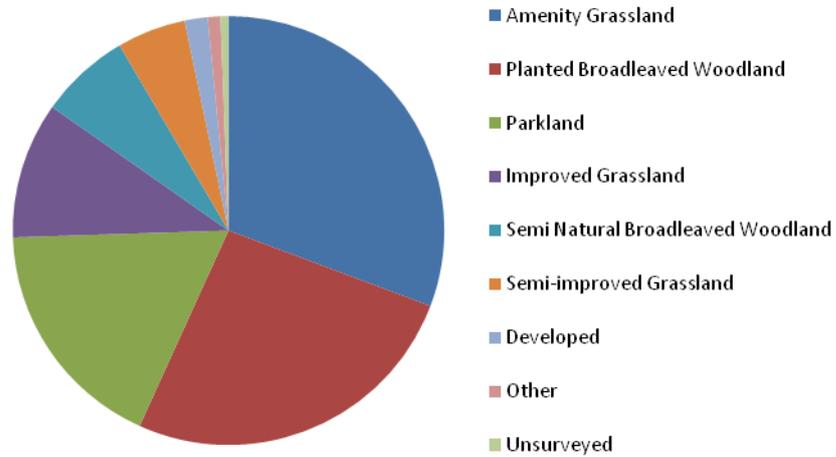


Of the 55.94ha classified as Parkland in 2010, 54.15% (30.29ha) was previously classified as Amenity Grassland. Mainly, this is because they have had scattered trees planted on the land since, or that the trees have become dense enough to alter the lands classification. Only 3.46ha (6.19%) was also classified as Parkland in 1999, which is Normanville (at the Fosse Andre), Candie Gardens and a very small section at Beau Sejour. 5.89% (3.29ha) was previously Planted Broadleaved Woodland. Often, if the woodland is sparse, it has been grouped together with the adjacent Amenity Grassland. Or in the case of a small area at the Rocquettes cider farm, the woodland has been removed and replaced with Parkland. 4.6% (2.57ha) was improved grassland, of which 1.52ha has been converted to Parkland, (0.3ha at Oatlands, 0.26ha at Delancy Park Hotel, 0.17ha at the Rohais, 0.44ha at Le Corbiere and 0.35ha at Rocquettes Cider Farm), the remaining 1.05ha that is attributable to ‘edge effects’. 2.18% (1.67ha) was previously Semi-improved Grassland, the majority of which has been converted to Parkland through the planting of scattered trees and heavily mowing the grassland. 9.83 ha (17.58%) was not surveyed in the previous study.

Habitat Classification	Amount (ha)	Proportion (%)
Amenity Grassland	6.00	30.73
Planted Broadleaved Woodland	5.09	26.04
Parkland	3.46	17.73
Improved Grassland	2.01	10.28
Semi Natural Broadleaved Woodland	1.33	6.80
Semi-improved Grassland	1.01	5.15
Other	0.19	0.95
Total	19.09	97.68

Table 18. The current classification of the land identified as Parkland in the 1999 survey. 'Proportion' refers to the percentage of the total, 19.54ha of land, classified as Parkland in 1999

Figure 81. The current classification of the land identified as parkland in the 1999 survey.



Of the 19.54ha of Parkland identified during the 1999 survey, only 17.73% (3.46ha) has remained classified as such. A large proportion of this change is due to the re-classification of Saumarez Park from Parkland to Amenity Grassland (3.77ha) and Planted Broadleaved Woodland (4.3ha). The remaining 2.23ha of Amenity Grassland and 0.79ha of Planted Broadleaved Woodland which were previously Parkland have changed classification due to the separation of woodland from the adjacent grassland, either because of differing views of the surveyors or because the woodland has become dense enough to classify separately. 10.28% (2.01ha) has been reclassified as improved grassland. 1.8ha of which is at Le Foulon Cemetery, which has not changed, but rather the surveyors have had different opinions on its classification. The remaining 0.2ha is at Beau Sejour, which was an area of Parkland that has now been classified as improved grassland and 1.03 ha of Semi-natural Broadleaved Woodland, which accounts for a proportion of the 6.8% currently classified as such. 5.15% is now Semi-improved Grassland; including areas at Le Foulon Cemetery and Courtil Rozel (on Mount Durand).

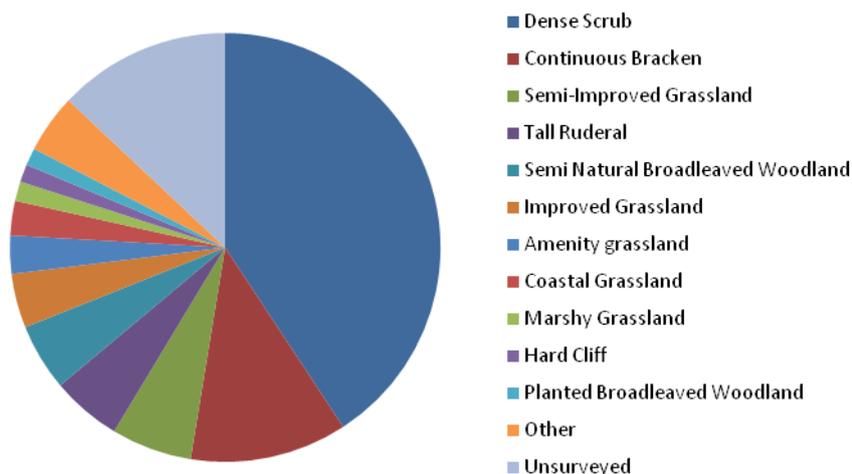
SCRUB

DENSE SCRUB

Habitat Classification	Amount (ha)	Proportion (%)
Dense Scrub	128.37	40.78
Continuous Bracken	37.07	11.78
Semi-improved Grassland	19.00	6.04
Tall Ruderal	16.57	5.27
Semi Natural Broadleaved Woodland	15.92	5.06
Improved Grassland	12.90	4.10
Amenity Grassland	9.08	2.88
Coastal Grassland	8.20	2.61
Marshy Grassland	4.66	1.48
Hard Cliff	4.18	1.33
Planted Broadleaved Woodland	4.15	1.32
Other	13.92	4.42
Total	274.02	87.06

Table 19. The classification in the 1999 survey of the land currently identified as Dense Scrub. 'Proportion' refers to the percentage of the total, 314.74ha of land, classified as Dense Scrub.

Figure 82. The classification in the 1999 survey of the land currently classified as dense scrub.



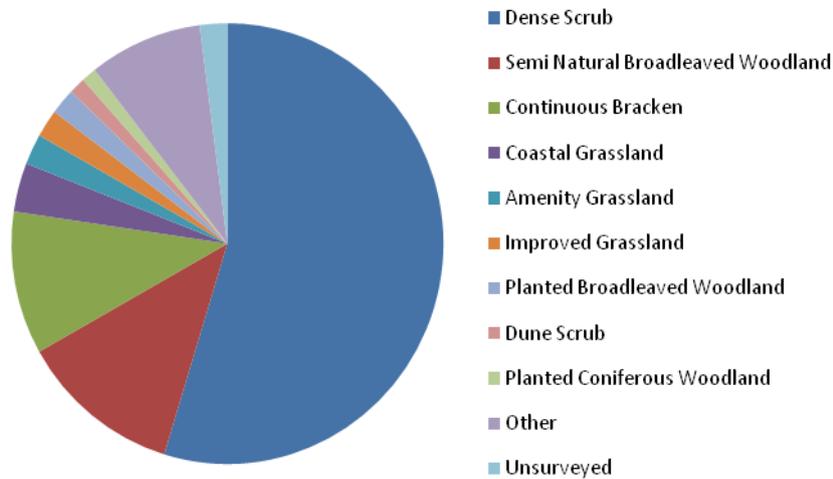
Of the 314.74ha identified as Dense Scrub in the present survey, 40.78% (128.37ha) was also classified as Dense Scrub in 1999. This includes the majority of the coastal areas of Dense Scrub and those areas around the disused quarries in the north. 11.78% (37.07ha) was previously classified as Continuous Bracken and has succeeded to Dense Scrub through lack of management. A high proportion of which is around the cliffs and (especially at Pleinmont), a large area at La Vallée (east of Rocquaine Bay), roughly 1.5ha at Kings Mills and

0.5ha at Fort Saumarez headland, and some areas on Lihou island. 6.04% (19.00ha) was previously Semi-improved Grassland and has succeeded to Dense Scrub following abandonment. These areas comprise of small areas scattered throughout the island, but mainly inland, and generally in the northern parishes. There are lots of small areas in the Talbot Valley and quite a few around Ivy Castle and The Bowl. 5.27% (16.57ha) was Tall Ruderal, again, mostly was abandoned land that has succeeded to Dense Scrub. Mainly inland, scattered throughout the island, the largest areas being 3.5ha at Kenilworth Vineries which was previously a greenhouse site, subsequently demolished and abandoned. 15.92ha was previously classified as Semi-natural Broadleaved Woodland (areas within woodlands that have been located and classified separately; as has already been discussed on page 71. 4.10% (12.90ha) was previously classified as improved grassland, some of which are variations in where the boundaries were cut; others are due to scrub encroachment, especially those towards the cliffs in the south of the island where there is no boundary to the field, solely the edge of the scrub. This also accounts for the 8.20ha of Dense Scrub which was previously classified as Coastal Grassland. 9.08ha of Amenity Grassland, according to the 1999 survey (2.88%) has now been classified as Dense Scrub, a proportion of which is at Le Grande Mare Golf Course, where willow trees have become established, or areas around the edges of large gardens, where the scrub has encroached. 1.48% (4.66ha) was previously classified as marshy grassland, one field in Barras Lane (0.32ha) and another just to the south of L'Ancrese (0.25ha) have recently reverted entirely to scrub. The rest is predominately due to scrub encroachment. 1.33% (4.18ha) was previously classified as Hard Cliff, which is almost entirely situated along the cliffs. It appears that most of this was also Dense Scrub in 1999 but, given the methodology of that survey, was too small to map separately from the surrounding Hard Cliff.

Habitat Classification	Amount (ha)	Proportion (%)
Dense Scrub	128.37	54.73
Semi Natural Broadleaved Woodland	28.39	12.10
Continuous Bracken	24.62	10.50
Coastal Grassland	8.40	3.58
Amenity Grassland	5.28	2.25
Improved Grassland	4.77	2.03
Planted Broadleaved Woodland	4.50	1.92
Dune Scrub	2.87	1.22
Planted Coniferous Woodland	2.62	1.12
Other	19.89	8.48
Total	229.71	97.94

Table 20. The current classification of the land identified as Dense Scrub in the 1999 survey. 'Proportion' refers to the percentage of the total, 234.53ha of land, classified as Dense Scrub in 1999.

Figure 83. The current classification of the land identified as parkland in the 1999 survey.



Of the 234.53ha of Dense Scrub classified in 1999, 54.73% (128.37ha) has remained as such. 12.10% (28.39ha) has succeeded to Semi-natural Broadleaved Woodland, a large proportion of which is located along the coast from Fermain Bay to Icart Point, and inland through the Petit Bôt Valley, as well as at Le Douit and the northern aspect of Pleinmont, (see Semi-natural Broadleaved Woodland section, page 71. 10.50% (24.62ha) has been classified as Continuous Bracken, which is mainly located around the southern coast, at Fort Le Marchant headland and Fort Saumarez headland. With the exception of an area at La Corbière which was cleared at some point between 2005 and 2006, it appears that most of this was not separated from the surrounding Dense Scrub during the previous survey. This is also the case for the majority of the Coastal Grassland which was previously classified as Dense Scrub (3.58%, 8.40ha). 2.25% (5.28ha) is now classified as Amenity Grassland, some of which are areas that have been cleared to extend the curtilage of the adjacent garden, however, some of this change can be attributed to 'edge effects'. 2.03% (4.77ha) has now been classified as improved grassland; some areas have been cleared to be utilised as agricultural land, however a large amount of this change is also attributable to 'edge effects'. 1.22% (2.87ha) has been classified as Dune Scrub, which is mainly in two areas; Le Catelain by L'Ancrese, and an area inland from Portinfer. The cause for this change will be a difference in opinion of the underlying substrate, however given the nature of the classifications, there is very little ecological difference between them. Some areas have also been planted with broadleaved and coniferous woodland (1.92% and 1.12% respectively).

SCATTERED SCRUB

A total of 4,192 points of scattered scrub were identified during the 1999 survey. Table 21 below contains the data describing the current classifications of the habitat parcels in which the 1999 survey marked 'Scatter Scrub' target notes.

Habitat Classification	Count	Area (ha)	%
Improved Grassland	247	131.79	25.10
Dense Scrub	261	71.72	13.66
Amenity Grassland	213	62.46	11.89
Dune Grassland	30	30.67	5.84
Semi Natural Broadleaved Woodland	80	29.64	5.64

Continuous Bracken	96	28.54	5.43
Arable Land s.t. ley	35	23.02	4.38
Arable Land	41	20.45	3.89
Semi-improved Grassland	48	17.10	3.26
Coastal Grassland	53	17.04	3.24
Planted Broadleaved Woodland	48	15.62	2.97
Semi-improved Marshy Grassland	31	15.15	2.89
Developed	60	8.70	1.66
Parkland	15	7.76	1.48
Dune Scrub	15	5.23	1.00
Other	106	27.17	5.17
Total	1379.00	525.14	

Table 21. The current classification of the land previously target noted as scattered scrub. Count refers to the amount of target notes located in each habitat classification. Area refers to the amount of land covered by the habitat units containing a scattered scrub target note.

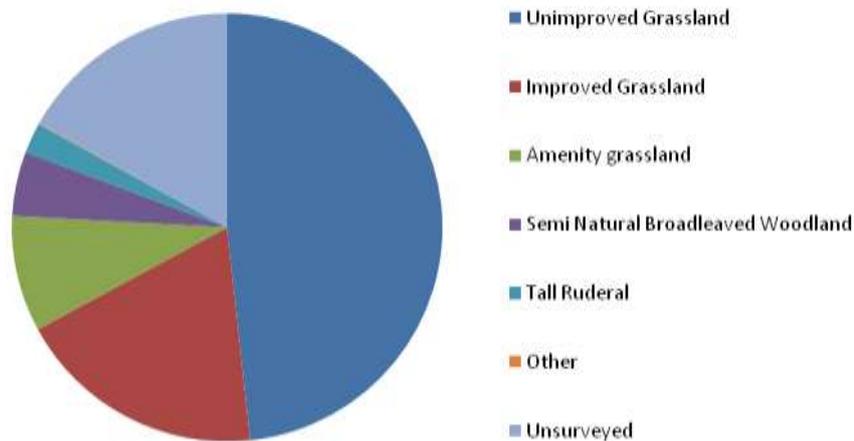
DRY GRASSLANDS

UNIMPROVED GRASSLAND

Habitat Classification	Amount (ha)	Proportion (%)
Unimproved Grassland	0.99	48.22
Improved Grassland	0.38	18.75
Amenity Grassland	0.18	8.78
Semi Natural Broadleaved Woodland	0.10	4.87
Tall Ruderal	0.05	2.29
Other	0.00	0.08
Total	1.70	82.99

Table 22. The classification in the 1999 survey of the land currently identified as Unimproved Grassland. 'Proportion' refers to the percentage of the total, 2.05ha of land, classified as Unimproved Grassland.

Figure 84. The classification in the 1999 survey of the land currently classified as unimproved grassland.



As this habitat is so rare in Guernsey, the prior classifications of each area of land will be discussed.

Candie Cemetery is the only area which has been classified as Unimproved Grassland in both the 1999 and the 2010 surveys, however, the amount classified as such varies between the surveys; only 0.99ha was classified as Unimproved Grassland during both surveys. 0.10ha of Planted Broadleaved Woodland which runs alongside the cemetery was grouped with the Unimproved Grassland during the 1999 survey, but has been classified separately during the current survey.

The field at Rue Des Vicheries, 0.16ha of the clearing at the Fauxquets Valley and the strip within the field at Kings Mills were all previously classified as improved grassland. The strip of grassland within the field was not separated from the surrounding field during the 1999 survey, as it was too small to map using their methodology. Due to the length of time required for an area of grassland to progress from an improved to an un-improved condition, it is unlikely that this has occurred at the field at Rue Des Vicheries and the clearing at Fauxquets Valley, it is more likely that they have been mis-classified during the present of the previous survey. It may have been that they were previously surveyed at a time when the indicator species weren't visible, and so were assumed to be improved grassland, or rather that the current surveyor has been too generous with the classification. It is necessary for these sites to be re-visited and possibly a phase 2 survey carried out to clarify this issue.

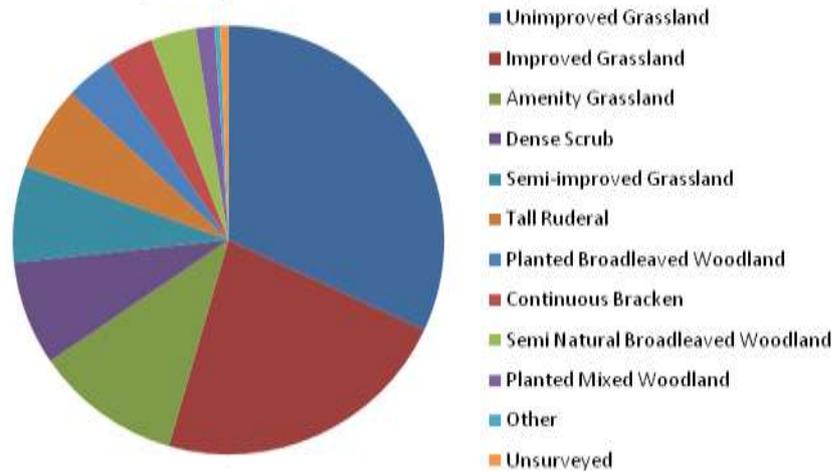
The remaining 0.15ha of the clearing at the Fauxquets Valley was classified as Tall Ruderal and Semi-natural Broadleaved Woodland. The area of Tall Ruderal has since been cut and the area of Semi-natural Broadleaved Woodland has changed due to the change in where the boundary of the woodland has been drawn. The greenhouses at the site in St Saviour's were demolished at some point between 1986 and 1990, but this area of land was not included in the 1999 survey, so it is difficult to speculate at it's previous condition. The grassland at Ivy Castle was previously classified as Amenity Grassland. As it is maintained by regular mowing it is possible that the previous survey was performed recently after the grass had been mown, and thus is short and fairly uniform with no visible indicator species. The verge at Specsavers was not previously surveyed.

Habitat Classification	Amount (ha)	Proportion (%)
Unimproved Grassland	0.99	31.88
Improved Grassland	0.70	22.59

Amenity Grassland	0.34	11.00
Dense Scrub	0.24	7.85
Semi-improved Grassland	0.23	7.27
Tall Ruderal	0.20	6.40
Planted Broadleaved Woodland	0.11	3.63
Continuous Bracken	0.11	3.56
Semi Natural Broadleaved Woodland	0.10	3.38
Planted Mixed Woodland	0.04	1.43
Other	0.01	0.41
Total	3.09	99.39

Table 23. The current classification of the land identified as Unimproved Grassland in the 1999 survey. 'Proportion' refers to the percentage of the total, 3.11ha of land, classified as Unimproved Grassland in 1999.

Figure 85. The current classification of the land identified as unimproved grassland in the 1999 survey.



The survey in 1999 identified different areas of Unimproved Grasslands to those located during the current survey:

- A strip of land by Juas Quarry (0.10ha) which appears to have been mis-classified and is a combination of Semi-natural Broadleaved Woodland, planted mixed woodland, and Dense Scrub.
- A field near to Les Rouvets (0.71ha), which is now classified as improved grassland. After examining aerial photographs, it appears this field may have been treated with fertilizer or herbicides at some point between 2004 and 2006 which has caused its improvement.
- A clearing in the woodland surrounding the reservoir (0.09ha), which has now been lost as the semi-natural woodland surrounding it has expanded.
- A section of a garden at Rocquaine Bay (0.54ha), which was altered at some point between 1999 and 2001 and is now classified as Amenity Grassland (0.25ha), Semi-improved Grassland (0.22ha) and Continuous Bracken (0.07ha).
- 0.12ha was a clearing in some Dense Scrub just inland from Fort Grey; management ceased on this land shortly after the previous study and it has since reverted back to Dense Scrub.
- There is also field at Les Genette (0.32ha) which was abandoned shortly after the previous survey and has succeeded to a mosaic of Tall Ruderal (0.20ha), Dense Scrub (0.08ha) and Continuous Bracken (0.04ha).

- A field just south of the airport (0.12ha) was altered at some point between 1999 and 2001, and is now mainly Amenity Grassland (0.1ha). The remaining 0.02ha is a combination of Semi-improved Grassland, Dense Scrub and Planted Broadleaved Woodland, which has changed classification due to 'edge effects'.
- The 3.11ha identified in 1999 also includes 1.09ha at Candie Cemetery already discussed (see page 31).

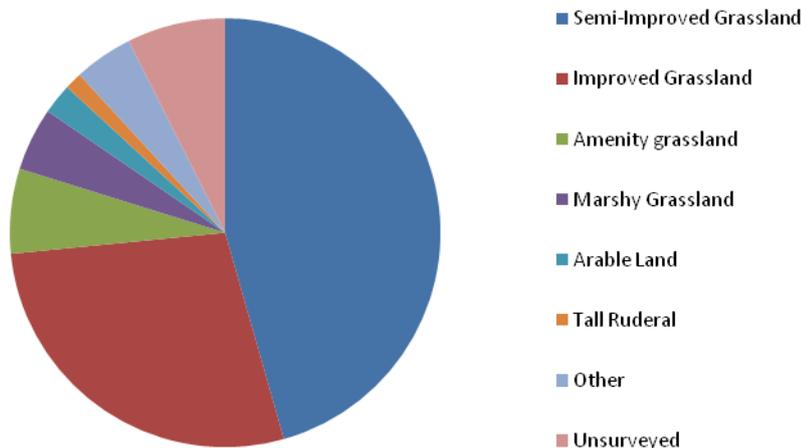
These measurements of Unimproved Grasslands are underestimates as they do not take into account the grassland found on earth banks, some of which is likely to be unimproved (see Boundaries, section 4.1.11).

SEMI-IMPROVED GRASSLAND

Habitat Classification	Amount (ha)	Proportion (%)
Semi-improved Grassland	87.71	45.61
Improved Grassland	53.49	27.82
Amenity Grassland	12.34	6.41
Marshy Grassland	9.17	4.77
Arable Land	4.41	2.29
Tall Ruderal	2.50	1.30
Other	8.51	4.42
Total	178.12	92.63

Table 24. The classification in the 1999 survey of the land currently identified as Semi-improved Grassland. 'Proportion' refers to the percentage of the total, 192.30ha of land, classified as Semi-improved Grassland.

Figure 86. The classification in the 1999 survey of the land currently classified as semi-improved grassland.



