Department of the Environment—Jersey

Habitat Management Objectives Review
July 2013

Penny Anderson Associates Ltd
Consultant Ecologists

DEPARTMENT OF THE ENVIRONMENT - JERSEY

HABITAT MANAGEMENT OBJECTIVES REVIEW JULY 2013

Penny Anderson Associates Limited
'Park Lea'
60 Park Road
Buxton
Derbyshire
SK17 6SN

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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed

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1 INTRODUCTION

1.1 Objectives

1.1.1 The aim of this exercise is to undertake a review of the existing habitat monitoring objectives (HMO) for eight or nine different habitats or locations in Jersey. The HMO are:

- dwarf shrub heath at Les Landes;
- mature gorse at Les Landes;
- *Molinia* bog on Les Landes;
- scrub habitats;
- mixed woodland;
- maritime acidic grassland – two different versions;
- dune grassland at les Blanches Banques;
- mature/rank grassland at Les Blanches Banques.

1.1.2 The remit provided asks for a professional opinion on how closely the HMOs match the stated objectives for habitat monitoring. For each HMO provided, a view on whether the objectives are fit for purpose in describing the state of the habitats is required, along with any ideas on whether they can be improved or simplified so that they can be used by the non-specialist who is unfamiliar with the locations where the monitoring is being undertaken, without reducing their effectiveness. A view is required on whether the HMO and the methodology described is sufficient to assess the condition of the habitats on the sites being monitored. Finally, an opinion is needed on whether it is better to have several, different, site-based objectives for a habitat type or a single objective that would fit a range of acceptable change states across the Island.

1.1.3 The two HMO for Les Blanches Banques will be considered in the project related specifically to the whole dunes monitoring.

1.2 The Approach

1.2.1 The approach has been to review the HMO provided in the light of personal knowledge of the sites, with reference to the previous surveys undertaken by Penny Anderson Associates Ltd (PAA) in Jersey, and against the background of other monitoring objectives produced by JNCC for the country agencies for condition monitoring SSSIs in Great Britain (JNCC 2004), and the simpler versions for farmers to assess habitat condition when applying for agri-environment support (Natural England 2010). In addition, PAA was instrumental in developing a number of condition monitoring protocols prior to those developed by the former English Nature and JNCC.

1.2.2 Each of the HMOs provided are reviewed in the following sections but the review starts with consideration of the process in general rather than any specific habitats, seeking to answer the questions on the adequacy of the HMOs in assessing condition of habitats and whether one HMO could be applied to more than one site across the Island.

2 THE CONDITION MONITORING PROCESS

2.1 Introduction

2.1.1 It is assumed that the HMO have some key functions:

- they should be able to identify whether key features of sites that have been scheduled are still present or not;
- they should be repeatable so that change in the condition of features can be identified confidently over time;
- they act as markers for interventions where needed to direct change (remove invasive species, introduce grazing, reduce scrub etc);
- they should be repeatable by different assessors in the field in the same way so that there is confidence in any change recorded.

2.1.2 Although most of the HMOs so far undertaken have been used to develop baseline data, the need to re-assess on a cycle (eg of six years) needs to be considered at the same time so that the methodology is appropriate for this later use as well. It is in this arena that most of the generic comments arise since a high level of confidence in the data obtained is essential, both for reporting at a Government level on value for money but also for assessing progress with site care and maintenance as well as future monitoring cycles with the same reporting objectives. Developing a robust system needs to be at the heart of nature conservation management and administration in the DoE in Jersey.

2.2 Site Methodology

2.2.1 None of the HMOs provided give any instructions on how to undertake the assessment when on site. On the basis that different surveyors will be undertaking the assessments in the next round and that even the Nature Conservation Officers could be different with no memory of the recent application of the HMOs, it is considered essential to have written instructions – either generic or modified for each habitat or site as appropriate. It is also assumed that there are or will be management plans for each site with the desired vegetation types/habitats agreed. There needs to be some flexibility in this for sites that are dynamic – e.g. gorse patches or bracken can move around and be affected by salt spray and storms, leading to new distribution of habitats as has been witnessed on Les Landes and Les Blanches Banques after the 1990 storms.