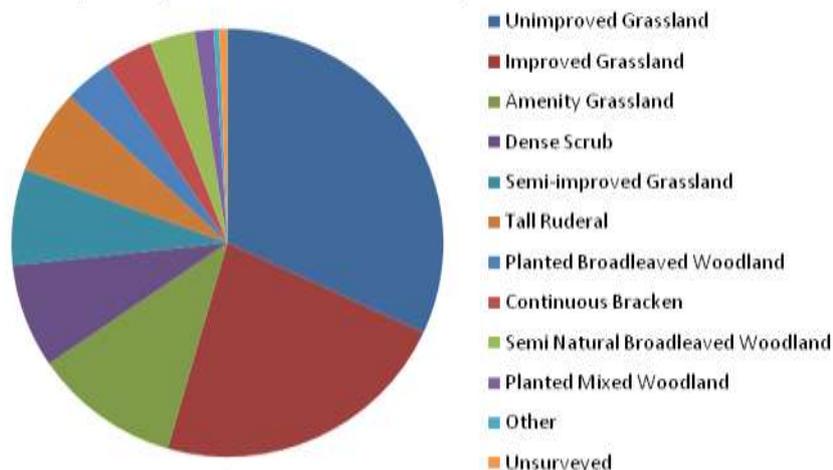
Of the 192.30ha located, 45.61% (87.71ha) was also classified as Semi-improved Grassland in the 1999 report. This includes the majority of the grassland surrounding the airport runway. The remaining 38ha or so is scattered throughout the island, including the grassland at the Bordeaux Tip and some of the land at Vale Pond and inland from Rocquaine Bay. 27.82% (53.49ha) was previously classified as improved grassland, including the 3.01ha north of Saumarez Park, a section of the Semi-improved Grassland at Vale Pond. This change may be due to either a loss of the effects of improvement following appropriate management, or an error caused by the differing views of the surveyors with regards to the habitat definitions; especially if the land is borderline

between improved and semi-improved, where there is the highest margin of error. 6.41% (12.34) was previously classified as Amenity Grassland. 1.06ha of which is around Carteret Quarry Reservoir, 0.97ha at the north end of Rocquaine Bay and 0.81ha in a field behind Les Prevosts Farm in St Saviors, the rest is scattered throughout the island in much smaller areas. Most of this change appears to be due to changes in classification of areas, as opposed to 'edge effects'. This change may be due to a change in the management of the land; if it is being mown less frequently, then the less disturbance-tolerant species may be able to re-colonise the grassland, and thus the area becomes more diverse. However, it may also be due to mis-classification during either this, or the previous survey; the classification of Amenity Grassland is heavily biased depending on the time between the grassland was last mown and when it is surveyed. 4.77% (9.17ha) was previously identified as marshy grassland, such as 0.6ha at the Fauxquets Valley, 1.35ha through 4 fields at Les Landes, Vale, and 0.68ha in a field at La Route du Braye. The spring and summer of 2010 have been much drier than average so these areas may have become too dry for the marshy grassland indicator species to survive, thus giving the grassland the appearance to semi-improved dry grassland (see marshy grassland, section 4.1.4) 2.29% (4.41ha) was previously arable land. Some areas of which have been mis-classified in either this, or the previous survey, and some change is due to 'edge effects'. However, some areas were arable land in 1999, and have subsequently been left fallow, such as 0.37ha close to Torteval Cemetery which was left fallow in 2000, and now appears to be semi-improved permanent grassland, however it is possible that it only appears semi-improved due to the diversity of forbs which are in fact arable weeds, and the underlying soil may still be quite poor.

Habitat Classification	Amount (ha)	Proportion (%)
Improved Grassland	133.14	37.84
Semi-improved Grassland	87.71	24.93
Amenity Grassland	35.56	10.11
Dense Scrub	19.00	5.40
Developed	11.77	3.35
Semi Natural Broadleaved Woodland	9.06	2.57
Arable Land s.t. ley	8.13	2.31
Planted Broadleaved Woodland	7.55	2.15
Arable Land	7.41	2.11
Tall Ruderal	6.59	1.87
Continuous Bracken	6.06	1.72
Semi-improved Marshy Grassland	4.16	1.18
Other	15.67	4.46
Total	346.13	98.38

Table 25. The current classification of the land identified as Semi-improved Grassland in the 1999 survey. 'Proportion' refers to the percentage of the total, 351.81ha of land, classified as Semi-improved Grassland in 1999.

Figure 87. The current classification of the land identified as semi-improved grassland in the 1999 survey.



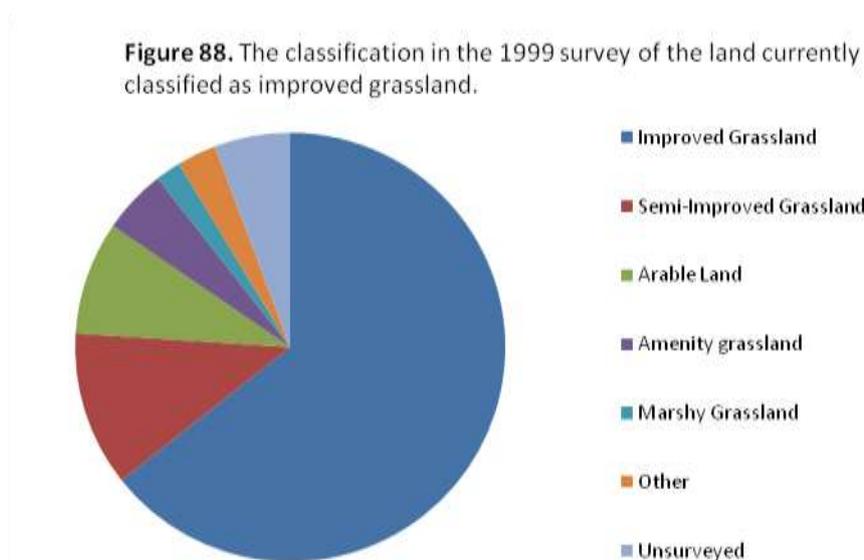
Of the 351ha of Semi-improved Grassland identified in the 1999 survey, 37.84% (133.14ha) has now been classified as improved grassland. These areas may have actually become more improved due to more intensive management, or they may have changed classification due to the more strict definition of Semi-improved Grassland (see improved grassland section below). Only 24.93% (87.71ha) has remained classified as Semi-improved Grassland, as already discussed, this includes the majority of the 49.25ha surrounding the runway at the airport. 10.11% (35.56ha) has now been classified as Amenity Grassland, as previously mentioned, this may be an error in classification caused by the amount of time that has elapsed since the grassland being cut and being surveyed. However, if the grassland has not been reseeded, or had heavy applications of herbicides, it is possible that with less intensive management it may revert to Semi-improved Grassland. 5.40% (19.00ha) is now classified as Dense Scrub, these hectares are concentrated in areas along the coast between La Corbiere and Less Tielles, through the Talbot Valley, around Petit Bôt, from Pleinmont to L'Eree headland and scattered throughout St Sampsons and Vale. Some small areas were previously mis-classified, i.e. too small to map, but on the whole it appears to be areas that have been abandoned and have succeeded to scrub. 2.57% (9.06ha) has now been classified as Semi-natural Broadleaved Woodland, there are small areas scattered throughout the island, but most densely concentrated through the Talbot Valley and on the plateau between the Talbot and Fauxquets valleys. Again, some of this is due to mis-classification, but generally due to abandonment and natural succession (see semi-natural woodland, section 4.1.1). 2.31% (8.13ha) is now classified as arable short-term leys, and 2.11% (7.41ha) arable land. Of their combined 15.54ha, only 5.43ha appears to have been correctly identified in both surveys (0.47ha was ploughed between 1999 and 2001, 1.71ha between 2001 and 2004, 1.84ha between 2004 and 2006 and 1.42ha between 2006 and 2009). The remaining 10.1ha was either mis-classified in the previous survey (and was actually arable) or mis-classified during the current survey. Fallow arable can appear very diverse, and recently cut grass may appear very uniform, giving the appearance of a short term ley. 2.15% (7.55ha) has now been classified as Planted Broadleaved Woodland, as has already been discussed in section 4.1.1. 1.87% (6.59ha) is now classified as Tall Ruderal, and 1.72% (6.06ha) as Continuous Bracken, these areas are mainly on land which has been abandoned, especially around the outskirts of fields where the Bracken is encroaching inwards. There is a large are of Continuous Bracken (1.12ha) on the plateau between the Talbot and Fauxquets valleys, where management ceased at some point between 2004 and 2006, and has subsequently succeeded to Bracken. 1.18% (4.16ha) has now been classified as Semi-improved Marshy Grassland. Predominately located just inland from Rocquaine Bay, including several at Les Vicheries (see Semi-improved Marshy Grassland section, page 98).

11.77ha (3.35%) of Semi-improved Grassland has been lost to development, including 2.44ha at the airport which has been converted to a car park, 1.15ha at Baubigny which was lost when the new school was built, 0.69ha at Le Friquet Garden Centre which was converted to a car park and 1.23ha at Richmond corner which is the new BBC premises and several houses.

IMPROVED GRASSLAND

Habitat Classification	Amount (ha)	Proportion (%)
Improved Grassland	732.11	64.33
Semi-improved Grassland	133.14	11.70
Arable Land	97.49	8.57
Amenity Grassland	55.21	4.85
Marshy Grassland	21.76	1.91
Other	33.58	2.95
Total	1073.28	94.31

Table 26. The classification in the 1999 survey of the land currently identified as improved grassland. 'Proportion' refers to the percentage of the total, 1,138.08ha of land, classified as improved grassland.



Over 2 thirds of the 1,138.08ha of land currently identified as improved grassland was also classified as such in 1999 (64.33%, 732.11ha, table 26), including most of the grassland at Barras Lane and Claire Mare nature reserve. 11.70% (13.14ha) was previously classified as Semi-improved Grassland. It is most likely that the majority of this land has changed classifications due to the more 'strict' definitions of the grassland habitats as opposed to having been improved through the application of fertilizers or herbicides, intensive grazing or re-seeding. 8.57% (97.49ha) was previously classified as arable land, it is most likely that these areas were seeded with a short-term ley at some point after the previous survey and have become so well established that they appear as permanent grasslands. These areas may have now been taken out of arable use, or they may be ploughed at some point in the future.

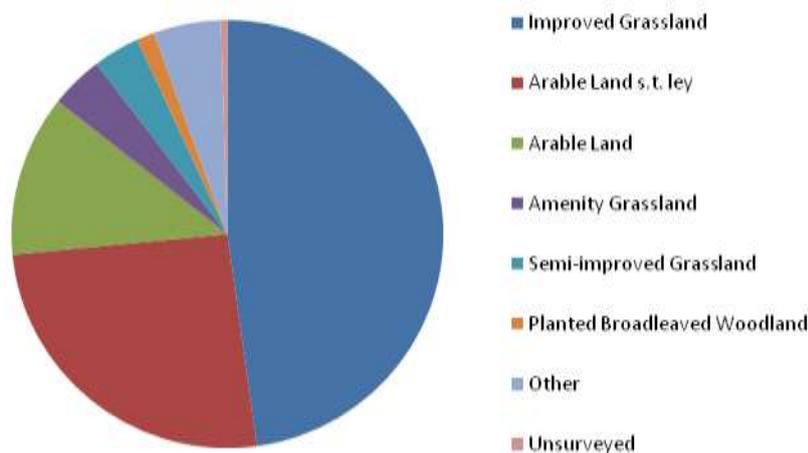
The re-classification of St Pierre Park golf course accounts for roughly 4.5ha of the 55.21ha of improved grassland which was previously Amenity Grassland. This change, along with the majority of other re-

classifications, e.g. 2.36ha at Hotel Jerbourg, 1.8ha at La Bailloterie, 1.36ha at Foulon Cemetery and 1.90ha at Delancy Park, is mainly due to different opinions of the surveyors, which has probably been heavily biased with the amount of time elapsed between the grassland being cut and being surveyed. 1.91% (21.76ha) was previously classified as Marshy grassland (see marshy grassland section, page 97).

Habitat Classification	Amount (ha)	Proportion (%)
Improved Grassland	732.11	47.81
Arable Land s.t. ley	392.95	25.66
Arable Land	186.39	12.17
Amenity Grassland	61.33	4.01
Semi-improved Grassland	53.49	3.49
Planted Broadleaved Woodland	20.18	1.32
Other	77.29	5.05
Total	1523.74	99.50

Table 27. The current classification of the land identified as improved grassland in the 1999 survey. 'Proportion' refers to the percentage of the total, 1,531.35ha of land, classified as improved grassland in 1999.

Figure 89 The current classification of the land identified as improved grassland in the 1999 survey.



Of the 1,531.35ha of improved grassland identified during the 1999 survey, 47.81% (732.11ha) has also been classified as such during the current survey. 25.66% (392.95ha) has now been classified as arable short-term ley; this is mainly due to the change in classification (short-term leys were previously classified as improved grassland) rather than permanent grasslands having been converted to arable land. This is also the case for the 189.39ha of improved grassland which is now classified as arable land. 4.01% (61.33ha) is now classified as Amenity Grassland, most of which is due to land being taken out of agricultural use to extend cartilage, this grassland is then mown very frequently and possibly re-seeded. For example, 8.7ha of land at Havilland Hall was converted to Amenity Grassland between 1999 and 2001. 53.49ha (3.49%) is now classified as Semi-improved Grassland, such as 3.01ha in the field directly north of Saumarez Park (see Semi-improved Grassland section, page 92. 20.18ha (1.32%) is now Planted Broadleaved Woodland (see Planted Broadleaved Woodland section, page 72. 1.78ha of improved grassland have been lost to development since the previous survey;

1.35ha at the Hospital between 2001 and 2004, which is now the Mignot Training Centre and 0.43ha at L'Aumone House was developed between 2006 and 2009.

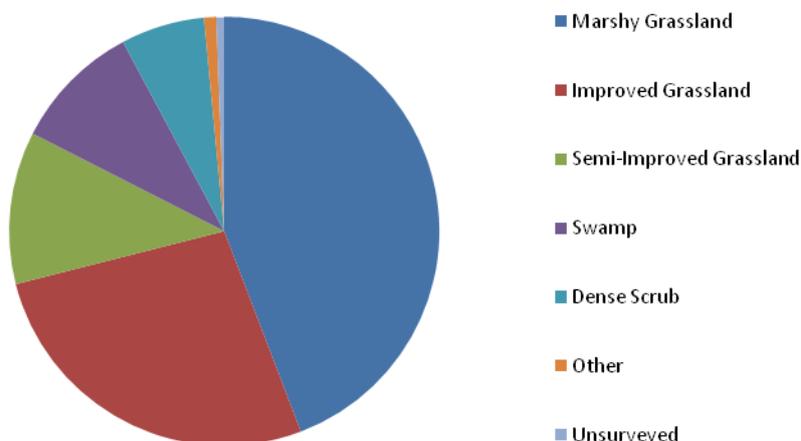
MARSHY GRASSLANDS

UNIMPROVED MARSHY GRASSLAND

Habitat Classification	Amount (ha)	Proportion (%)
Marshy Grassland	3.51	43.89
Improved Grassland	2.13	26.60
Semi-improved Grassland	0.91	11.44
Swamp	0.77	9.61
Dense Scrub	0.50	6.23
Other	0.13	1.65
Total	7.94	99.43

Table 28. The classification in the 1999 survey of the land currently identified as marshy grassland. 'Proportion' refers to the percentage of the total, 7.99ha of land, classified as marshy grassland.

Figure 90. The classification in the 1999 survey of the land currently classified as unimproved marshy grassland.



Of the 7.99ha currently identified, 43.89% (3.51ha) was also classified as marshy grassland during the 1999 survey, including 0.88ha of the fields at Les Vicheries, the area at L'Ancrese and the land at the Claire Mare. 26.60% (2.13ha) was previously classified as improved grassland, such as 1.44ha in the grasslands at Vazon and a field of 0.34ha at Les Vicheries. It is possible that these fields have lost the effects of their improvement; however, they may have been mis-classified in either this survey or the last. The remaining 0.35ha is due to the changes in boundaries between marshy grasslands and the surrounding dry grasslands. 11.44% (0.91ha) was previously classified as Semi-improved Grassland, 0.84ha of which is across 4 fields at Les Vicheries. They currently contain loose-flower orchids, ragged robin, and many other marshy grassland indicator species, so the current classification is most probably correct. These fields may have been surveyed later in the year during the 1999 survey, and so appeared as dry grasslands. 9.61% (0.77ha) was Swamp, predominately at the Claire Mare (0.75ha). After examining past aerial photographs, it appears that the area was mis-classified during the

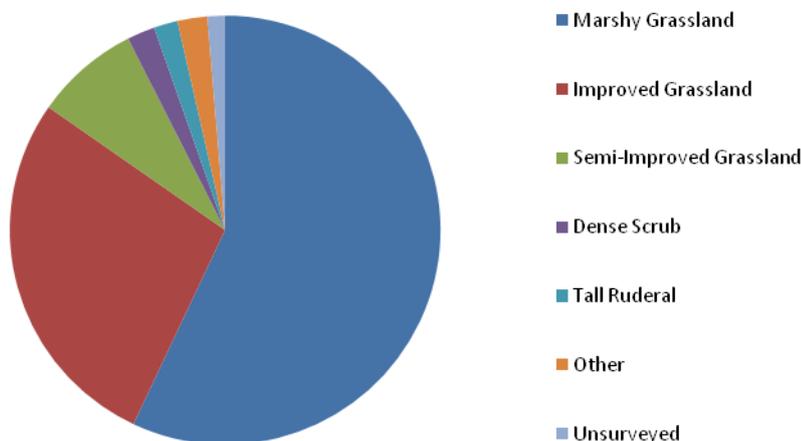
previous survey, and the areas of Swamp and marshy grassland weren't divided at the correct area, as opposed to having converted to marshy grassland through the succession from open water to willow scrub. Finally, 6.23% (0.50ha) was classified as Dense Scrub in 1999. 0.13ha in the field just south of L'Ancrese was cleared at some point between 2006 and 2009, 0.09ha at the Claire Mare was mis-classified during the previous survey, and the remaining 0.28ha is attributable to 'edge effects'.

SEMI-IMPROVED MARSHY GRASSLAND

Habitat Classification	Amount (ha)	Proportion (%)
Marshy Grassland	30.18	56.99
Improved Grassland	14.69	27.74
Semi-improved Grassland	4.16	7.85
Dense Scrub	1.11	2.09
Tall Ruderal	0.94	1.78
Other	1.18	2.24
Total	52.26	98.68

Table 29. The classification in the 1999 survey of the land currently identified as Semi-improved Marshy Grassland. 'Proportion' refers to the percentage of the total, 52.96ha of land, classified as Semi-improved Marshy Grassland.

Figure 91. The classification in the 1999 survey of the land currently classified as semi-improved marshy grassland.



Of these 52.96ha currently classified as Semi-improved Marshy Grassland, 56.99% (30.18ha) was classified as marshy grassland in 1999 (see marshy grassland section above). 27.74% (14.69ha) was previously improved grassland, such as 2.41ha at Vale Pond nature reserve and several of the fields from Fort Grey to Le Grande Mare, also 7.85% (4.16ha) was previously classified as semi-improved dry grassland, and these areas are mainly located at Les Vicheries. These fields may have become marshy over the past 11 years following changes to their management, or they may have appeared as dry grasslands during the previous survey if they were surveyed later in the summer. However, as the fields contain marshy grassland species such as ragged robin (*Silene flos-cuculi*), loose-flowered orchids (*Orchis laxifloris*), galingale (*Cyperus longus*) and silverweed (*Potentilla anserina*) it is not possible that they have been mis-classified during this survey. 2.09% (1.11ha) was

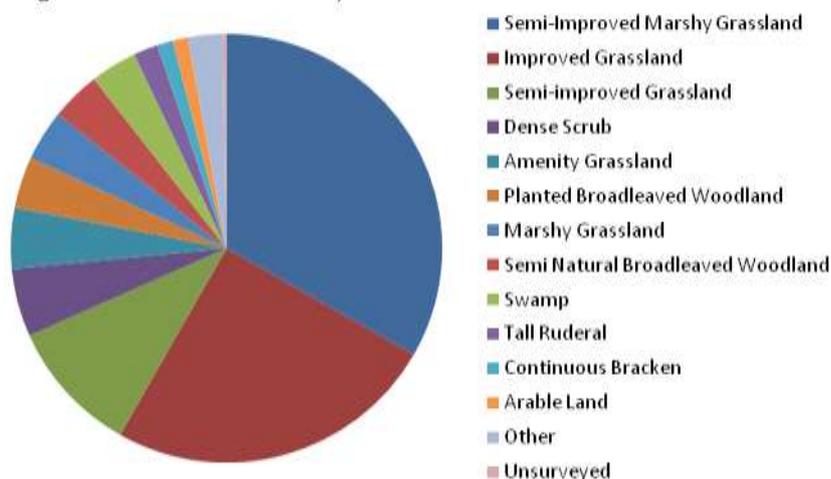
previously classified as Dense Scrub, such as 0.79ha at La Marais which was an area of scrub cleared at some point between 2001 and 2004.

1999 CLASSIFICATION OF MARSHY GRASSLAND

Habitat Classification	Amount (ha)	Proportion (%)
Semi-improved Marshy Grassland	30.18	33.26
Improved Grassland	22.64	24.95
Semi-improved Grassland	9.17	10.11
Dense Scrub	4.66	5.13
Planted Broadleaved Woodland	4.17	4.60
Marshy Grassland	3.51	3.86
Semi Natural Broadleaved Woodland	3.48	3.83
Amenity Grassland	3.38	3.72
Swamp	3.17	3.49
Tall Ruderal	1.67	1.84
Continuous Bracken	1.08	1.19
Arable Land	1.02	1.13
Other	2.37	2.61
Total	90.49	99.73

Table 30. The current classification of the land identified as marshy grassland in the 1999 survey. 'Proportion' refers to the percentage of the total, 90.74ha of land, classified as marshy grassland in 1999.

Figure 92. The current classification of the land identified as marshy grassland in the 1999 survey.



10.11% (9.17ha) has now been classified as semi-improved dry grassland. Some of these areas may have become drier this year because of the lack of rainfall during spring and early summer, also, there will be some variation with the time of year that the fields were surveyed, affecting how wet they appear. 5.13% (4.66ha) has succeeded to Dense Scrub (see Dense Scrub, section 4.1.2). 3.72% (3.38ha) is now Amenity Grassland; such as scattered areas at Vazon Bay, where the Grande Mare Golf Course has been expanded into the surrounding fields and some other areas have been converted to gardens. 4.17ha (4.60%) is now Planted Broadleaved Woodland (see section 4.1.1) and 3.48ha (3.83%) now Semi-natural Broadleaved Woodland which is found mainly along the Talbot, Fauxquets and Quanteraine Valleys where the woodland has expanded. There is also

an area to the south east of the Grande Mare Golf Course which was previously mis-classified. 3.49% (3.17ha) is now classified as Swamp, 0.64ha of which is at Le Claire Mare nature reserve and 0.66ha at Le Grande Prè nature reserve where management by grazing has ceased, and the reed bed has spread considerably.

TALL HERB AND FERN

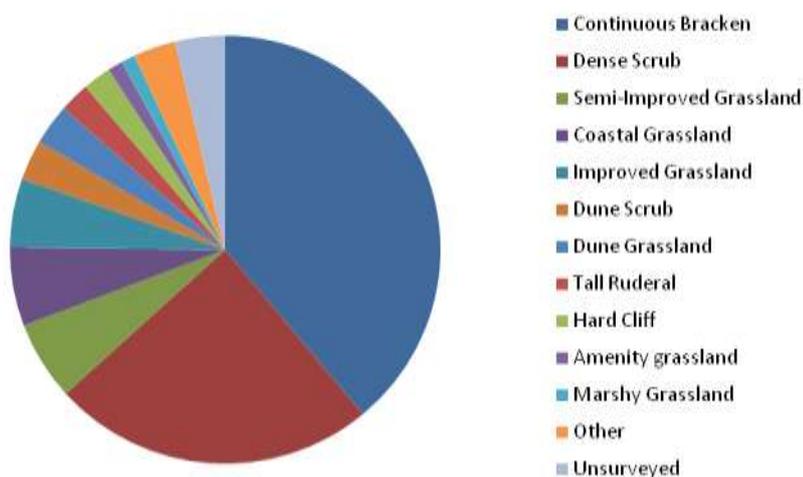
BRACKEN

CONTINUOUS BRACKEN

Habitat Classification	Amount (ha)	Proportion (%)
Continuous Bracken	39.52	38.96
Dense Scrub	24.62	24.28
Semi-improved Grassland	6.06	5.98
Coastal Grassland	6.02	5.94
Improved Grassland	5.30	5.23
Dune Scrub	3.11	3.07
Dune Grassland	3.11	3.06
Tall Ruderal	2.32	2.28
Hard Cliff	2.16	2.13
Amenity Grassland	1.12	1.10
Marshy Grassland	1.08	1.07
Other	3.21	3.16
Total	97.63	96.26

Table 31. The classification in the 1999 survey of the land currently identified as Continuous Bracken. 'Proportion' refers to the percentage of the total, 101.42ha of land, classified as Continuous Bracken.

Figure 93. The classification in the 1999 survey of the land currently classified as continuous bracken.



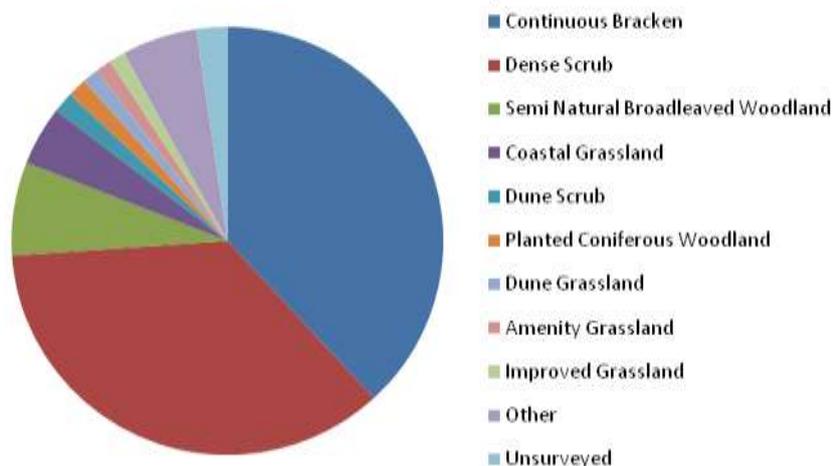
Of the 101.42ha located in 2010, 38.96% (39.52ha) was also classified as Continuous Bracken in 1999, these areas account for a proportion of the Bracken identified in all areas of Guernsey except through the Talbot and

Fauxquets valleys. 24.28% (24.62ha) was Dense Scrub in 1999, the majority of which is around the coast comprising of small areas which were not separated from the surrounding Dense Scrub. But some areas, e.g. 0.19ha at La Maraive, are areas which have been cleared of scrub, and have subsequently become dominated by Bracken. 5.98% (6.06ha) was Semi-improved Grassland and has succeeded to Continuous Bracken following abandonment, such as 1.12ha on the plateau between the Talbot and Fauxquets valleys and 0.5ha to the east of the reservoir (see Semi-improved Grassland, section 4.1.3). 5.94% (6.02ha) was Coastal Grassland during the 1999 survey, including large areas on Lihou Island and L'Ancrese headland which have converted to Continuous Bracken as it has spread outwards. 5.23% (5.30ha) was previously classified as improved grassland, almost entirely around the edges of fields where the Bracken is encroaching. Such as 0.48ha across 3 fields next the Guernsey Sea Farm at Petils Bay, which was noted as scattered Bracken in 1999, but has become large enough to classify as the Bracken has moved inwards. 3.11ha (3.07%) scattered across L'Ancrese and Le Picquerel were classified as Dune Scrub in 1999 but were in fact small patches of Bracken that were too small to isolate from the surrounding scrub, but given the current methodology, were able to be separated during this survey. 3.06% (3.11ha) was previously classified as Dune Grassland, located across L'Ancrese headland, Pembroke Headland and Le Picquerel, and have succeeded to Continuous Bracken due to lack of disturbance. 2.32ha of Tall Ruderal has also succeeded to Continuous Bracken, such as a field of 0.53ha by the reservoir. 2.13% (2.16ha) was previously classified as Hard Cliff, this change is caused in part by Bracken encroachment, but mainly due to 'edge effects'. 1.10% (1.12ha) was previously classified as Amenity Grassland, which is predominately areas that have been colonised by Bracken, such as at L'Ancrese Golf Course, and around the edges of some gardens. 1.07% (1.08ha) of the land now classified as Continuous Bracken was previously classified as marshy grassland, these areas are mainly around the edges of fields, especially through the valleys, where the Bracken is encroaching inwards.

Habitat Classification	Amount (ha)	Proportion (%)
Continuous Bracken	39.52	38.13
Dense Scrub	37.07	35.77
Semi Natural Broadleaved Woodland	7.31	7.06
Coastal Grassland	4.64	4.48
Dune Scrub	1.62	1.57
Planted Coniferous Woodland	1.48	1.43
Dune Grassland	1.27	1.22
Amenity Grassland	1.25	1.21
Improved Grassland	1.23	1.18
Other	5.85	5.64
Total	101.24	97.69

Table 32. The current classification of the land identified as Continuous Bracken in the 1999 survey. 'Proportion' refers to the percentage of the total, 103.63ha of land, classified as Continuous Bracken in 1999.

Figure 94. The current classification of the land identified as continuous bracken in the 1999 survey.



The 39.52ha that remained as Continuous Bracken accounts for 38.13% of the 103.63ha of Continuous Bracken identified in 1999. 35.77% (37.07ha) is now classified as Dense Scrub (see Dense Scrub, section 4.1.2) and 7.03% (7.31ha) is now Semi-natural Broadleaved Woodland (see section 4.1.1). 4.48% (4.64ha) has now been classified as Coastal Grassland and 1.22% (1.27ha) was Dune Grassland; these consist of lots of small areas along the coast and at L'Ancrese common respectively, which have been isolated from the surrounding Bracken. 1.57% (1.62ha) has succeeded to Dune Scrub, mainly at L'Ancrese Golf Course. Finally 1.43% (1.48ha) is not Planted Coniferous Woodland (see section 4.1.1).

SCATTERED BRACKEN

Habitat Classification	Count	Area (ha)	Proportion (%)
Dense Scrub	74	25.33	19.50
Dune Grassland	13	22.07	16.98
Improved Grassland	43	20.48	15.77
Continuous Bracken	67	16.96	13.05
Semi Natural Broadleaved Woodland	24	11.97	9.21
Arable Land s.t. ley	6	6.30	4.85
Dune Scrub	14	6.20	4.77
Coastal Grassland	14	4.58	3.52
Arable Land	6	3.76	2.89
Semi-improved Grassland	11	2.87	2.21
Planted Coniferous Woodland	9	2.56	1.97
Planted Broadleaved Woodland	7	1.87	1.44
Planted Mixed Woodland	3	1.66	1.28
Rock	2	1.30	1.00
Other	19	2.02	1.55
Total	312	129.92	100

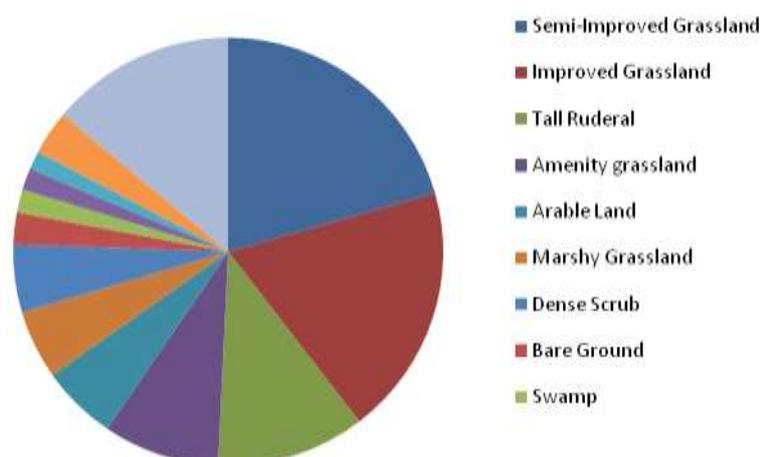
Table 33. The current classification of the land previously target noted as scattered Bracken

TALL RUDERAL

Habitat Classification	Amount (ha)	Proportion (%)
Semi-improved Grassland	6.59	20.57
Improved Grassland	6.10	19.03
Tall Ruderal	3.58	11.16
Amenity Grassland	2.81	8.75
Arable Land	1.83	5.70
Marshy Grassland	1.67	5.20
Dense Scrub	1.65	5.15
Bare Ground	0.77	2.40
Swamp	0.56	1.74
Coastal Grassland	0.53	1.65
Semi Natural Broadleaved Woodland	0.44	1.38
Other	1.07	3.34
Total	27.59	86.08

Table 34. The classification in the 1999 survey of the land currently identified as Tall Ruderal. 'Proportion' refers to the percentage of the total, 32.05ha of land, classified as Tall Ruderal.

Figure 95. The classification in the 1999 survey of the land currently classified as tall ruderal



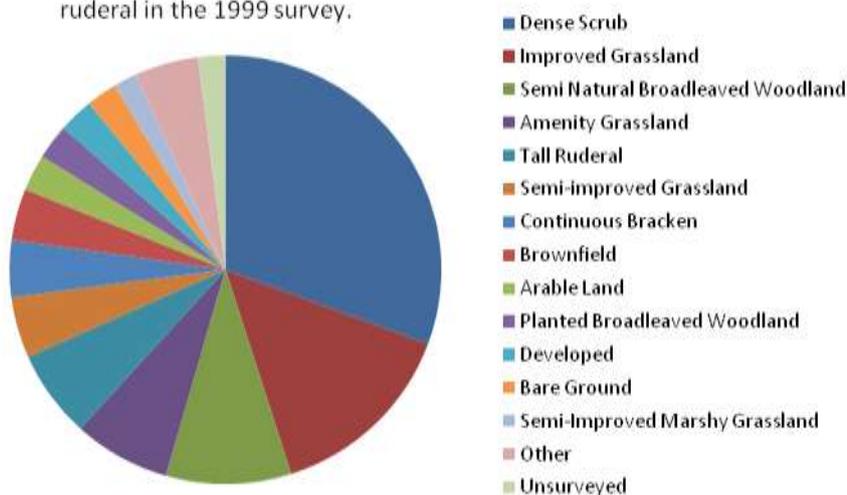
Of the 32.05ha of Tall Ruderal identified during the present survey, only 11.16% (3.58ha) was also classified as such during the IDC's survey in 1999. Tall Ruderal is a very transient category, as the indicator species, such as Nettles (*Urtica diotica*), Docks (*Rumex* sp.) and Hemlock Water Dropwort (*Oenanthe crocata*), become established on land very quickly once it is left without disturbance for a period of time. If left without management it will succeed to scrub and eventually woodland, however it is also easily cleared and reverted back to grassland. Thus change in the proportion of Tall Ruderal is not deemed significant, however it does illustrate the amount of land currently, if only temporarily, abandoned.

Table 36 above contains the data describing the previous classification of the land currently identified as Tall Ruderal and table 35 the current classification of land previously identified as Tall Ruderal. The diversity of categories illustrates the transient nature.

Habitat Classification	Amount (ha)	Proportion (%)
Dense Scrub	16.57	30.64
Improved Grassland	7.81	14.43
Semi Natural Broadleaved Woodland	5.08	9.39
Amenity Grassland	3.93	7.27
Tall Ruderal	3.58	6.61
Semi-improved Grassland	2.50	4.62
Continuous Bracken	2.32	4.28
Brownfield	2.10	3.87
Arable Land	1.49	2.75
Planted Broadleaved Woodland	1.43	2.65
Developed	1.42	2.63
Bare Ground	1.25	2.31
Semi-improved Marshy Grassland	0.94	1.74
Other	2.59	4.78
Total	53.00	97.96

Table 35. The current classification of the land identified as Tall Ruderal in the 1999 survey. 'Proportion' refers to the percentage of the total, 54.10ha of land, classified as Tall Ruderal in 1999.

Figure 96. The current classification of the land identified as tall ruderal in the 1999 survey.



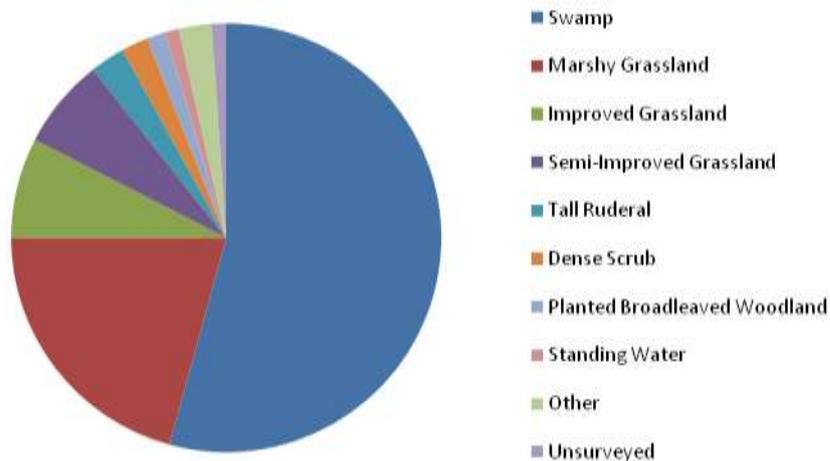
SWAMP

Large proportions of the 3 main areas of Swamp; La Claire Mare, Le Marais (St Sampsons) and Le Grande Prè, were classified as Swamp in both the current survey, and the 1999 survey, amounting to 8.3ha (50v). Of the 15ha currently classified as Swamp, 20.76% (3.17ha) was previously classified as marshy grassland. This land is located in many small areas scattered throughout, including 0.68ha at Le Claire Mare, 0.31ha at Le Marais and 0.66ha at Le Grand Prè. This change is caused by the encroachment of Reeds (*Phragmites australis*) from Swamp onto adjacent marshy grassland, however some is also attributable to 'edge effects'. 7.56% (1.15ha) was previously classified as Improved grassland. With the exception of 0.67ha next to the Grande Mare which appears to have been abandoned and reverted to Reed (*P. australis*) dominated Swamp, the majority of this change is due to edge effects.

Habitat Classification	Amount (ha)	Proportion (%)
Swamp	8.27	54.25
Marshy Grassland	3.17	20.76
Improved Grassland	1.15	7.56
Semi-improved Grassland	1.04	6.81
Tall Ruderal	0.40	2.63
Dense Scrub	0.30	2.00
Planted Broadleaved Woodland	0.21	1.40
Standing Water	0.16	1.04
Other	0.37	2.45
Total	15.08	98.91

Table 36. The classification in the 1999 survey of the land currently identified as Swamp. 'Proportion' refers to the percentage of the total, 15.24ha of land, classified as Swamp.

Figure 97. The classification in the 1999 survey of the land currently classified as swamp.



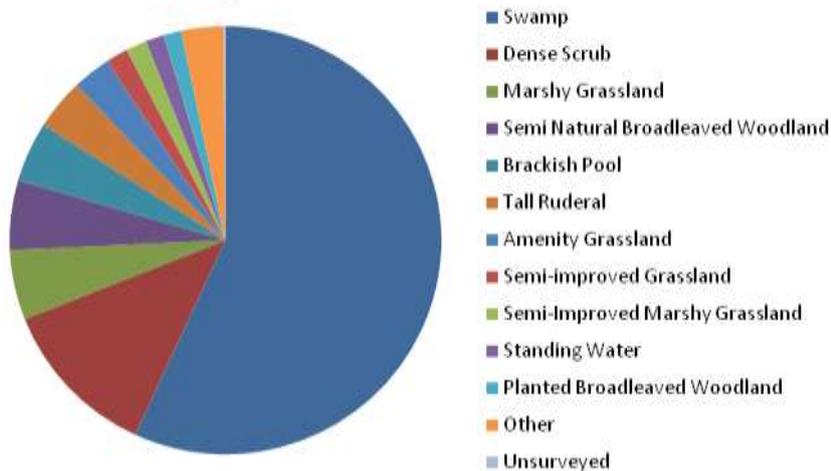
3 fields as Rocquaine Bay totalling 1.04ha (6.81%) were previously agricultural land, and classified as Semi-improved Grassland during the 1999 survey, but have since been abandoned and have succeeded to *P. australis* dominated Swamp. 2.63% (0.40ha) was previously classified as Tall Ruderal which is located almost entirely on an abandoned old greenhouse site which has succeeded through Tall Ruderal to Swamp. 2% (0.30ha) was previously classified as Dense Scrub, however this is attributable entirely to 'edge effects'. 1.04% (0.37ha) was previously Standing Water, this is also due to 'edge effects', with the exception of two small areas at the Reservoir where *P. australis* has become established.

14.06ha of Swamp were identified during the 1999 survey, 56.88% (8.27ha) has remained classified as such. Sallow has become established on 1.76ha (12.11%) of this land, and is now classified as Dense Scrub. 5.28% (0.77ha) is now classified as Unimproved Marshy Grassland (see Marshy grassland section). 0.76ha (5.25%) have been re-classified as Semi-natural Broadleaved Woodland following the establishment of trees such as willow and alder on this land.

Habitat Classification	Amount (ha)	Proportion (%)
Swamp	8.27	56.88
Dense Scrub	1.76	12.11
Marshy Grassland	0.77	5.28
Semi Natural Broadleaved Woodland	0.76	5.25
Brackish Pool	0.66	4.54
Tall Ruderal	0.56	3.84
Amenity Grassland	0.42	2.88
Semi-improved Grassland	0.24	1.67
Semi-improved Marshy Grassland	0.23	1.55
Standing Water	0.20	1.38
Planted Broadleaved Woodland	0.19	1.33
Other	0.46	3.18
Total	14.06	96.70

Table 37. The current classification of the land identified as Swamp in the 1999 survey. 'Proportion' refers to the percentage of the total, 14.54ha of land, classified as Swamp in 1999.

Figure 98. The current classification of the land identified as swamp in the 1999 survey.



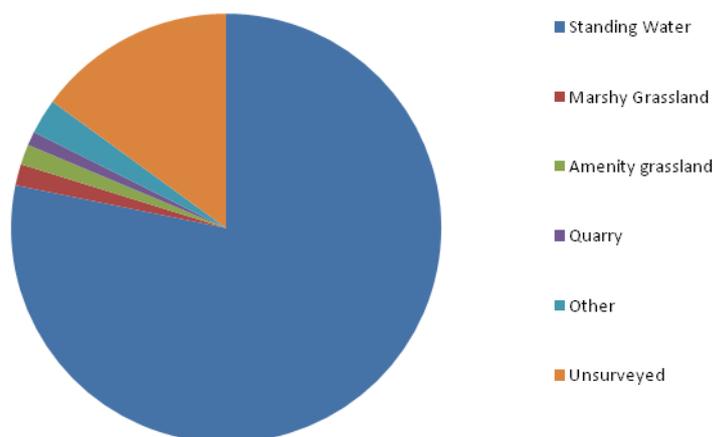
OPEN WATER

STANDING WATER

Habitat Classification	Area (ha)	Proportion (%)
Standing Water	37.36	78.21
Marshy Grassland	0.77	1.61
Amenity Grassland	0.73	1.53
Quarry	0.50	1.04
Other	1.27	2.66
Total	40.62	85.06

Table 38. The classification in the 1999 survey of the land currently identified as Standing Water. 'Proportion' refers to the percentage of the total, 47.76ha of land, classified as Standing Water.

Figure 99. The classification in the 1999 survey of the land currently classified as Standing Water



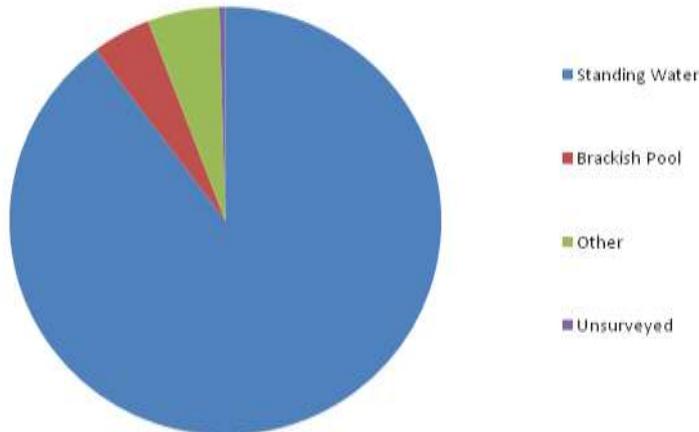
Of the 47.76ha identified as Standing Water during the current survey, 78.21% (37.36ha) was also classified as such during the 1999 survey. 61% was previously marshy grassland, such as 0.16ha at the Claire Mare nature reserve. This land may have previously been mis-classified, or the water level may have risen to such an extent so as to change its classification. 1.53% was Amenity Grassland. This is all attributable to ‘edge effects’, mainly at the golf courses at Le Grande Mare and St Pierre Park, where there are pathways of water criss-crossing through the course and so there is a very high margin of error when defining the boundaries between the water and the surrounding grassland. 1.04% was classified as Quarry, such as Chouet and Le Grande Maison which have subsequently been abandoned and have converted to Standing Water. 7.14% (14.94ha) were not surveyed during the previous survey; this includes Beaucette Marina (2.34ha) and St Andrews Reservoir (2.07ha).

Habitat Classification	Area (ha)	Proportion (%)
Standing Water	37.36	89.75
Brackish Pool	1.83	4.41
Other	2.25	5.40
Total	41.43	99.56

Table 39. The current classification of the land identified as Standing Water in the 1999 survey. Proportion refers to the percentage of the total, 41.62ha of land, classified as Standing Water

89.75% of the 41.62ha classified as Standing Water in 1999 has remained so. 4.41% has now been classified as Brackish Pool, due to the change in habitat categories.

Figure 100. The current classification of the land identified as Standing Water in the 1999 survey.

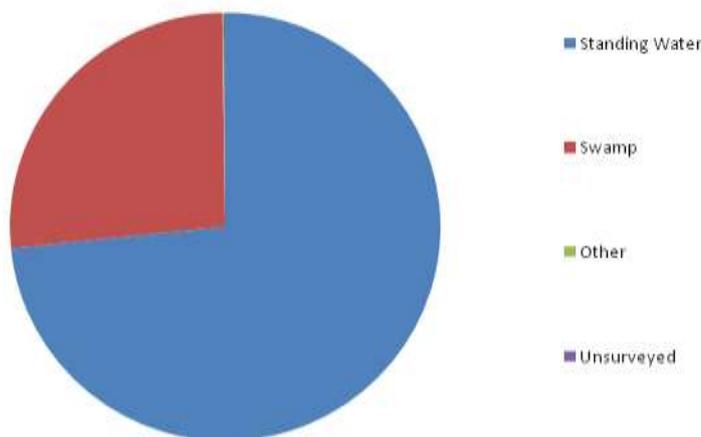


BRACKISH POOL

Habitat Classification	Area (ha)	Proportion (%)
Standing Water	1.83	73.38
Swamp	0.66	26.40
Other	0.00	0.11
Total	2.50	99.89

Table 40. The classification in the 1999 survey of the land currently identified as Brackish Pool. 'Proportion' refers to the percentage of the total, 2.50ha of land, classified as Brackish Pool.

Figure 101. The classification in the 1999 survey of the land currently classified as Brackish Pool



Of the 2.50ha of Brackish Pools located during the current survey, 73.38% (1.83ha) were classified as Standing Water, as the areas of Standing Water were not separated by salinity. Over a quarter (26.40%, 0.66ha) was classified as Swamp, these are areas on the outskirts of pools, such as Pulias Pond, La Claire Mare and Grand

Havre, where the boundary between the Swamp and the pools have differed, but do not appear to have changed classification due to a shift in the ecology of the area.

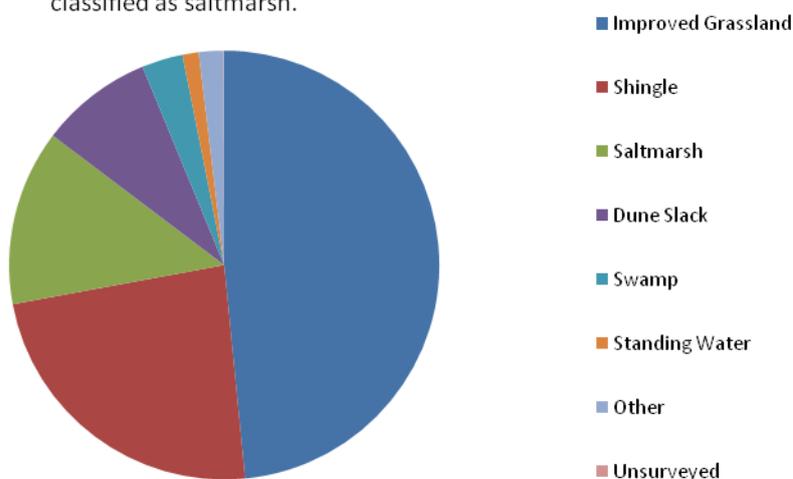
COASTLAND

SALTMARSH

Habitat Classification	Area (ha)	Proportion (%)
Improved Grassland	0.75	48.45
Shingle	0.37	23.62
Saltmarsh	0.21	13.28
Dune Slack	0.13	8.47
Swamp	0.05	3.08
Standing Water	0.02	1.22
Other	0.03	1.85
Total	1.55	99.96

Table 41. The classification in the 1999 survey of the land currently identified as Saltmarsh. ‘Proportion’ refers to the percentage of the total, 1.55ha of land, classified as Saltmarsh.

Figure 102. The classification in the 1999 survey of the land currently classified as saltmarsh.

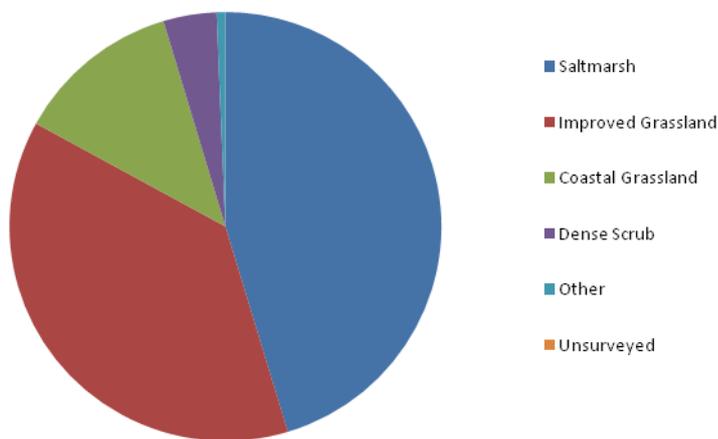


Of the 1.55ha of Saltmarsh identified during the present survey, 23.62% (0.37ha) was also classified as such during the 1999 survey. The 1999 survey identified two small patches of Saltmarsh at Le Clair Mare, surrounded by Improved Grassland. Since that survey, this Saltmarsh has expanded over the surrounding Improved Grassland which accounts for the change in 48.45% (0.75ha) of the land currently identified as Saltmarsh. 0.37ha of Saltmarsh at L'Eree Bay was previously classified as Shingle (23.62%), although the Saltmarsh in this area has expanded since the 1999 survey, it has mostly changed due to a previous misclassification. 13.28% (0.21ha) was previously misclassified as Dune Slack as the water providing the marshy conditions was assumed to be freshwater, but it is actually saline and is caused by periodic inundation at very high tides.

Habitat Classification	Area (ha)	Proportion (%)
Saltmarsh	0.21	45.33
Improved Grassland	0.17	37.64
Coastal Grassland	0.06	12.40
Dense Scrub	0.02	3.98
Other	0.003	0.65
Total	0.45	100.00

Table 42. The current classification of the land identified as Saltmarsh in the 1999 survey. Proportion refers to the percentage of the total, 0.45ha of land, classified as Saltmarsh.

Figure 103. The current classification of the land identified as Saltmarsh in the 1999 survey.



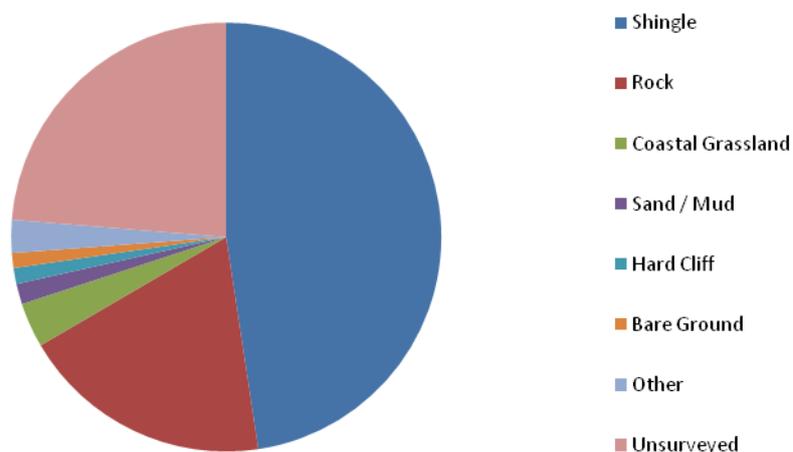
Of the 0.45ha of Saltmarsh identified during the 1999 survey, 45.33% (0.21ha) has remained classified as such. 37.64% (0.17ha) has now been classified as Improved Grassland, this is due to the errors involved in mapping the Saltmarsh at Le Claire Mare when using the previous methodology. 12.40% (0.06ha) has now been classified as Coastal Grassland, this change is predominately due to 'edge effects' when mapping the Saltmarsh at Pulia's Pond and Le Claire Mare.

SHINGLE

Habitat Classification	Area (ha)	Proportion (%)
Shingle	7.77	47.62
Rock	3.09	18.93
Coastal Grassland	0.55	3.38
Sand / Mud	0.25	1.55
Hard Cliff	0.19	1.20
Bare Ground	0.19	1.13
Other	0.41	2.49
Total	12.45	76.30

Table 43. The classification in the 1999 survey of the land currently identified as shingle. 'Proportion' refers to the percentage of the total, 16..31ha of land, classified as shingle.

Figure 104. The classification in the 1999 survey of the land currently classified as shingle.

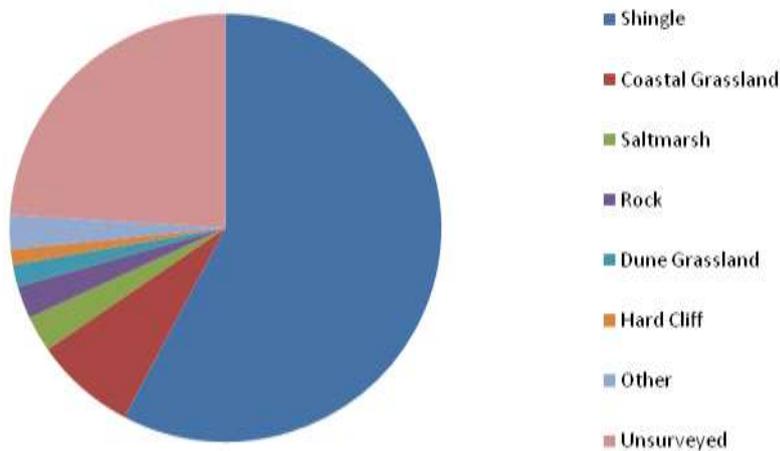


Of the 16.31ha of land classified as shingle during the 1999 survey, 47.62% (7.77ha) has remained classified as such during the current survey. The remaining 52.38% (8.54ha) has changed classification from rock, Coastal Grassland etc. (see table 43 above) to shingle, however none of this appears to have been a significant change, but rather is due to error in classifying the areas, either due to 'edge effects' or observer error.

Habitat Classification	Area (ha)	Proportion (%)
Shingle	7.77	57.75
Coastal Grassland	1.03	7.63
Saltmarsh	0.37	2.72
Rock	0.33	2.46
Dune Grassland	0.22	1.66
Hard Cliff	0.15	1.14
Other	0.35	2.60
Total	10.22	75.98

Table 44. The current classification of the land identified as shingle in the 1999 survey. 'Proportion' refers to the percentage of the total, 13.45ha of land, classified as shingle in 1999.

Figure 105. The current classification of the land identified as shingle in the 1999 survey.



Of the 13.45ha of land classified as shingle during the 1999 survey, 57.75% has remained classified as such during the present survey. 7.63% (1.03ha) is now classified as Coastal Grassland. A section of shingle on Lihou has become more vegetated since the 1999 survey and so has succeeded to Coastal Grassland, and a large areas at L'Eree (0.19ha) was previously mis-classified. The remaining change is due to 'edge effects'. 2.72% (0.37ha) is now classified as Saltmarsh (see Saltmarsh section above). 0.33ha (2.46%) is now classified as rock and 0.15ha (1.14%) as Hard Cliff. These changes are due to the isolation of small fragments from within other habitats units. 1.66% (0.22ha) is now classified as Dune Grassland, this is mainly due to 'edge effects', however some areas have become more densely vegetated to allow a change in the classification.

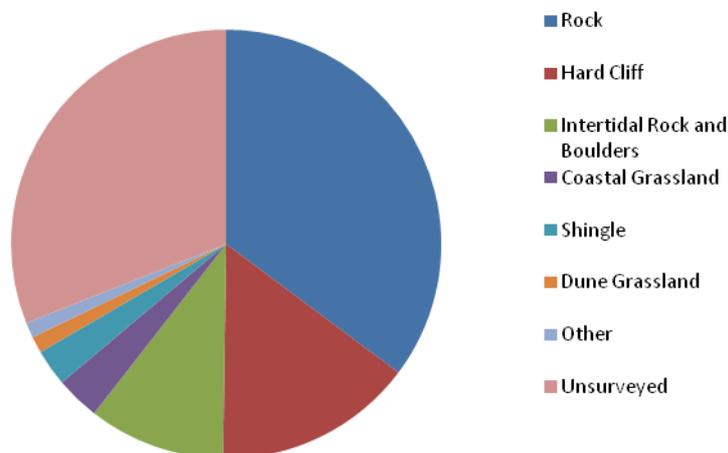
ROCK

The total are of rock identified has decreased by 25%; from 15.97ha in 1999 to 11.99ha during the present survey.

Habitat Classification	Area (ha)	Proportion (%)
Rock	4.23	35.24
Hard Cliff	1.80	14.99
Intertidal Rock and Boulders	1.23	10.28
Coastal Grassland	0.40	3.30
Shingle	0.33	2.77
Dune Grassland	0.15	1.24
Other	0.14	1.17
Total	8.27	68.99

Table 45. The classification in the 1999 survey of the land currently identified as rock. 'Proportion' refers to the percentage of the total, 11.99ha of land, classified as rock.

Figure 106. The classification in the 1999 survey of the land currently classified as rock

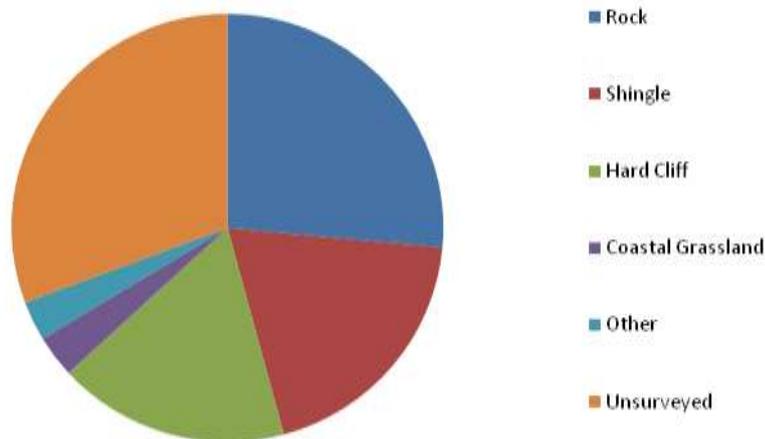


Of the 11.99ha currently identified, 35.24% (4.23ha) was also classified as rock during the 1999 survey. 14.99% (1.80ha) was previously classified as Hard Cliff, such as the rocks above the mean high tide mark surrounding Les Houmets on the North East coast of Guernsey. 10.28% (1.23ha) was misclassified as intertidal land during the previous survey, but was actually above the mean high tide mark. 3.30% (0.40ha) was previously classified as Coastal Grassland and 1.24% (0.15ha) as Dune Grassland, these changes are caused by 'edge effects', especially around Albecq headland and Port Soif. 2.77% (0.33ha) was previously classified as shingle, as described in the shingle section above. 31.01% (3.72ha) of the rock identified during the present survey was not surveyed in 1999.

Habitat Classification	Area (ha)	Proportion (%)
Rock	4.23	26.46
Shingle	3.09	19.33
Hard Cliff	2.77	17.36
Coastal Grassland	0.51	3.19
Other	0.48	2.99
Total	11.07	69.33

Table 46. The current classification of the land identified as rock in the 1999 survey. Proportion refers to the percentage of the total, 15.97ha of land, classified as rock

Figure 107. The current classification of the land identified as rock in the 1999 survey.



Of the 15.97ha of land previously classified as rock, 26.46% (4.23ha) has remained classified as such during the present and survey. 19.33% (3.09ha) has now been classified as shingle (see shingle section). 17.36% (2.77ha) has now been classified as Hard Cliff, which is almost entirely located at the cliffs surrounding Lihou. 3.19% (0.51ha) has now been classified as Coastal Grassland; this is almost entirely due to 'edge effects' rather than areas of rock becoming vegetated.

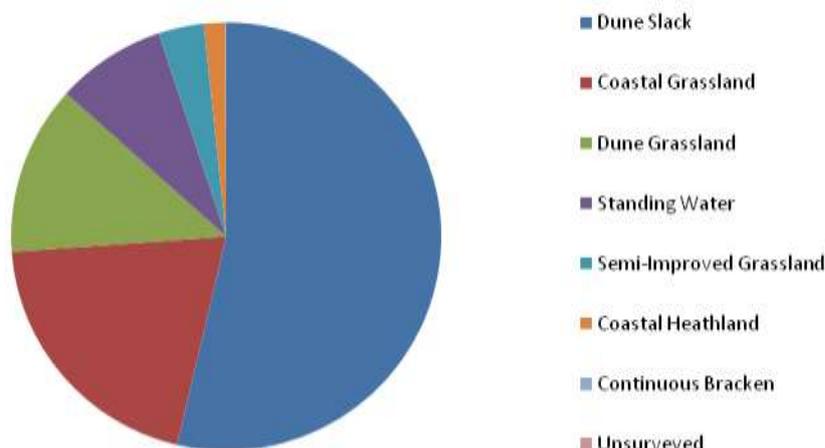
SAND DUNE

DUNE SLACK

Habitat classification	Area (ha)	Proportion (%)
Dune Slack	0.25	53.67
Coastal Grassland	0.10	20.18
Dune Grassland	0.06	12.82
Standing Water	0.04	8.26
Semi-improved Grassland	0.02	3.40
Coastal Heathland	0.01	1.62
Continuous Bracken	0.00	0.05
Total	0.47	100.00

Table 47. The classification in the 1999 survey of the land currently identified as Dune Slack. 'Proportion' refers to the percentage of the total, 0.47ha of land, classified as Dune Slack

Figure 108. The classification in the 1999 survey of the land currently classified as dune slack.

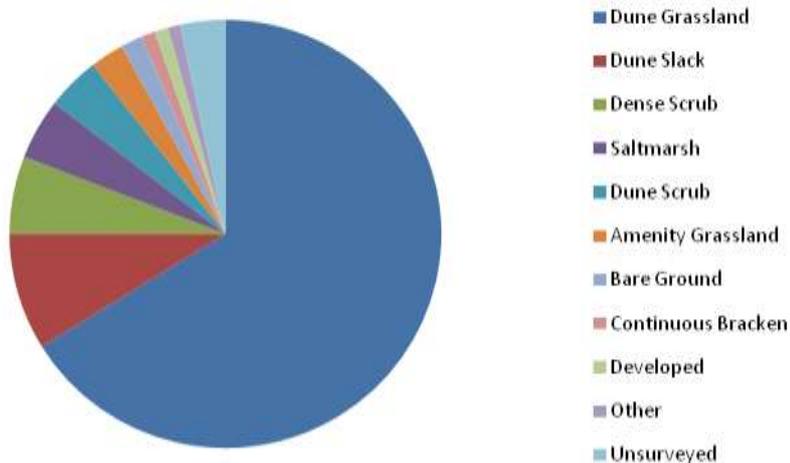


Of the 0.47ha of land currently classified as Dune Slack, only 53.67% (0.25ha) was also classified as Dune Slack during the 1999 survey. This land is located in two areas; 0.12ha in a stretch to the east of L’Ancresse Road and 0.13ha spread across 4 small patches at the north end of Vazon. 8.26% (0.04ha) at Albecq was previously classified as Standing Water, this land may be in the process of succeeding from standing water to marshy grassland as it gradually becomes drier due to a build up of debris. It appears that a large proportion of the remaining 38.07% (0.18ha) of Dune Slack has developed since the previous survey following an increase in the level of the water table, however it is possible that it was also Dune Slack in 1999 but may have appeared drier due to weather conditions at the time of the survey, or the recent management of the land.

Habitat Classification	Area (ha)	Proportion (%)
Dune Grassland	1.90	66.19
Dune Slack	0.25	8.83
Dense Scrub	0.17	5.85
Saltmarsh	0.13	4.59
Dune Scrub	0.12	4.04
Amenity Grassland	0.07	2.52
Bare Ground	0.05	1.62
Continuous Bracken	0.03	1.04
Developed	0.03	1.03
Other	0.03	0.90
Total	2.77	96.62

Table 48. The current classification of the land identified as Dune Slack in the 1999 survey. Proportion refers to the percentage of the total, 2.86ha of land, classified as Dune Slack

Figure 109. The current classification of the land identified as dune slack in the 1999 survey.



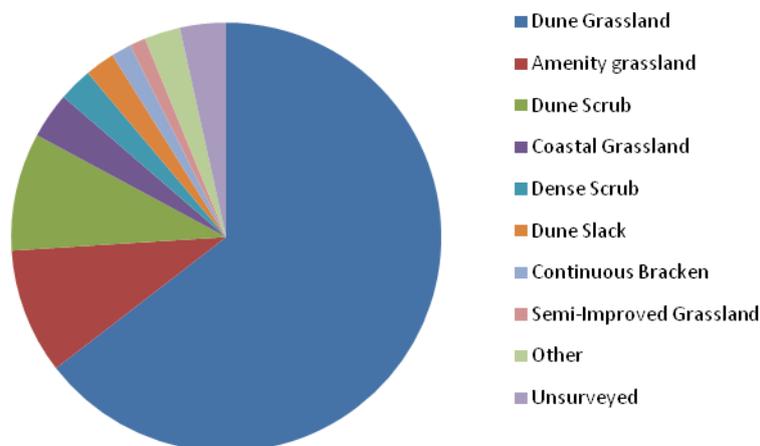
Of the 2.86ha of land identified as Dune Slack during the 1999 survey, only 8.83% (0.25ha) has remained classified as such during the present survey. The majority of this land (66.19%, 1.90ha) has now been classified as Dune Grassland. It appears that the previous area mapped as Dune Slack was an overestimate as opposed to this land having dried out and succeeded to Dune Grassland.

DUNE GRASSLAND

Habitat Classification	Area (ha)	Proportion (%)
Dune Grassland	54.42	64.51
Amenity Grassland	8.00	9.48
Dune Scrub	7.52	8.91
Coastal Grassland	2.93	3.47
Dense Scrub	2.13	2.53
Dune Slack	1.90	2.25
Continuous Bracken	1.27	1.50
Semi-improved Grassland	1.02	1.21
Other	2.27	2.69
Total	81.45	96.54

Table 49. The classification in the 1999 survey of the land currently identified as Dune Grassland. 'Proportion' refers to the percentage of the total, 84.36ha of land, classified as Dune Grassland

Figure 110. The classification in the 1999 survey of the land currently classified as dune grassland.

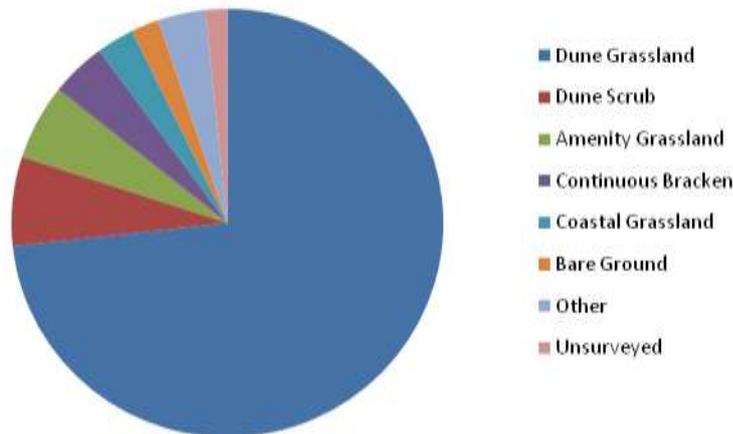


The majority of Dune Grassland (64.51%, 54.42ha) classified during present survey was also classified as such during the 1999 survey. The grassland adjacent to the fairways at L'Ancrese Golf Course is not as heavily mown as the fairways and greens and so remain better quality grassland. Whereas during this survey these areas were separated, the previous survey did not make this distinction this has led to the re-classification of 8.00ha (9.48%) of Amenity Grassland to Dune Grassland. 8.94.52ha) of the land currently classified as Dune Grassland was previously classified as Dune Scrub. Although there have been some areas of scrub which have been cleared since the 1999 survey, especially at Le Grande Hougue, most of this is due to the more accurate isolation of scrub from the surrounding grassland. 2.93% (3.47ha) was previously misclassified as Coastal Grassland and has been reclassified as Dune Grassland during the present survey. 2.53% (2.13ha) was previously classified as Dense Scrub, this is land at Le Grand Hougue, which although should previously have been classified as Dune Scrub, is land which has been cleared since the 1999 survey. 2.25% (1.90ha) was previously classified as Dune Slack, as has been described in the Dune Slack section above. 1.50% (1.27ha) was previously classified as Continuous Bracken, this land has predominately changed classification due to 'edge effects', and largely at L'Ancrese Gold Course due to the intricate mosaic of Continuous Bracken and Dune Grassland. There are 3 small patches of Dune Grassland which were previously classified as Semi-improved Grassland accounting for 2.69% (2.27ha) of the land currently classified as Dune Grassland. It is possible that previous management techniques prevented the Dune Grassland indicator species from being visible.

Habitat Classification	Area (ha)	Proportion (%)
Dune Grassland	54.42	73.26
Dune Scrub	5.01	6.74
Amenity Grassland	4.24	5.71
Continuous Bracken	3.11	4.18
Coastal Grassland	2.10	2.82
Bare Ground	1.55	2.09
Other	2.63	3.54
Total	73.06	98.35

Table 50. The current classification of the land identified as Dune Grassland in the 1999 survey. Proportion refers to the percentage of the total, 74.29ha of land, classified as Dune Grassland

Figure 111. The current classification of the land identified as dune grassland in the 1999 survey.



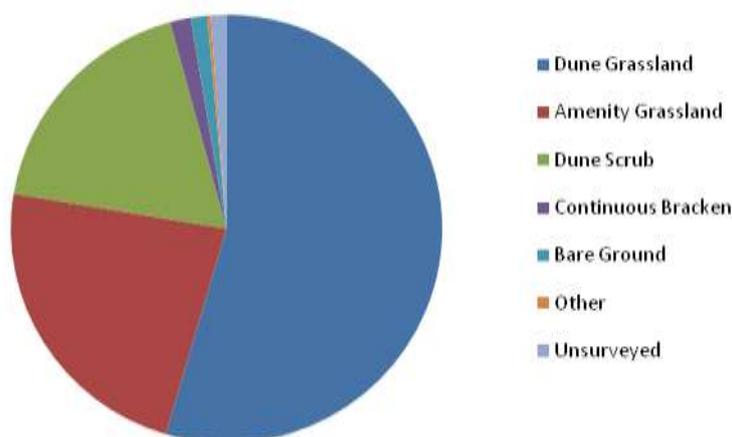
Of the 74.29ha of land classified as Dune Grassland during the 1999 survey, 73.26% (54.52ha) has remained classified as such during the present survey. 6.74% (5.01ha) is now classified as Dune Scrub, mainly at L'Ancrese and Portinfer where the Gorse (*Ulex europaeus*) has encroached over the adjacent grassland. 5.71% (4.24ha) is now classified as Amenity grassland, this is mainly located where the L'Ancrese Golf Course have expanded their fairways. An area at Grande Rocque (1.21ha) has changed classification from Dune Grassland to Amenity Grassland but does not appear to have changed botanically since the 1999 survey. It is most probably that this grassland had been mown recently, and so the Dune Grassland indicator species were not visible. Large areas (3.11ha; 4.18%) of what was Dune Grassland at Fort Pembroke and La Grande Hougue has been abandoned and succeeded to Continuous Bracken. 2.82% (2.10ha) was misclassified during the previous survey as it is not lying on Sand Dunes, so has been reclassified as Coastal Grassland. This grassland is located at Grande Rocque and the headland adjacent to Pulia's Pond. Finally, 2.09% (1.55ha) of the land previously classified as Dune Grassland is actually the paths around the coastal areas which have been separated during the present survey and are now classified as Bare Ground,

DUNE HEATH

Habitat Classification	Area (ha)	Proportion (%)
Dune Grassland	0.69	54.55
Amenity Grassland	0.29	23.06
Dune Scrub	0.23	18.18
Continuous Bracken	0.02	1.54
Bare Ground	0.02	1.26
Other	0.00	0.25
Total	1.26	98.84

Table 51. The current classification of the land identified as Dune Heath in the 1999 survey. Proportion refers to the percentage of the total, 1.27ha of land, classified as Dune Heath

Figure 112. The current classification of the land identified as dune heath in the 1999 survey.



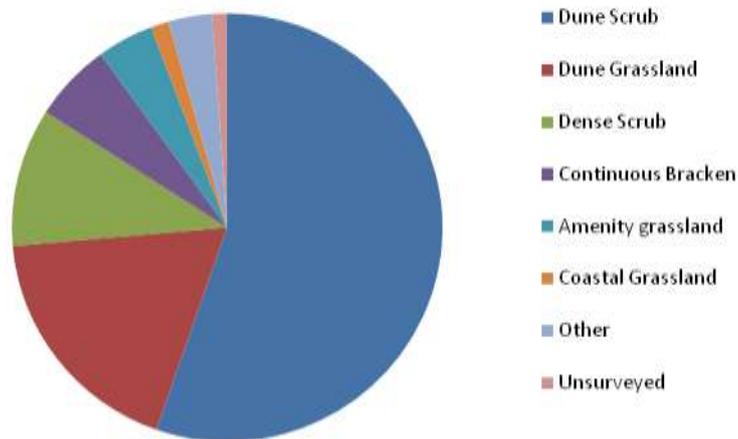
1.3ha of Dune Heath were located during the 1999 survey, however none have been identified during the present survey. All of the Dune Heath in 1999 was located on L'Ancrese common, through the golf course. 54.55% (0.69ha) of the land previously identified as Dune Heath are now classified as Dune Grassland. There are a few scattered fragments of heather (*Calluna vulgaris*) scattered in some areas of this grassland but they are too small and poorly established to warrant inclusion in a Dune Heath category. 23.06% (0.29ha) is now classified as Amenity Grassland; these areas are the fairways and greens of the golf course which have been extended since the previous survey. 18.18% (0.23ha) and 1.54% (0.02ha) have succeeded to Dune Scrub and Continuous Bracken respectively following a lack of management.

DUNE SCRUB

Habitat Classification	Area (ha)	Proportion (%)
Dune Scrub	15.14	55.32
Dune Grassland	5.01	18.29
Dense Scrub	2.87	10.47
Continuous Bracken	1.62	5.93
Amenity Grassland	1.16	4.25
Coastal Grassland	0.37	1.34
Other	0.90	3.27
Total	27.06	98.88

Table 52. The classification in the 1999 survey of the land currently identified as Dune Scrub. 'Proportion' refers to the percentage of the total, 27.37ha of land, classified as Dune Scrub

Figure 113. The classification in the 1999 survey of the land currently classified as dune scrub.

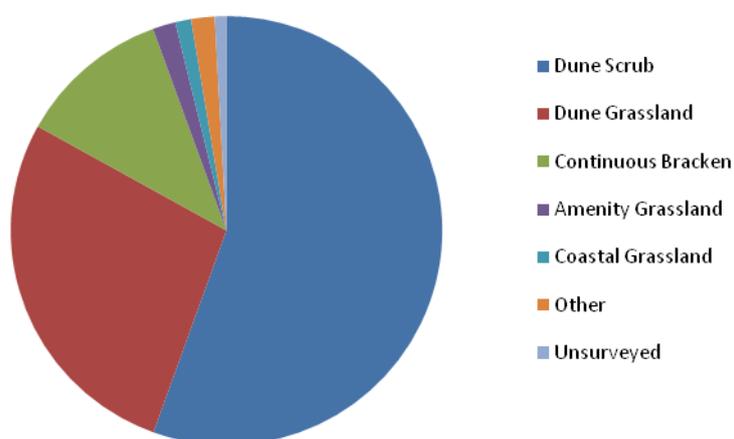


27.37ha of Dune Scrub have been located during the present survey, of which 55.32% (15.14ha) were also identified as Dune Scrub during the IDC's survey in 1999, predominately located through L'Ancrese and at Port Soif. 18.29% (5.01ha) was previously classified as Dune Grassland but has succeeded to Dune Scrub following lack of management which allowed Brambles (*Rubus fruticosus*), Gorse (*Ulex europaeus*) and Blackthorn (*Prunus spinosa*) to establish. 10.47% (2.87ha) was previously classified as Dense Scrub, but has been reclassified as Dune Scrub. This land is located almost entirely just inland from Portinfer and was previously misclassified. 5.93% (1.62ha) was previously classified as Continuous Bracken but has since succeeded to scrub. 4.25% (1.16ha), located at L'Ancrese golf course, was previously classified as Amenity Grassland, some of this has succeeded to scrub, however some was previously mis-classified and a large proportion of this change is due to 'edge effects'.

Habitat Classification	Area (ha)	Proportion (%)
Dune Scrub	15.14	55.51
Dune Grassland	7.52	27.56
Continuous Bracken	3.11	11.40
Amenity Grassland	0.47	1.72
Coastal Grassland	0.32	1.19
Other	0.48	1.76
Total	27.04	99.12

Table 53. The current classification of the land identified as Dune Scrub in the 1999 survey. Proportion refers to the percentage of the total, 27.28ha of land, classified as Dune Scrub

Figure 114. The current classification of the land identified as dune scrub in the 1999 survey.



55.51% of the 27.28ha of Dune Scrub identified in the 1999 survey has remained classified as such during the present survey. 27.56% (7.52ha) is now classified as Dune Grassland. The majority of this land has been cleared since the previous survey and converted back to grassland, especially on the East side of L'Ancrese common, however there are some areas which have changed classification due to 'edge effects', predominately when dividing the mosaic of scrub and grassland on L'Ancrese golf course. 11.40% (3.11ha) has now been classified as Continuous Bracken. Most of this land appears to have been misclassified during the 1999 survey, as patches of Bracken from within scrub could not be isolated and mapped separately. 1.72% (0.47ha) has changed classification to Amenity Grassland, however this appears to be entirely due to the misclassification of land during the previous survey, as opposed to land having been cleared to extend cartilage or the fairways and greens on L'Ancrese golf course.

OPEN DUNE

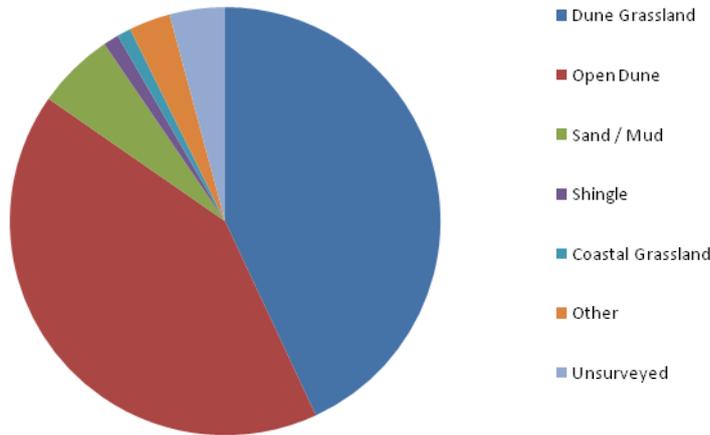
Habitat Classification	Area (ha)	Proportion (%)
Dune Grassland	0.59	43.09
Open Dune	0.57	41.63
Sand / Mud	0.08	5.83
Shingle	0.02	1.16
Coastal Grassland	0.01	1.04
Other	0.04	3.11
Total	1.30	95.85

Table 54. The classification in the 1999 survey of the land currently identified as Open Dune. 'Proportion' refers to the percentage of the total, 1.36ha of land, classified as Open Dune.

41.63% of the 1.36ha of land currently classified as Open Dune was also classified as such during the 1999 survey, such as stretches along Vazon Bay, Port Soif and Le Picquerel. 43.09% (0.59ha) was previously classified as Dune Grassland. Rather than this land having become less stable and reverting to Open Dune, these are areas that were misclassified during the previous survey. 5.83% (0.08ha) was previously classified as Sand/Mud and 1.16% (0.02ha) as Shingle, these changes are due to variation involved in defining the boundary between

the bare sand or shingle and the start of the Open Dune, which is very subjective and may vary depending on recent weather etc. One stretch of land (0.01ha; 1.04%) was previously misclassified as Coastal Grassland.

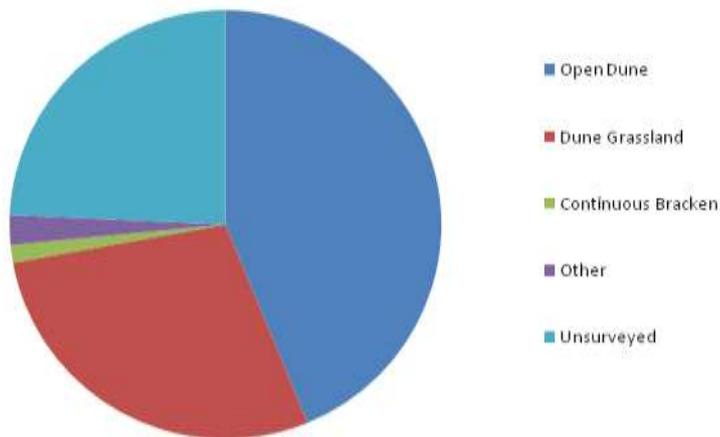
Figure 115. The classification in the 1999 survey of the land currently classified as Open Dune



Habitat Classification	Area (ha)	Proportion (%)
Open Dune	0.57	43.78
Dune Grassland	0.37	28.36
Continuous Bracken	0.02	1.33
Other	0.03	2.23
Total	0.98	75.71

Table 55. The current classification of the land identified as Open Dune in the 1999 survey. Proportion refers to the percentage of the total, 1.29ha of land, classified as Open Dune

Figure 116. The current classification of the land identified as Open Dune in the 1999 survey.



Of the 1.29ha of land previously classified as Open Dune, 43.78% (0.57ha) has remained classified as such. 28.36% (0.37ha) is now classified as Dune Grassland. Such as a stretch along Vazon and a section at Le Picquerel where the Marram Grass (*Ammophila arenaria*) has become outcompeted by other flora and thus have succeeded to established Dune Grassland. 1.33% (0.02ha) has now been classified as Continuous Bracken due to the establishment of Bracken (*Pteridium aquilinum*) at two small patches at Le Picquerel.

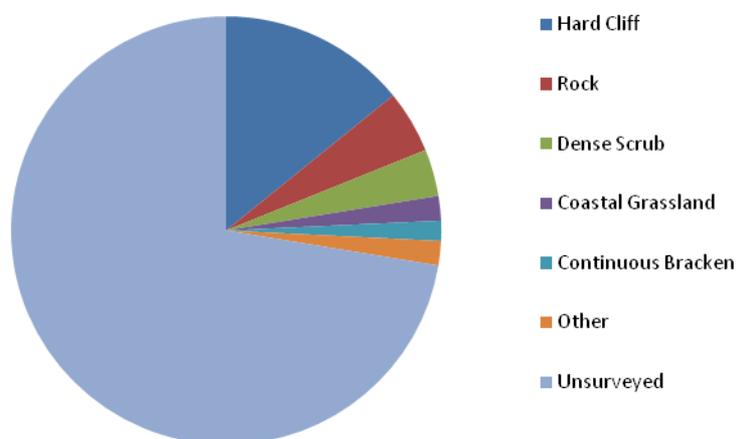
MARITIME CLIFF AND SLOPE

HARD CLIFF

Habitat Classification	Area (ha)	Proportion (%)
Hard Cliff	8.26	14.11
Rock	2.77	4.74
Dense Scrub	2.08	3.56
Coastal Grassland	1.08	1.85
Continuous Bracken	0.89	1.53
Other	1.07	1.84
Total	16.16	27.63

Table 56. The classification in the 1999 survey of the land currently identified as Hard Cliff. 'Proportion' refers to the percentage of the total, 58.50ha of land, classified as Hard Cliff.

Figure 117. The classification in the 1999 survey of the land currently classified as hard cliff



There has been a 112% increase in the amount of Hard Cliff identified on Guernsey and Lihou; only 27.57ha were identified in 1999, where as 58.50% has been located during the present survey.

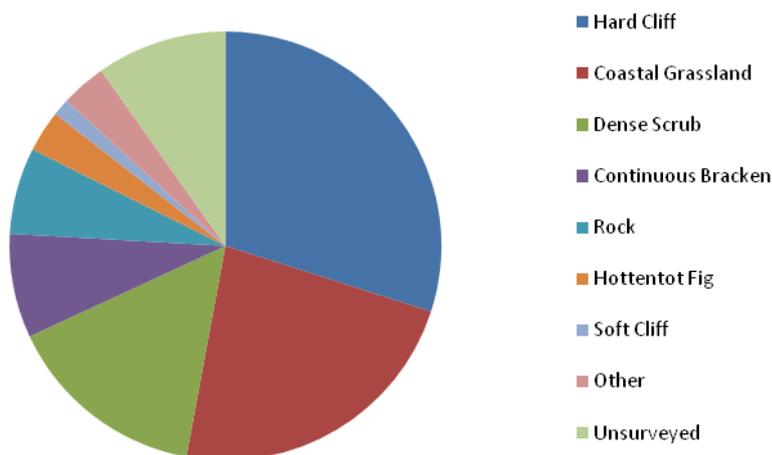
Of the 58.50ha of Hard Cliff currently identified, only 14.11% (8.26ha) was also classified as Hard Cliff during the 1999 survey, this is located almost entirely on the cliffs in the South of Guernsey. 4.74% (2.77ha) was previously classified as rock, which is almost entirely located around Lihou. 3.56% (2.08ha) was previously classified as Dense Scrub, 1.85% (1.08ha) was previously Coastal Grassland and 1.53% (0.89ha) was previously Continuous Bracken. These changes are either 'edge effects' or habitat units which have been isolated from within other habitat types but which were not discernable using the previous methodology. However, this increase in Hard Cliff is likely to be attributable to an increase in area surveyed, as 72.37% (42.34ha) was not

surveyed during the 1999 survey, a large amount of which is located on the southern aspect of Pleinmont, which was omitted from the previous survey.

Habitat Classification	Area (ha)	Proportion (%)
Hard Cliff	8.26	29.94
Coastal Grassland	6.33	22.95
Dense Scrub	4.18	15.17
Continuous Bracken	2.16	7.84
Rock	1.80	6.52
Hottentot Fig	0.87	3.14
Soft Cliff	0.35	1.28
Other	0.94	3.40
Total	24.88	90.24

Table 57. The current classification of the land identified as Hard Cliff in the 1999 survey. Proportion refers to the percentage of the total, 27.57ha of land, classified as Hard Cliff

Figure 118. The current classification of the land identified as hard cliff in the 1999 survey.



Of the 27.57ha of Hard Cliff identified during the 1999 survey, 29.94% (8.26ha) has remained as Hard Cliff during the present survey.

22.95% (6.33ha) is now classified as Coastal Grassland and 7.84% (2.16ha) now Continuous Bracken. These changes are almost entirely attributable to 'edge effects'. 15.17% (4.18ha) is now classified as Dense Scrub; some of this is also due to 'edge effects', but some change is also due to the encroachment of scrub onto the surrounding cliff. 6.52% (1.80ha) is now classified as Rock and 3.14% (0.87ha) as Hottentot fig, these changes are discussed in detail in the Rock and Hottentot Fig categories. 1.28% (0.94ha) is now classified as Soft Cliff – these appear to be areas that were misclassified during the previous survey as the methodology did not allow the surveyors to isolate them.

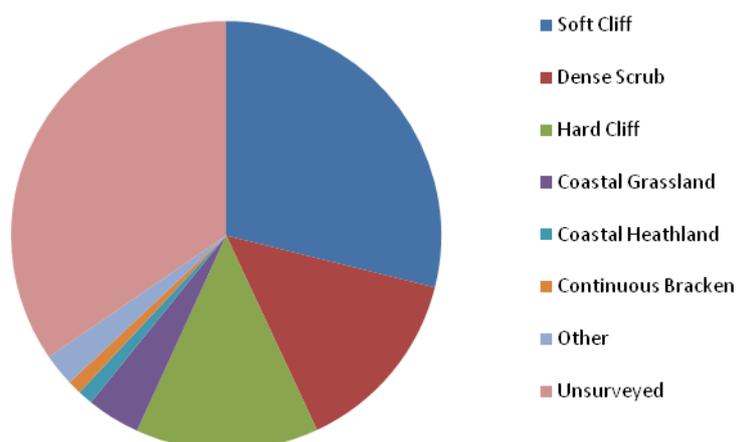
SOFT CLIFF

Only 2.57ha of Soft Cliff have been mapped as habitat polygons during the present survey, this is a decrease of 49% since the 1999 survey which identified 5.02ha. The Soft Cliff that was not able to be mapped spatially due to the angle of the aerial photographs was mapped as a linear feature, this category covered 5.7km.

Habitat Classification	Area (ha)	Proportion (%)
Soft Cliff	0.74	28.90
Dense Scrub	0.36	14.18
Hard Cliff	0.35	13.72
Coastal Grassland	0.10	4.01
Coastal Heathland	0.03	1.12
Continuous Bracken	0.03	1.04
Other	0.06	2.43
Total	1.68	65.39

Table 58. The classification in the 1999 survey of the land currently identified as Soft Cliff. 'Proportion' refers to the percentage of the total, 2.57ha of land, classified as Soft Cliff.

Figure 119. The classification in the 1999 survey of the land currently classified as soft cliff



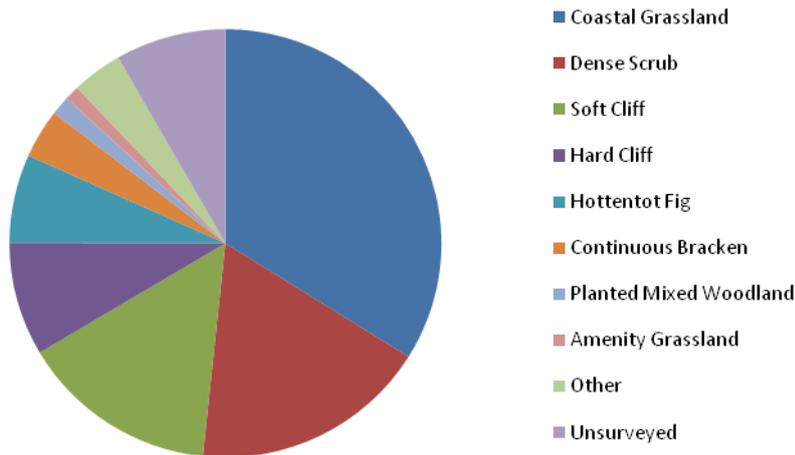
Of the 2.57ha currently located, 28.90ha were also classified as Soft Cliff during the 1999 survey, located predominately around the cliffs in the south of Torteval. 14.18% (0.36ha) was previously misclassified as Dense Scrub, and 13.72% (0.35ha) was Hard Cliff. 4.01% (0.10ha) was previously classified as Coastal Grassland. This change appears to be attributable to 'edge effects', especially around the Soft Cliffs at Fort Saumarez. 0.03ha (1.12%) at La Corbière were previously classified as Coastal Heathland, it is not possible to determine whether this heathland has been lost or, given it's small size, that it is due to 'edge effects'. 2.43% (0.06ha) was previously Continuous Bracken, however this change appears to be entirely due to 'edge effects'.

Habitat Classification	Area (ha)	Proportion (%)
Coastal Grassland	1.70	33.89
Dense Scrub	0.89	17.79
Soft Cliff	0.74	14.79
Hard Cliff	0.43	8.57
Hottentot Fig	0.34	6.69
Continuous Bracken	0.19	3.70
Planted Mixed Woodland	0.07	1.43

Amenity Grassland	0.06	1.10
Other	0.19	3.78
Total	4.60	91.72

Table 59. The current classification of the land identified as Soft Cliff in the 1999 survey. Proportion refers to the percentage of the total, 5.02ha of land, classified as Soft Cliff

Figure 120. The current classification of the land identified as soft cliff in the 1999 survey.



Of the 5.02ha of Soft Cliff identified during the 1999 survey, only 14.79% (0.74ha) has also been mapped as Soft Cliff during the current survey. 33.89% (1.70ha) has now been classified as Coastal Grassland, it appears that this land was misclassified during the previous survey as opposed to having become vegetated and converting to grassland. 17.79% (0.89ha) has now been classified as Dense Scrub. Although there are some instances where the scrub has expanded over adjacent land, most of this change is due to the misclassification of land during the previous survey. 8.57% (0.43ha) has now been classified as Hard Cliff, as described above in the Hard Cliff section and 6.69% (0.34ha) has now become dominated by *Carpobrotus edulis*, which is described in further detail in the Hottentot Fig category below. 3.70% (0.19ha) has now been classified as Continuous Bracken, these areas were misclassified during the previous survey.

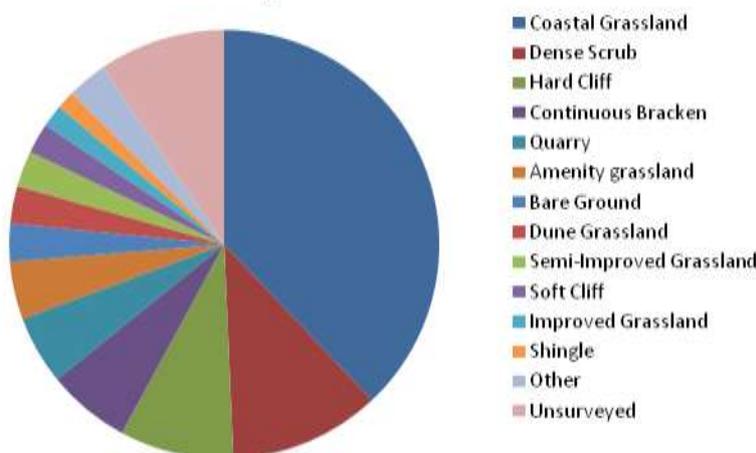
COASTAL GRASSLAND

Habitat Classification	Area (ha)	Proportion (%)
Coastal Grassland	28.11	37.97
Dense Scrub	8.40	11.35
Hard Cliff	6.33	8.55
Continuous Bracken	4.64	6.27
Quarry	3.85	5.20
Amenity Grassland	3.23	4.37
Bare Ground	2.12	2.87
Dune Grassland	2.10	2.83
Semi-improved Grassland	2.01	2.71
Soft Cliff	1.70	2.30

Improved Grassland	1.24	1.68
Shingle	1.03	1.39
Other	2.22	2.99
Total	66.98	90.47

Table 60. The classification in the 1999 survey of the land currently identified as Coastal Grassland. 'Proportion' refers to the percentage of the total, 74.03ha of land, classified as Coastal Grassland.

Figure 121. The classification in the 1999 survey of the land currently classified as coastal grassland

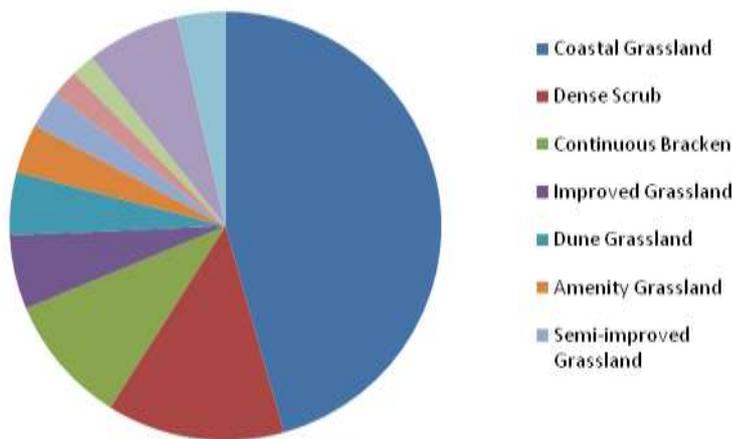


74.03ha of Coastal Grassland were identified in 2010, of which 37.97% (28.11ha) have remained classified as such during the present survey. This land is located across Lihou, around the coast and especially on the cliffs in the South on the headlands. 11.35% (8.40ha) was previously classified as Dense Scrub, it does not appear that this land has been cleared of scrub since the 1999 survey, but rather this land was misclassified and the grassland was not isolated from the surrounding scrub. 8.55% (6.33ha) was previously classified as Hard Cliff, this change is mainly due to 'edge effects' and the isolation of patches of Coastal Grassland from within areas of Hard Cliff. 6.27% (4.64ha) was previously classified as Continuous Bracken, this change is predominately due to 'edge effects' and some patches of grassland which have been isolated from within areas of Continuous Bracken, however there are 2 small areas on the cliffs which have been cleared of Bracken since the previous survey and reverted to grassland. Since the 1999 survey 3.85ha of Quarry; located at Chouet and Portinifer, have been filled survey and Coastal Grassland has established on top of them. 4.37% (3.23ha) was previously classified as Amenity Grassland, 1.10ha of which is at Hotel Bon Port and 0.70ha at Portinifer clay pigeon shooting range. This land has also been noted as poor quality, so it is very likely that it is, or has been heavily managed. Its distinction between coastal and Amenity Grassland will depend almost entirely on how recently the grassland had been mown before being surveyed and so which indicator species are visible. There is also a large area at Fort Richmond which appears to be less intensively managed, so much so that it appears to have reverted almost to scrub in 2006. Thus it appears likely that it was misclassified during the 1999 survey. 2.87% (2.12ha) was previously classified as Bare Ground, this is largely land around the paths on the western coast of Guernsey which were so heavily trampled in 1999 that no vegetation was present. Since then extensive work has been done on these paths reducing the extent of trampling on the areas adjacent to them, allowing it to recover and convert to Coastal Grassland. However, a proportion of this change is also due to 'edge effects' when defining the boundaries of these paths.

Habitat Classification	Area (ha)	Proportion (%)
Coastal Grassland	28.11	45.64
Dense Scrub	8.20	13.31
Continuous Bracken	6.02	9.78
Improved Grassland	3.44	5.58
Dune Grassland	2.93	4.75
Amenity Grassland	2.29	3.71
Semi-improved Grassland	1.72	2.79
Bare Ground	1.28	2.08
Hard Cliff	1.08	1.76
Other	4.30	6.97
Total	59.37	96.38

Table 61. The current classification of the land identified as Coastal Grassland in the 1999 survey. Proportion refers to the percentage of the total, 61.60ha of land, classified as Coastal Grassland

Figure 122. The current classification of the land identified as coastal grassland in the 1999 survey.



Of the 61.60ha of Coastal Grassland identified during the 1999 survey, only 45.64% has remained classified as such. 13.31% (8.20ha) has now been classified as Dense Scrub, a large amount of this is located at le Catelain where scrub has established on abandoned land, however around the cliffs in the south, there are many areas of scrub that were misclassified in the 1999 survey as they weren't isolated from the surrounding grassland. 9.78% (6.02ha) has now been classified as Continuous Bracken; again this is largely due to the establishment of Bracken on land where management has ceased. There is a lot of land located on Lihou which has changed classification from Coastal Grassland to Continuous Bracken since the 1999 survey. However, this is largely due to these areas having been misclassified previously. There are many fields in coastal locations which have changed classification from Coastal Grassland to Improved grassland (3.44ha, 5.58%) due to either an increase in the intensity of the management of the land, or a change in the opinions of the surveyors when assigning the classification. 4.75% (2.93ha) is now classified as Dune Grassland (see Dune Grassland section above for details). 3.71% (2.29ha) of land previously classified as Coastal Grassland is now classified as Amenity Grassland, such as 0.53ha at Portinfer which was more intensively managed in order to create a lawn between 2001 and 2004. However, as mentioned earlier, the amount of time between the grassland having been mown and being surveyed can greatly bias the category to which the unit is assigned. 2.79% (1.72ha) is now classified

as Semi-improved Grassland, such as 0.51ha in the BBC field at Pleinmont. This land may have changed classification due to differing opinions of the observers or the indicator species of Coastal Grasslands may have been lost as the grassland is become more improved. The paths along the headlands on Guernsey's western coast have been isolated from the surrounding vegetated habitats, this accounts for the 2.08% (1.28ha) change from Coastal Grassland to Bare Ground

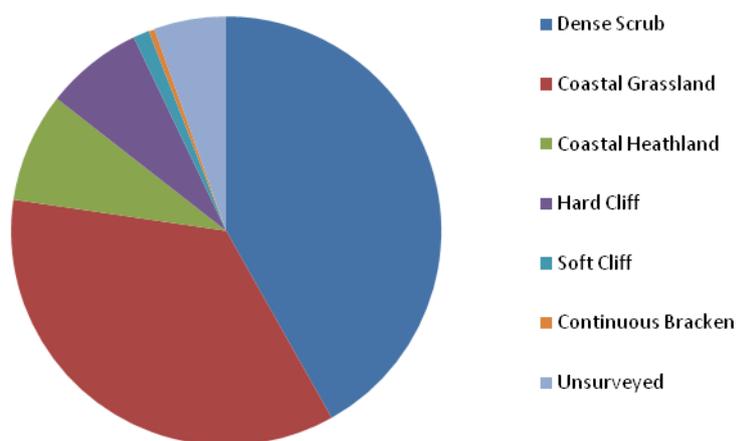
COASTAL HEATHLAND

The amount of Coastal Heathland identified on Guernsey has decreased from 2.70ha during the IDC's survey in 1999, to only 1.57ha identified during the current survey.

Habitat Classification	Area (ha)	Proportion (%)
Dense Scrub	0.66	41.86
Coastal Grassland	0.56	35.47
Coastal Heathland	0.13	8.26
Hard Cliff	0.12	7.34
Soft Cliff	0.02	1.20
Continuous Bracken	0.01	0.45
Total	1.49	94.58

Table 62. The classification in the 1999 survey of the land currently identified as Coastal Heathland. 'Proportion' refers to the percentage of the total, 1.57ha of land, classified as Coastal Heathland.

Figure 123. The classification in the 1999 survey of the land currently classified as coastal heathland

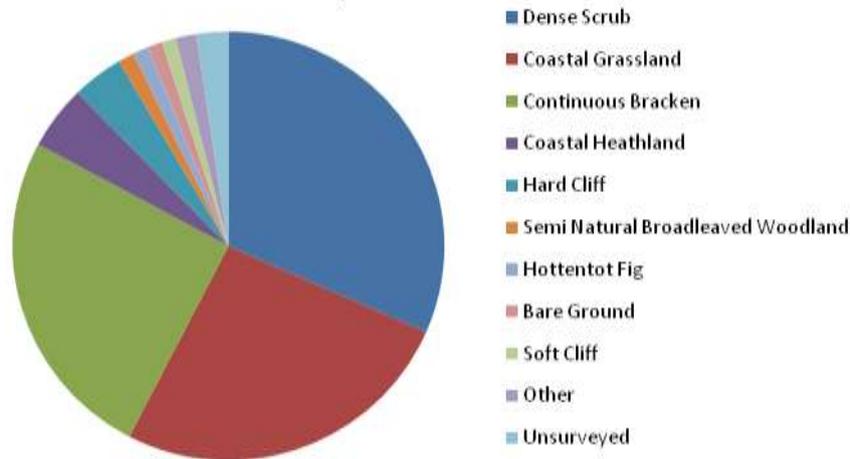


Of the 1.57ha identified during the present survey, only 8.26% was also classified as Coastal Heathland during the 1999 survey. Unfortunately the conditions which led to the heathland's decline are not widely understood, so it is also difficult to determine whether these conditions have reversed on the areas which are newly classified which would help clarify if this heathland has become newly established. 41.86% (0.66ha) was previously classified as Dense Scrub, 7.34% (0.12ha) as Hard Cliff and 1.20% (0.02ha) as Soft Cliff. Heathland is very difficult to identify from aerial photographs, and many of its small areas are inaccessible beyond stretches of scrub on the cliffs, so it is not possible to say whether these areas have been misclassified or whether this is newly developed heathland.

Habitat Classification	Area (ha)	Proportion (%)
Dense Scrub	0.85	31.57
Coastal Grassland	0.70	26.02
Continuous Bracken	0.68	25.27
Coastal Heathland	0.13	4.82
Hard Cliff	0.10	3.84
Semi Natural Broadleaved Woodland	0.03	1.20
Hottentot Fig	0.03	1.20
Bare Ground	0.03	1.08
Soft Cliff	0.03	1.07
Other	0.04	1.54
Total	2.63	97.61

Table 62. The current classification of the land identified as Coastal Heathland in the 1999 survey. Proportion refers to the percentage of the total, 2.70ha of land, classified as Coastal Heathland

Figure 124. The current classification of the land identified as coastal heathland in the 1999 survey.



Of the 2.70ha of Coastal Heathland located during the 1999 survey, only 4.82% (0.13ha) has remained classified as such during the present survey. 31.57% (0.85ha) has been classified as Dense Scrub and 25.27% (0.68ha) as Continuous Bracken. These areas may have succeeded to Scrub and Bracken following lack of grazing which allows the establishment of Brambles (*Rubus fruticosus*) and Blackthorn (*Prunus spinosa*) as well as Bracken (*Pteridium aquilinum*) which shade out the more delicate heather species (*Calluna vulgaris* and *Erica cinerea*). 26.02% (0.70ha) is now classified as Coastal Grassland and 3.84% (0.10ha) is now Hard Cliff. The heather may have been lost on these areas due to the increase in Nitrogen content of the soil following and increase in Nitrate deposition in rain (see Coastal Heathland in section 4.1.8).

QUARRY

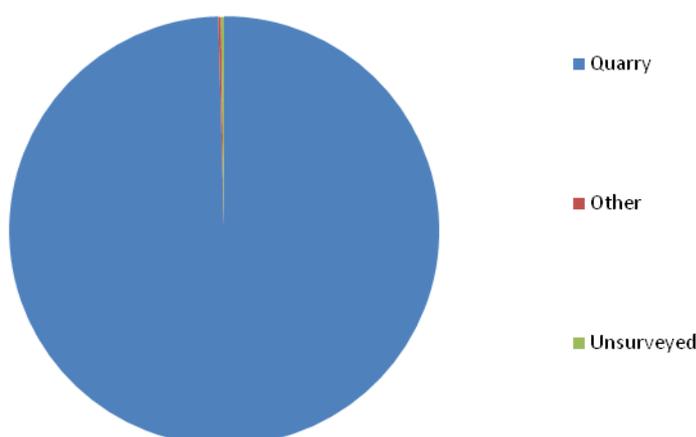
The amount of land used for Quarrying has reduced from 23.22ha in 1999 to only 5.83ha during the present survey. The only active Quarry remaining in Guernsey is Les Vardes Quarry, owned by Ronez. This was also an active Quarry in 1999. Of the 23.22ha of quarries located in 1999, Les Vardes Quarry accounts for only 25%, the remaining 75% has been abandoned or filled in. 16.57% (3.85ha) are now classified as Coastal Grassland,

predominately the eastern half of Chouet refuse-tip which was fully filled-in in 2006 and has now become vegetated and converted to Coastal Grassland. The western half of Chouet is also a refuse-tip and has been reclassified as bare ground during the current survey and noted as a refuse-tip. This accounts for 14.50% (3.37ha) of the change in the land classified as Quarry in 1999. 8.14% (1.89ha) has now been classified as Amenity Grassland, this is predominately located at St Germain Quarry, which was filled-in in 2000.

Habitat Classification	Area (ha)	Proportion (%)
Quarry	5.81	99.56
Other	0.01	0.20
Total	5.82	99.76

Table 63. The classification in the 1999 survey of the land currently identified as Quarry. 'Proportion' refers to the percentage of the total, 5.83ha of land, classified as Quarry.

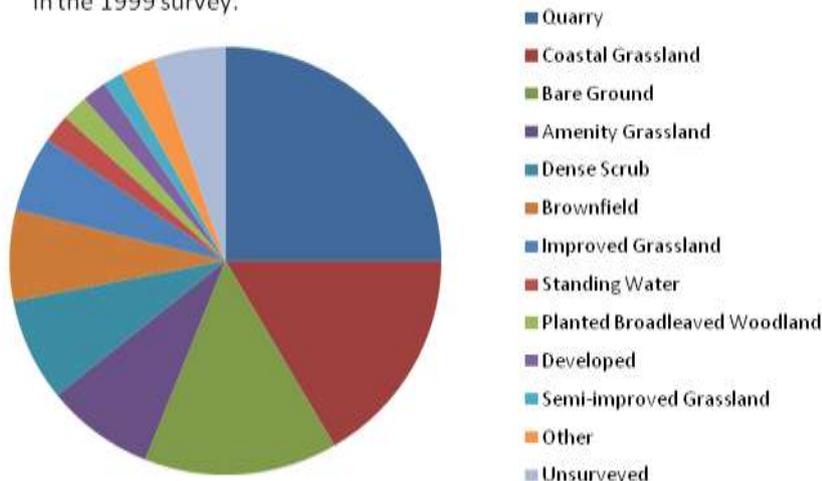
Figure 125. The classification in the 1999 survey of the land currently classified as Quarry



Habitat Classification	Area (ha)	Proportion (%)
Quarry	5.81	25.00
Coastal Grassland	3.85	16.57
Bare Ground	3.37	14.50
Amenity Grassland	1.89	8.14
Dense Scrub	1.80	7.77
Brownfield	1.60	6.88
Improved Grassland	1.33	5.72
Standing Water	0.50	2.14
Planted Broadleaved Woodland	0.46	1.97
Developed	0.43	1.86
Semi-improved Grassland	0.33	1.43
Other	0.62	2.67
Total	21.98	94.65

Table 64. The current classification of the land identified as Quarry in the 1999 survey. Proportion refers to the percentage of the total, 23.22ha of land, classified as Quarry

Figure 126. The current classification of the land identified as Quarry in the 1999 survey.



Around the outskirts of St Germain, Chouet and Les Vardes Quarries, there are areas of Dense Scrub, some of this scrub was present during the 1999 survey, but was not classified separately from the Quarry, they have, however, spread considerable and become much more established during the current survey. 6.88% (1.60ha) is now classified as Brownfield Site which is located across several small sites in the north of the island, all of which appear to have been misclassified during the 1999 survey. 5.72% (1.33ha) is now classified as Improved grassland, 0.75ha of which is at Quet de la Chasses in Portinifer, and some of the grassland at St Germain Quarry is also Improved. An old Quarry in Vale; Grande Maison has been abandoned and filled naturally with water, so is now classified as Standing Water. This accounts for 2.14% (0.50ha) of the land previously classified as Quarry. 0.46ha (1.97%) of the land at St Germain's Quarry has been planted with Oak (*Quercus robur*) and Elder (*Sambucus nigra*), Hazel (*Corylus avellana*) and Hawthorn (*Crataegus monogyna*) and is now classified as Planted Broadleaved Woodland.

MISCELLANEOUS

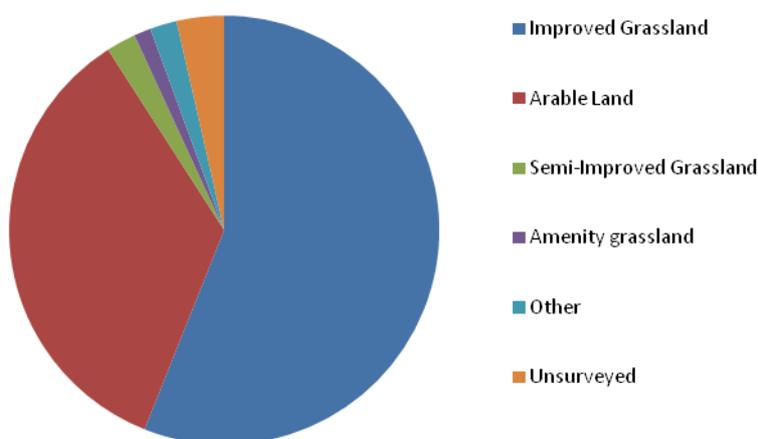
CULTIVATED/DISTURBED LAND

ARABLE

Habitat classification	Area (ha)	Proportion (%)
Improved Grassland	186.39	56.02
Arable Land	116.15	34.91
Semi-improved Grassland	7.41	2.23
Amenity Grassland	4.22	1.27
Other	6.71	2.02
Total	320.87	96.45

Table 65. The classification in the 1999 survey of the land currently identified as arable land. 'Proportion' refers to the percentage of the total, 332.69ha of land, classified as arable.

Figure 127. The classification in the 1999 survey of the land currently classified as arable

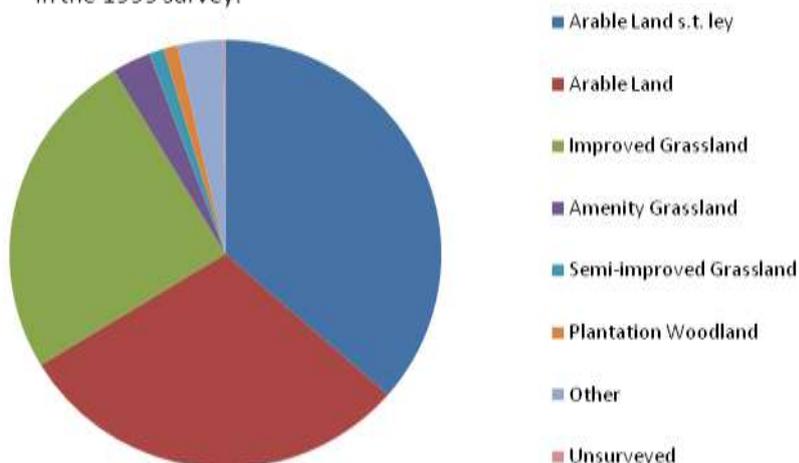


332.69ha of Arable land have been identified during the current survey, 34.91% (116.15ha) of which were also classified as such during the 1999 survey. This is likely to have been a short-term ley during the 1999 survey, and as such was classified as Improved Grassland (see Habitat Classification definitions, section 3.1.2), however some of this may have been recently converted to crop production. The same may also be true for the 7.41ha (2.23%) which was previously classified as Semi-improved Grassland. 1.27% (4.22ha) was previously classified as Amenity Grassland, the majority of which was due to 'edge effects', however some areas appear to have been misclassified during the previous survey, and two small fields have been converted to arable. 3.55% (11.82ha) was not previously surveyed.

Habitat classification	Area (ha)	Proportion (%)
Arable Land s.t. ley	141.67	36.44
Arable Land	116.15	29.87
Improved Grassland	97.49	25.07
Amenity Grassland	11.17	2.87
Semi-improved Grassland	4.41	1.13
Plantation Woodland	4.01	1.03
Other	13.25	3.41
Total	388.14	99.83

Table 66. The current classification of the land identified as arable in the 1999 survey. Proportion refers to the percentage of the total, 388.81ha of land, classified as arable

Figure 128. The current classification of the land identified as arable in the 1999 survey.



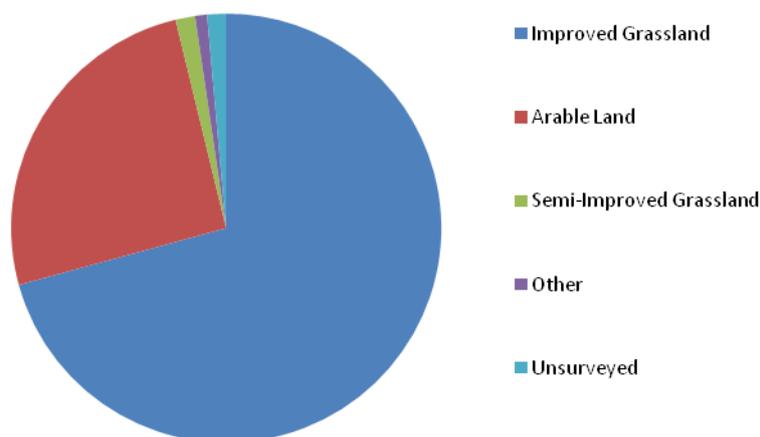
Of the 388.81ha of land classified as arable during the 1999 survey, 29.87% (116.15ha) has remained classified as Arable during the present survey and 36.44% (141.67ha) as Arable short-term leys. 25.07% (97.49ha) has now been classified as Improved grassland. It is probable that this land has been seeded as a ley since the previous survey and is now so well established that it is indistinguishable from Improved grassland. If so, it is likely that this land may be ploughed and utilised for crop production again (see Improved Grassland section). 2.97% (11.17ha) has now been classified as Amenity Grassland; some of which has been lost in order to extend a domestic curtilage (such as 2.73ha at Havilland Hall; see Extensions to Curtilage section for more details). 1.13% (4.41ha) has been classified as Semi-improved Grassland, (as described above in the Semi-improved Grassland section) and 1.03% (4.01ha) is now Plantation Woodland, which is almost entirely at Rocquettes Cider Farm.

ARABLE SHORT-TERM LEY

Habitat classification	Area (ha)	Proportion (%)
Improved Grassland	392.95	70.72
Arable Land	141.67	25.50
Semi-improved Grassland	8.13	1.46
Other	4.98	0.90
Total	547.73	98.58

Table 66. The classification in the 1999 survey of the land currently identified as arable short-term ley. 'Proportion' refers to the percentage of the total, 555.61ha of land, classified as arable short-term leys.

Figure 129. The classification in the 1999 survey of the land currently classified as arable short-term leys



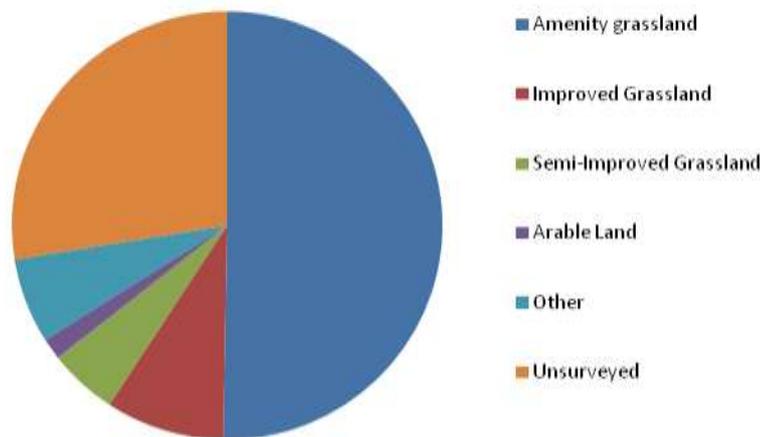
Of the 555.61ha of land currently identified as arable short-term leys, 70.72% (392.95ha) was previously classified as Improved grassland, mainly due to the change in classifications rather than permanent grasslands having been converted to crop production. 25.50% (141.67ha) was previously Arable land, and has since been seeded and set-aside as a Ley. 1.46% (8.13ha) was previously classified as Semi-improved Grassland, of which most appears to have been misclassified, but some small areas have been ploughed (see Semi-improved Grassland section).

AMENITY GRASSLAND

Habitat Classification	Area (ha)	Proportion (%)
Amenity Grassland	345.51	50.28
Improved Grassland	61.33	8.93
Semi-improved Grassland	35.56	5.17
Arable Land	11.17	1.63
Other	44.28	6.44
Total	497.85	72.45

Table 67. The classification in the 1999 survey of the land currently identified as Amenity Grassland. 'Proportion' refers to the percentage of the total, 687.18ha of land, classified as Amenity Grassland.

Figure 130. The classification in the 1999 survey of the land currently classified as amenity grassland

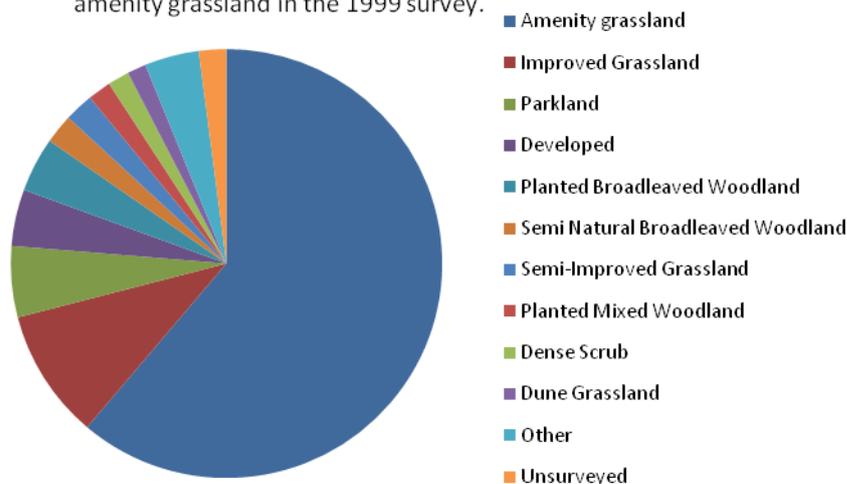


687.18ha of Amenity Grassland have been located during the present survey, of which 50.28% (345.51ha) was also classified as Amenity Grassland during the survey conducted in 1999. 8.93% (61.33ha) were previously classified as improved grassland, most notably 8.7ha of land at Havilland Hall (see improved grassland section). 5.17% (35.56ha) was previously Semi-improved Grassland, this may be caused by an extension to domestic curtilage, such as 0.33ha at Havilland Hall which have been reseeded and heavily mown. However it may be an error caused by the amount of time elapsed between the grassland being mown and being surveyed which will affect the appearance of the grassland and the visibility of indicator species.

Habitat Classification	Area (ha)	Proportion (%)
Amenity Grassland	345.51	61.18
Improved Grassland	55.21	9.78
Parkland	30.29	5.36
Developed	24.07	4.26
Planted Broadleaved Woodland	23.27	4.12
Semi Natural Broadleaved Woodland	12.47	2.21
Semi-improved Grassland	12.34	2.18
Planted Mixed Woodland	9.85	1.74
Dense Scrub	9.08	1.61
Dune Grassland	8.00	1.42
Other	23.07	4.08
Total	553.14	97.95

Table 68. The current classification of the land identified as Amenity Grassland in the 1999 survey. Proportion refers to the percentage of the total, 564.74ha of land, classified as Amenity Grassland

Figure 131. The current classification of the land identified as amenity grassland in the 1999 survey.



27.55% (189.33ha) of the Amenity Grassland identified during the present survey was not surveyed during the 1999 survey which should be noted when examining the increase in the incidence of Amenity Grassland.

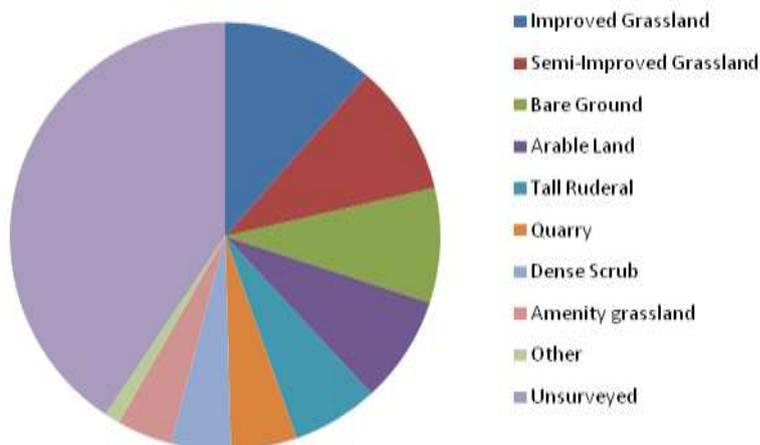
564.74ha of Amenity Grassland were located during the 1999 survey, of which 61.18% (345.51ha) have remained classified as such during the present survey. 9.78% (55.21ha) have now been classified as Improved grassland, this change is most likely due to the error involved in defining between Improved and Amenity Grassland (see Improved Grassland section for details). 5.36% (30.29ha) is now classified as Parkland due to trees having been newly planted so to convert the land, or scattered trees having been grouped with the adjacent grassland and classified as Parkland. 4.26% (24.07ha) is now classified as developed land; this is almost entirely driveways which have been separated from the surrounding Amenity Grassland in gardens rather than newly developed land. 23.27ha of land (4.12%) have been planted with broadleaved trees and 2.21% (12.47ha) is now classified as Semi-natural Broadleaved Woodland (see their respective sections for further details).

BROWNFIELD SITES

Habitat Classification	Area (ha)	Proportion (%)
Improved Grassland	3.70	11.43
Semi-improved Grassland	3.20	9.91
Bare Ground	2.81	8.68
Arable Land	2.63	8.12
Tall Ruderal	2.10	6.48
Quarry	1.60	4.94
Dense Scrub	1.45	4.48
Amenity Grassland	1.35	4.17
Other	0.37	1.15
Total	19.20	59.37

Table 69. The classification in the 1999 survey of the land currently identified as Brownfield Sites. 'Proportion' refers to the percentage of the total, 32.33ha of land, classified as Brownfield Sites.

Figure 132. The classification in the 1999 survey of the land currently classified as brownfield sites



32.33ha of land has been identified as Brownfield Sites during the current survey, this category was not included in the 1999 survey, so it is not possible to determine the change in the abundance of Brownfield Sites over the past 11 years.

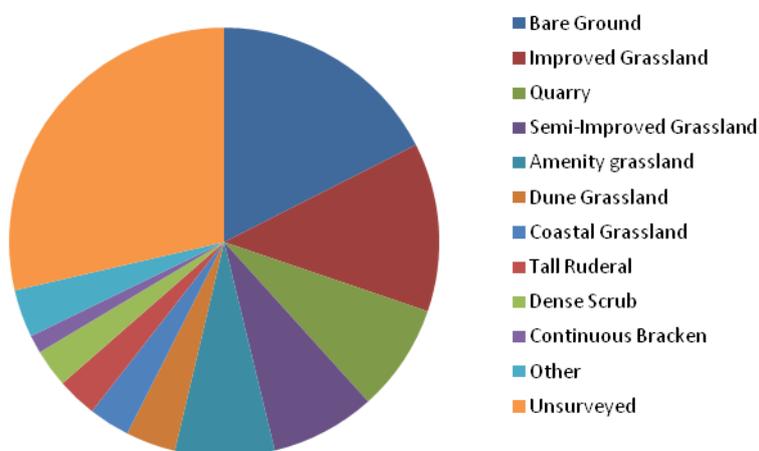
Of the 32.33ha currently classified, 11.43ha (3.70%) was previously Improved grassland and 3.20ha (9.91%) was Semi-improved Grassland. On the whole, this is land that has been disturbed at some point since the previous survey, however some of this change is also due to 'edge effects'. 8.68% (2.81ha) was previously Bare Ground, but has remained abandoned and has now been reclassified as a Brownfield Site. 8.12% (2.63ha) was previously classified as arable land, this appears to have remained as farmland, but is used as storage space for the agricultural equipment.

BARE GROUND

Habitat Classification	Area (ha)	Proportion (%)
Bare Ground	7.25	17.49
Improved Grassland	5.29	12.76
Quarry	3.37	8.12
Semi-improved Grassland	3.26	7.87
Amenity Grassland	3.09	7.45
Dune Grassland	1.55	3.75
Coastal Grassland	1.28	3.09
Tall Ruderal	1.25	3.01
Dense Scrub	1.19	2.87
Continuous Bracken	0.56	1.36
Other	1.50	3.62
Total	29.61	71.37

Table 70. The classification in the 1999 survey of the land currently identified as Bare Ground. 'Proportion' refers to the percentage of the total, 41.48ha of land, classified as Bare Ground.

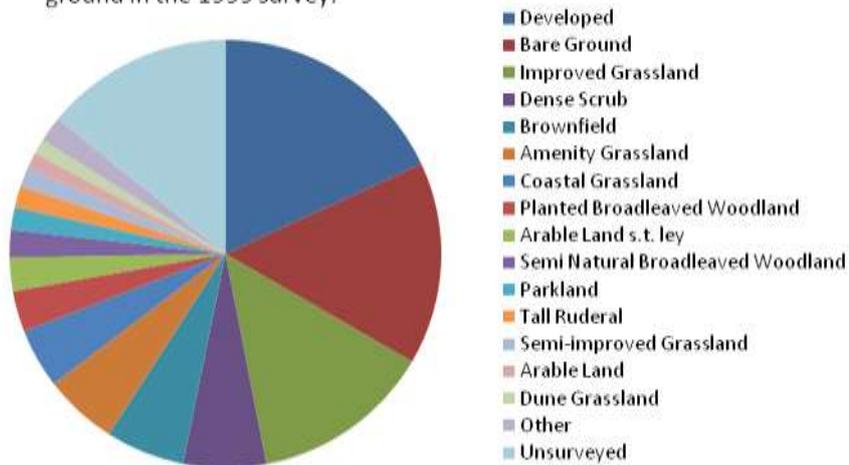
Figure 133. The classification in the 1999 survey of the land currently classified as bare ground



Habitat Classification	Area (ha)	Proportion (%)
Developed	8.57	18.09
Bare Ground	7.25	15.31
Improved Grassland	6.42	13.56
Dense Scrub	2.94	6.20
Brownfield	2.81	5.92
Amenity Grassland	2.63	5.55
Coastal Grassland	2.12	4.48
Planted Broadleaved Woodland	1.47	3.10
Arable Land s.t. ley	1.19	2.52
Semi Natural Broadleaved Woodland	0.99	2.09
Parkland	0.80	1.69
Tall Ruderal	0.77	1.62
Semi-improved Grassland	0.70	1.47
Arable Land	0.57	1.21
Dune Grassland	0.53	1.12
Other	0.92	1.95
Total	40.70	85.88

Table 71. The current classification of the land identified as Bare Ground in the 1999 survey. Proportion refers to the percentage of the total, 47.39ha of land, classified as Bare Ground.

Figure 134. The current classification of the land identified as bare ground in the 1999 survey.

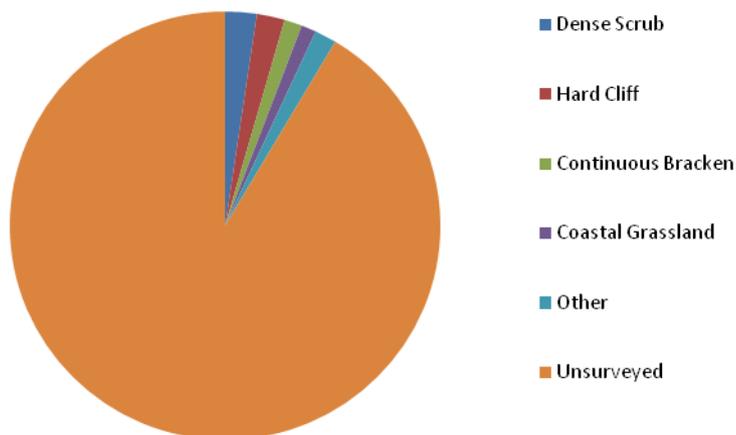


HOTTENTOT FIG

Habitat Classification	Area (ha)	Proportion (%)
Dense Scrub	0.10	2.36
Hard Cliff	0.09	2.09
Continuous Bracken	0.05	1.33
Coastal Grassland	0.05	1.11
Other	0.07	1.64
Total	0.35	8.53

Table 72. The classification in the 1999 survey of the land currently identified as dominated by Hottentot fig. 'Proportion' refers to the percentage of the total, 4.13ha of land, classified as Hottentot fig.

Figure 135. The classification in the 1999 survey of the land currently classified as Hottentot Fig



Of the 4.13ha of land currently classified as dominated by Hottentot Fig (*Carpobrotus edulis*), only 8.53% (0.35ha) was included in the 1999 habitat survey.

2.36% (0.10ha) of the 4.13ha identified as Hottentot Fig was previously classified as Dense Scrub. The aerial photographs appear to illustrate that in 1999 *C. edulis* was present in these areas but did not cover the same area of land. As this category was not included in the 1999 survey, these areas were not mapped but were grouped with the surrounding Dense Scrub, which has subsequently been lost to the spread of Hottentot Fig. 0.09ha (2.09%) of Hard Cliff, 0.05ha (1.33%) of Continuous Bracken and 0.05ha (1.11%) of Coastal Grassland have also been lost due to the spread of this invasive non-native.

Although it is not possible to provide a comparison with the extent of land covered by Hottentot Fig in past years, this data will allow its future spread to be mapped and monitored.

APPENDIX 4

Habitat Classification	2010		1999		Change (ha)	Change (%)
	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)		
Amenity Grassland	87.56	70.25	46.81	39.35	40.74	30.90
Parkland	6.02	4.83	0.00	0.00	6.02	4.83
Planted Mixed Woodland	0.93	0.75	0.00	0.00	0.93	0.75
Planted Broadleaved Woodland	2.91	2.34	2.10	1.76	0.81	0.57
Semi Natural Broadleaved Woodland	1.11	0.89	0.61	0.52	0.50	0.38
Plantation Woodland	0.14	0.11	0.00	0.00	0.14	0.11
Bare Ground	0.12	0.10	0.26	0.22	-0.14	-0.12
Coastal Grassland	0.00	0.00	0.23	0.19	-0.23	-0.19
Continuous Bracken	0.00	0.00	0.29	0.25	-0.29	-0.25
Marshy Grassland (SI and Unl)	0.08	0.06	0.45	0.37	-0.37	-0.31
Tall Ruderal	0.00	0.00	0.40	0.34	-0.40	-0.34
Semi-improved Grassland	5.65	4.53	6.38	5.36	-0.74	-0.83
Dense Scrub	0.23	0.19	1.28	1.08	-1.05	-0.89
Arable Land (inc. short-term ley)	2.01	1.61	6.59	5.54	-4.58	-3.93
Improved Grassland	17.87	14.33	53.56	45.02	-35.69	-30.68
Total	124.64		118.97			

Table 73 The classifications of the land in the 1999 survey and the present survey which is currently noted as an extension to a domestic curtilage.

APPENDIX 5

Habitat Classification	2010		1999		Change (ha)	Change (%)
	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)		
Improved Grassland	202.28	87.33	146.99	66.08	55.29	21.26
Bare Ground	3.68	1.59	0.00	0.00	3.68	1.59
Developed	0.68	0.29	0.00	0.00	0.68	0.29
Semi Natural Broadleaved Woodland	0.00	0.00	0.16	0.07	-0.16	-0.07
Continuous Bracken	0.07	0.03	0.45	0.20	-0.38	-0.17
Planted Broadleaved Woodland	0.00	0.00	0.74	0.33	-0.74	-0.33
Coastal Grassland	0.36	0.16	1.27	0.57	-0.91	-0.42
Dense Scrub	0.00	0.00	0.95	0.43	-0.95	-0.43
Bare Ground	0.00	0.00	1.52	0.68	-1.52	-0.68
Tall Ruderal	0.00	0.00	1.66	0.75	-1.66	-0.75
Marshy Grassland (SI and Uni)	0.76	0.33	3.21	1.44	-2.45	-1.11
Amenity Grassland	1.16	0.50	5.40	2.43	-4.24	-1.93
Arable Land (inc. short-term leys)	11.30	4.88	19.51	8.77	-8.22	-3.90
Semi-improved Grassland	11.32	4.89	40.59	18.25	-29.27	-13.36
Total	231.61		222.45			

Table 74 The classifications of the land in the 1999 survey and the present survey which is currently utilized for horses.

APPENDIX 6

Data for all Habitat Classifications identified on Herm and Jethou during the 2010 Habitat Survey.

Habitat Classification	Area (ha)	Area (vergees)	Proportion of Total area (%)	Proportion of Greenspace (%)
Terrestrial Zone				
Improved Grassland	36	221	23	24
Dense Scrub	23	142	15	15
Continuous Bracken	22	137	14	15
Coastal Grassland	14	83	8.7	8.9
Dune Grassland	11	69	7.3	7.4
Dune Scrub	10.2	62	6.6	6.7
Sand / Mud	4.4	27	2.9	2.9
Planted Broadleaved Woodland	4.1	25	2.7	2.7
Amenity Grassland	3.8	23	2.4	2.5
Open Dune	3.6	22	2.3	2.3
Rock	3.1	19	2.0	2.0
Hard Cliff	2.9	17	1.8	1.9
Semi Natural Broadleaved Woodland	2.8	17	1.8	1.8
Planted Coniferous Woodland	2.6	16	1.7	1.7
Planted Mixed Woodland	2.2	14	1.4	1.4
Parkland	1.6	9	1.00	1.01
Coastal Heathland	0.99	6	0.64	0.65
Dune Slack	0.99	6	0.64	0.65
Shingle	0.99	6	0.64	0.64
Bare Ground	0.90	5	0.58	0.59
Semi-improved Grassland	0.79	5	0.51	0.52
Developed	0.34	2	0.22	0.22
Dune Heath	0.16	39p	0.10	0.10
Plantation Woodland	0.13	31p	0.09	0.09
Soft Cliff	0.09	21p	0.06	0.06
Hottentot Fig	0.03	7p	0.02	0.02
Standing Water	<0.01	<1p	<0.01	<0.01
Total	153	934		
Intertidal Zone				
Intertidal Rock and Boulders	130	791	41	66
Intertidal Sand	61	374	19	31
Intertidal Shingle	4.5	27	1.42	2.3
Total	195	1190		

Table 75. Data for all habitats identified on Herm and Jethou. Proportion is the percentage of the total area (155ha (946v) of terrestrial and 316ha (1,928v) of intertidal land) and proportion of greenspace is the percentage of the area surveyed (153ha (934v) of terrestrial and 195ha (1,190v) of intertidal land).

APPENDIX 7

The constants found in each of the grasslands surveyed to a Phase 2 level.

The data collected for each habitat type has been converted into frequency indices, where V and IV are constants (species appear in 61-100% of the quadrats), their abundance is illustrated in the domin range in brackets.

The raw data is stored at the Guernsey Biological Records Centre together with photographs of each quadrat.

UNIMPROVED GRASSLAND

Species		Frequency	Domin range
<i>Holcus lanatus</i>	Yorkshire fog	V	(3-5)
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil	V	(3-4)
<i>Agrostis capillaris</i>	Common Bent	V	(3-4)
<i>Achillea millefolium</i>	Yarrow	V	(3)
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	V	(3)
<i>Plantago lanceolata</i>	Ribwort Plantain	V	(3)
<i>Trifolium repens</i>	White Clover	V	(3)
<i>Veronica chamaedrys</i>	Germander Speedwell	V	(3)
<i>Bellis perennis</i>	Daisy	V	(2-3)
<i>Festuca rubra</i>	Red Fescue	V	(2-3)
<i>Luzula campestris</i>	Field Wood-rush	V	(2-3)
<i>Hypochaeris radicata</i>	Cat's-ear	V	(1-3)
<i>Leontodon saxatilis</i>	Lesser Hawkbit	V	(1-3)
<i>Rumex acetosa</i>	Sorrel	V	(1-3)
<i>Viola riviniana</i>	Common Dog-violet	V	(1-3)
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed	IV	(2-3)
<i>Potentilla reptans</i>	Creeping Cinquefoil	IV	(2-3)
<i>Centaurea nigra</i>	Knapweed	IV	(2)
<i>Trifolium pratense</i>	Red Clover	IV	(1-3)
<i>Prunella vulgaris</i>	Selfheal	IV	(1-2)
<i>Trifolium dubium</i>	Lesser Trefoil	IV	(1-2)
<i>Trifolium occidentale</i>	Western Clover	IV	(1)
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	IV	Present
<i>Bryophyte Spp.</i>	Moss	II	(3)
<i>Dactylis glomerata</i>	Cock's-foot	II	(2)
<i>Cerastium fontanum</i>	Common Mouse-ear	II	(1)
<i>Crepis capillaris</i>	Smooth Hawksbeard	II	(1)
<i>Leontodon autumnalis</i>	Autumn Hawkbit	II	(1)
<i>Arrhenatherum elatius</i>	False Oat-grass	II	(1)
<i>Poa annua</i>	Annual Meadow-grass	II	(1)
<i>Poa ?trivialis</i>	Rough Meadow-grass	II	Present

SEMI-IMPROVED GRASSLAND

Species		Frequency	Domin Range
<i>Agrostis capillaris</i>	Common Bent	V	(3-5)
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	V	(3-5)
<i>Dactylis glomerata</i>	Cock's-foot	V	(3-4)
<i>Holcus lanatus</i>	Yorkshire fog	V	(2-4)
<i>Rumex acetosa</i>	Sorrel	V	(2-3)
<i>Festuca rubra</i>	Red Fescue	V	(1-5)
<i>Pteridium aquilinum</i>	Bracken	V	(1-3)
<i>Plantago lanceolata</i>	Ribwort Plantain	IV	(3)
<i>Cerastium fontanum</i>	Common Mouse-ear	IV	(2)
<i>Ranunculus acris</i>	Meadow Buttercup	IV	(1-2)
<i>Luzula campestris</i>	Field Wood-rush	III	(3)
<i>Centaurea nigra</i>	Knapweed	III	(2-3)
<i>Ficaria verna</i>	Celandine	III	(2-3)
<i>Ranunculus repens</i>	Creeping Buttercup	III	(2)
<i>Hyacinthoides non-scripta</i>	Bluebell	III	(1-3)
<i>Poa pratensis</i>	Smooth Meadow-grass	III	(1-2)
<i>Poa ?trivialis</i>	Rough Meadow-grass	III	(1)
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil	II	(3)
<i>Moenchia erecta</i>	Upright Chickweed	II	(3)
<i>Polygana serpyllifolia</i>	Heath Milkwort	II	(3)
<i>Teucrium scorodonia</i>	Wood Sage	II	(3)
<i>Veronica chamaedrys</i>	Germander Speedwell	II	(3)
<i>Viola riviniana</i>	Common Dog-violet	II	(3)
<i>Achillea millefolium</i>	Yarrow	II	(2)
<i>Bromus hordaceus ferronii</i>	Soft Brome	II	(2)
<i>Cardamine pratensis</i>	Cuckoo Flower	II	(1)
<i>Cirsium arvensis</i>	Creeping Thistle	II	(1)
<i>Crepis capillaris</i>	Smooth Hawksbeard	II	(1)
<i>Fraxinus excelsior</i>	Ash (seedling)	II	(1)
<i>Galium aparine</i>	Goosegrass, Cleavers	II	(1)
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	II	(1)
<i>Leontodon autumnalis</i>	Autumn Hawkbit	II	(1)
<i>Leontodon saxatilis</i>	Lesser Hawkbit	II	(1)
<i>Rubus fruticosus</i>	Brambles	II	(1)
<i>Trifolium pratense</i>	Red Clover	II	(1)
<i>Lolium perenne</i>	Rye-grass	II	(1)

IMPROVED GRASSLAND

Species		Frequency	Domin range
<i>Trifolium pratense</i>	Red Clover	V	(3-6)
<i>Dactylis glomerata</i>	Cock's-foot	V	(3-4)
<i>Holcus lanatus</i>	Yorkshire fog	V	(3-4)
<i>Plantago lanceolata</i>	Ribwort Plantain	V	(2-3)
<i>Rumex acetosa</i>	Sorrel	V	(2-3)
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	V	(2-3)
<i>Poa ?trivialis</i>	Rough Meadow-grass	V	(2-3)
<i>Lolium perenne</i>	Rye-grass	V	(2)
<i>Bromus hordaceus ferronii</i>	Soft Brome	III	(4)
<i>Ranunculus repens</i>	Creeping Buttercup	III	(3)
<i>Achillea millefolium</i>	Yarrow	III	(2)
<i>Cerastium fontanum</i>	Common Mouse-ear	III	(2)
<i>Convolvulus arvensis</i>	Field Bindweed	III	(2)
<i>Alopecurus pratensis</i>	Meadow Foxtail	III	(2)
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	III	(1)
<i>Hypochaeris radicata</i>	Cat's-ear	III	(1)
<i>Ranunculus acris</i>	Meadow Buttercup	III	(1)
<i>Rumex acetosella</i>	Sheeps sorrel	III	(1)
<i>Trifolium dubium</i>	Lesser Trefoil	III	(1)
<i>Trifolium repens</i>	White Clover	III	(1)
<i>Vicia sativa nigra</i>	Common Vetch	III	(1)
<i>Agrostis stolonifera</i>	Creeping Bent	III	(1)

UNIMPROVED MARSHY GRASSLAND

Species		Frequency	Domin range
<i>Plantago lanceolata</i>	Ribwort Plantain	V	(3-4)
<i>Pulicaria dysenterica</i>	Common Fleabane	V	(3-4)
<i>Carex punctata</i>	Dotted sedge	V	(3-4)
<i>Ranunculus flammula</i>	Lesser Spearwort	V	(3)
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	V	(3)
<i>Holcus lanatus</i>	Yorkshire fog	V	(3)
<i>Agrostis stolonifera</i>	Creeping Bent	V	(2-3)
<i>Phragmites australis</i>	Common Reed	V	(2-3)
<i>Lotus uliginosus</i>	Greater Bird-s-foot Trefoil	V	(1-3)
<i>Trifolium pratense</i>	Red Clover	V	(1-3)
<i>Cynosyrys cristatus</i>	Crested Dogs-tail	V	(1-3)
<i>Leontodon saxatilis</i>	Lesser Hawkbit	V	(1-2)
<i>Prunella vulgaris</i>	Selfheal	IV	(2-3)
<i>Ranunculus acris</i>	Meadow Buttercup	IV	(2-3)
<i>Juncus acutiflorus</i>	Sharp-flowered Rush	IV	(1-3)
<i>Lychnis flos-cuculi</i>	Ragged Robbin	IV	(1-2)
<i>Orchis laxiflora</i>	Loose-flowered Orchid	IV	(1-2)
<i>Mentha aquatica</i>	Water Mint	III	(2-4)
<i>Paremtucellia viscosa</i>	Yellow Bartsia	III	(2-3)
<i>Agrostis capillaris</i>	Common Bent	III	(2-3)
<i>Trifolium repens</i>	White Clover	III	(1-2)
<i>Hypochaeris radicata</i>	Cat's-ear	III	(1)
<i>Oenanthe aquatica</i>	Hemlock Water-dropwort	III	(1)
<i>Rumex acetosa</i>	Sorrel	III	(1)
<i>Polygonum amphibium</i>	Amphibious Bistort	II	(1-3)
<i>Carex flacca</i>	Glaucous Sedge	II	(1-3)
<i>Cirsium palustre</i>	Marsh Thistle	II	(1)
<i>Juncus articulatus</i>	Jointed Rush	II	(1)
<i>Danthonia decumbens</i>	Heath-grass	I	(3)
<i>Dactylorhiza sp.</i>	Spotted Orchid	I	(2)
<i>Taraxacum sp.</i>	Dandelion	I	(2)
<i>Bremus hordaceus ferronii</i>	Soft Brome	I	(2)
<i>Cyperus longus</i>	Galingale	I	(2)
<i>Lolium perenne</i>	Rye-grass	I	(2)
<i>Bellis perennis</i>	Daisy	I	(1)
<i>Cerastium fontanum</i>	Common Mouse-ear	I	(1)
<i>Convolvulus arvensis</i>	Field Bindweed	I	(1)
<i>Galium palustre</i>	Marsh Bedstraw	I	(1)
<i>Equisetum arvense</i>	Field Horsetail	I	(1)

SEMI-IMPROVED MARSHY GRASSLAND

Species		Frequency	Domin range
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	V	(3-7)
<i>Plantago lanceolata</i>	Ribwort Plantain	V	(3-4)
<i>Holcus lanatus</i>	Yorkshire fog	V	(2-4)
<i>Agrostis stolonifera</i>	Creeping Bent	V	(2-3)
<i>Cynosurus cristatus</i>	Crested Dogs-tail	V	(2-3)
<i>Lotus uliginosus</i>	Greater Bird-s-foot Trefoil	V	(1-7)
<i>Trifolium pratense</i>	Red Clover	V	(1-3)
<i>Equisetum arvense</i>	Field Horsetail	IV	(3)
<i>Ranunculus repens</i>	Creeping Buttercup	IV	(1-3)
<i>Trifolium repens</i>	White Clover	IV	(1-3)
<i>Cyperus longus</i>	Galingale	IV	(1-10)
<i>Ranunculus acris</i>	Meadow Buttercup	III	(2)
<i>Orchis laxiflora</i>	Loose-flowered Orchid	II	(1-3)
<i>Polygonum amphibium</i>	Amphibious Bistort	II	(1-2)
<i>Rumex acetosa</i>	Sorrel	II	(1-2)
<i>Lolium perenne</i>	Rye-grass	II	(1-2)
<i>Dactylorhiza sp.</i>	Spotted Orchid	II	(1)
<i>Hypochaeris radicata</i>	Cat's-ear	II	(1)
<i>Ranunculus flammula</i>	Lesser Spearwort	I	(3)
<i>Juncus effusus</i>	Soft Rush	I	(3)
<i>Lychnis flos-cuculi</i>	Ragged Robbin	I	(2)
<i>Oenanthe aquatica</i>	Hemlock Water-dropwort	I	(1)
<i>Trifolium dubium</i>	Lesser Trefoil	I	(1)

DUNE GRASSLAND

Species		Frequency	Domin range
<i>Festuca rubra</i>	Red Fescue	V	(4-6)
<i>Plantago lanceolata</i>	Ribwort Plantain	V	(2-3)
<i>Dactylis glomerata</i>	Cock's-foot	V	(2-3)
<i>Bellis perennis</i>	Daisy	V	(1-3)
<i>Plantago coronopus</i>	Buck's-horn Plantain	V	(1-3)
<i>Sedum acre</i>	Biting Stonecrop	V	(1-3)
<i>Thymus polytrichus</i>	Wild Thyme	IV	(3-5)
<i>Ononis repens</i>	Common Rest-harrow	IV	(2-3)
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil	IV	(1-3)
<i>Daucus carota</i>	Wild Carrot	IV	(1-2)
<i>Leontodon saxatilis</i>	Lesser Hawkbit	IV	(1-2)
<i>Koeleria macrantha</i>	Crested Hair-grass	IV	(1-2)
<i>Ranunculus bulbosus</i>	Bulbous Buttercup	III	(3)
<i>Luzula campestris</i>	Field Wood-rush	III	(2-3)

<i>Achillea millefolium</i>	Yarrow	III	(1-3)
<i>Cerastium diffusum</i>	Sea Mouse-ear	III	(1-3)
<i>Galium verum</i>	Lady's Bedstraw	III	(1-3)
<i>Carex arenaria</i>	Sand Sedge	III	(1-3)
<i>Scilla autumnalis</i>	Autumn Squill	III	(1-3)
<i>Homalothecium lutescens</i>		III	(1-3)
<i>Myosotis ramosissima</i>	Early Forget-me-not	III	(1-2)
<i>Spiranthes spiralis / Centaurium</i>	Autumn Lady's-tresses / Centaury	III	(1-2)
<i>Carex caryophyllea</i>	Spring Sedge	II	(3)
<i>Pleurochaete squarrosa</i>	A moss	II	(1-3)
<i>Hypochaeris radicata</i>	Cat's-ear	II	(1)
<i>Trifolium sp.</i>	Clover	II	(1)
<i>Valerianella sp</i>	Cornsalad	II	(1)
Bare Ground		II	(<10%)
<i>Cochlearia danica</i>	Danish Scurvy-grass	I	(3)
<i>Carex flacca</i>	Glaucous Sedge	I	(3)
<i>Raphanus raphinistrum maritimus</i>	Sea Radish	I	(2)
<i>Silene uniflora</i>	Sea Champion	I	(2)
<i>Bromus hordaceus ferronii</i>	Soft Brome	I	(2)
<i>Catapodium marinum</i>	Sea Fern-grass	I	(2)
<i>Elytrigia atherica</i>	Sea Couch	I	(2)
<i>Scorpiurum circinatum</i>	A moss	I	(2)
<i>Pteridium aquilinum</i>	Bracken	I	(1)
<i>Arenaria serpyllifolia</i>	Thyme-leaved Sandwort	I	(1)
<i>Convolvulus arvensis</i>	Field Bindweed	I	(1)
<i>Erodium cicutarium</i>	Common Storks-bill	I	(1)
<i>Geranium molle</i>	Dove's-foot Crane's-Bill	I	(1)
<i>Ranunculus repens</i>	Creeping Buttercup	I	(1)
<i>Salvia verbenaca</i>	Wild Clary	I	(1)
<i>Saxifraga tridactylites</i>	Rue-leaved Saxifrage	I	(1)
<i>Senecio jacobaea</i>	Common Ragwort	I	(1)
<i>Taraxacum sp.</i>	Dandelion	I	(1)
<i>Vicia sativa nigra</i>	Common Vetch	I	(1)
<i>Anacamptis pyramidalis</i>	Pyramidal Orchid	I	(1)
<i>Poa ?trivialis</i>	Rough Meadow-grass	I	(1)
<i>Hypnum sp</i>	A moss	I	(1)
<i>Cladonia sp</i>	A lichen	I	(1)

COASTAL GRASSLAND

Species		Frequency	Domin range
<i>Festuca rubra</i>	Red Fescue	V	(2-6)
<i>Dactylis glomerata</i>	Cock's-foot	V	(1-6)
<i>Plantago lanceolata</i>	Ribwort Plantain	V	(2-4)
<i>Bromus hordaceus ferronii</i>	Soft Brome	V	(2-3)
<i>Armeria maritima</i>	Sea Pink	V	(1-4)
<i>Daucus carota</i>	Wild Carrot	V	(1-3)
<i>Scilla autumnalis</i>	Autumn Squill	V	(1-3)
<i>Plantago coronopus</i>	Buck's-horn Plantain	IV	(1-4)
<i>Silene uniflora</i>	Sea Campion	IV	(1-3)
<i>Leontodon saxatilis</i>	Lesser Hawkbit	IV	(1-3)
<i>Cerastium diffusum</i>	Sea Mouse-ear	IV	(1-3)
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil	IV	(1-3)
<i>Sedum anglicum</i>	English stonecrop	III	(2-3)
<i>Catapodium marinum</i>	Sea Fern-grass	III	(1-3)
<i>Polycarpon tetraphyllum</i>	Four Leaved Allseed	III	(1-2)
<i>Aira praecox</i>	Early hair grass	III	(1-2)
<i>Carex arenaria</i>	Sand Sedge	II	(3)
<i>Cochlearia danica</i>	Danish Scurvy-grass	II	(2)
<i>Ononis repens</i>	Common Rest-harrow	II	(1-3)
<i>Vulpia bromoides</i>	Squirreltail Fescue	II	(1-3)
<i>Euphorbia portlandica</i>	Portland Spurge	II	(1-2)
<i>Jasione montana</i>	Sheep's-bit	II	(1-2)
<i>Hypochaeris radicata</i>	Cat's-ear	II	(1-2)
<i>Festuca sp</i>	Red fescue (blue variety)	II	(1-2)
<i>Sonchus oleraceus</i>	Smooth Sow Thistle	II	(1)
<i>Holcus lanatus</i>	Yorkshire fog	II	(1)
<i>Hypochoeris glabra</i>	Smooth Cat's ear	II	(1)
<i>Senecio vulgaris var denticulata</i>	Rayed Groundsel	II	(1)
<i>Mibora minima</i>	Early sand grass	II	(1)
<i>Agrostis capillaris</i>	Common Bent	II	(1)
Bare Ground		II	(<10%-4)
<i>Scleropodium cespitans?</i>	A moss	I	(6)
<i>Cardus tenuiflorus</i>	Slender Thistle	I	(3)
<i>Aira caryophyllea</i>	Silver Hair-grass	I	(3)
<i>Sagina procumbens</i>	Procumbent Pearlwort	I	(3)
<i>Trifolium ornithopodioides</i>	Fenugreek	I	(3)
<i>Erodium cicutarium</i>	Common Storksbill	I	(2)
<i>Myosotis ramosissima</i>	Early Forget-me-not	I	(2)
<i>Montia fontana</i>	Blinks	I	(2)
other		I	(2)
<i>Cladonia foliacea</i>	A lichen	I	(2)
<i>Beta vulgaris maritima</i>	Sea Beet	I	(1)
<i>Crepis capillaris</i>	Smooth Hawksbeard	I	(1)
<i>Cytisus scoparius ssp maritimus</i>	Prostrate brome	I	(1)
<i>Erodium moschatum</i>	Musk Stork's-bill	I	(1)

<i>Lotus subliflorus</i>	Hairy Bird's-foot-trefoil	I	(1)
<i>Rumex acetosa</i>	Sorrel	I	(1)
<i>Rumex acetosella</i>	Sheeps sorrel	I	(1)
<i>Silene dioica</i>	Red Champion	I	(1)
<i>Trifolium campestre</i>	Hop Trefoil	I	(1)
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	I	(1)
<i>Isoetes histrix</i>	Land Quillwort	I	(1)
<i>Anagallis arvensis</i>	Scarlet Pimpernel	I	(1)
<i>Moenchia erecta</i>	Upright Chickweed	I	(1)
<i>Radiola linoides</i>	Allseed	I	(1)
<i>Sagina apetala</i>	Annual Pearlwort	I	(1)
<i>Sagina maritima</i>	Sea Pearlwort	I	(1)
<i>Cladonia rangiformis</i>	A lichen	I	(1)

COASTAL HEATHLAND

Species		Frequency	Domin range
<i>Erica cinerea</i>	Bell Heather	V	(4-9)
<i>Leontodon saxatilis</i>	Lesser Hawkbit	V	(1-3)
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil	V	(3)
<i>Rumex acetosa</i>	Sorrel	V	(1)
<i>Teucrium scorodonia</i>	Wood Sage	V	(1)
<i>Agrostis capillaris</i>	Common Bent	V	(3-4)
<i>Festuca rubra</i>	Red Fescue	V	(3-4)
<i>Holcus lanatus</i>	Yorkshire fog	V	(1-2)
<i>Plantago lanceolata</i>	Ribwort Plantain	IV	(1-2)
<i>Polygana vulgaris</i>	Common Milkwort	IV	(1)
<i>Sedum anglicum</i>	English stonecrop	IV	(1-2)
<i>Luzula campestris</i>	Field Wood-rush	IV	(2-3)
<i>Scilla autumnalis</i>	Autumn Squill	IV	(1)
<i>Cladonia sp</i>	A lichen	IV	(1-5)
<i>Calluna vulgaris</i>	Ling	II	(6)
<i>Hypochaeris radicata</i>	Cat's-ear	II	(1)
<i>Plantago coronopus</i>	Buck's-horn Plantain	II	(1)
<i>Vicia sativa nigra</i>	Common Vetch	II	(1)
<i>Viola riviniana</i>	Common Dog-violet	II	(3)
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	II	(3)
<i>Dactylis glomerata</i>	Cock's-foot	II	(3)
<i>Hypnum sp</i>	A moss	II	(3)