2.2.2 The minimum requirements for the HMO instructions should be:

- take a plan of the site with the desired vegetation shown and another with the existing vegetation. Where the assessment requires an assessment of extent compared with that at a particular date on an air photograph, there needs to be a site map with this extent shown;
- the site map of the habitat concerned should be divided into patches or units based on habitat and site boundaries, giving an area of not more than about 1-5ha for each assessment. The assessment should be repeated across all units of the same habitat until the site coverage is completed. All units should be numbered on the maps, each map should be dated, with the surveyor's name added. The same unit numbers should be used

and should relate to the CMS. All this can be accomplished in hand held GIS units if available, or be added onto the GIS system to develop the map and to add the survey results;

- the HMO should be applied systematically across each unit using a W or multiple W walk. This route should be roughly marked on the field map so that future comparisons can be made more easily;
- where quadrat data (e.g. species or observations in a 2m circle round the surveyor) are required, the stopping points should be at regular intervals to avoid bias and be marked on plans (use GPS or aerial photographs to mark these approximately);
- where larger scale observations are needed, mark the stopping point and rough circle of view on the maps/aerial photographs;
- label each stopping point with a number which matches that used in the notes;
- complete the required observations – it would be useful to provide a table against the observations required to minimize pieces of paper or fields on the computer;
- sum the results to give the overall frequency of meeting each objective if more than one stopping point is required;
- take, record locations of and present representative photographs of the habitat and its condition for future reference.

2.2.3 The worked example of the habitats on Noirmont that has been provided shows that where a site has numerous habitat patches of the same kind, then each is labelled in sequence. However, if 2m circle or square quadrats are also needed, these need labelling for each patch. Where patches are small, then the assessment can be for the whole patch, but this needs to be stated in the instructions so that all surveyors over the years undertake the assessment in the same way.

2.2.4 Unless the Noirmont assessment is only the summary, it is also important to report at the quadrat scale, with the totals summed from these for each patch to show where the criteria were met or failed in each area. If species are being identified as being present, which ones should be recorded in the report back process so that future surveyors can see which had been present in previous assessments. This would help reveal if any species were being lost from the site or a patch on the site or not.

2.2.5 It is also important to be clear on how a site or habitat patch might be meeting favourable conservation status. A percentage quality guide is given in most HMOs. This should relate to the proportion of the habitat patch meeting the guide quality indicator, not that 85% (or whatever number is chosen) of the criteria should be met.

2.2.6 Some guidance will be needed on the time of year to undertake the assessments. This needs to coincide with the main flowering or fruiting period of the more difficult species to identify that have been included. In addition, repeat assessments need to be carried out at the same time as the previous ones to make comparison more effective and informative. The ideal time is likely to be sometime in the late spring to early autumn, depending on the habitats involved.

2.3 Single or Composite HMOs

2.3.1 Having reviewed all the HMOs provided and started to develop others for new habitats, mostly multiple sites with the same kind of habitat, it has become clear that it should be possible to

adopt single habitat HMOs that would cover more than one site across the Island. There are general objectives that are independent of location, but there may be particular species or features found in only restricted locations that could be added for particular sites. Thus some HMOs may have generic requirements and specific ones for particular sites. If the overall HMO is developed with this in mind, then particular criteria can be downloaded and others deleted for just one or two of the criteria to be assessed. This would allow greater familiarity with the HMO across the habitat type for surveyors, whilst at the same time identifying special features on a site.

2.3.2 There is an additional problem where single habitat HMOs are used in that there are many small patches of vegetation that do not directly fit into those that have already been developed. For example, there are small patches of rocks with scrub, coastal heath or grassland or variants on these all along the coasts, there are small patches of neutral grassland, springs, tall herbs and flushes along the cliffs. There are path edges of trampled vegetation which can be quite rich. These habitat variations, often on a small scale, provide much diversity for sites and add significantly to overall species richness. Decisions will need to be made on whether each habitat is important enough to warrant its own HMO, bearing in mind that many might need to be completed for large, complex sites.

2.4 Meeting Objectives

2.4.1 One requirement of this overview is to judge whether the objectives are fit for purpose in describing the state of the habitats. The answer in general is that the HMOs tend to be too simplistic and fail to capture sufficient of the essence of the site or habitat. Some suggestions have been made to increase the criteria under review for each habitat type in the following sections. Many of the criteria selected cover some aspects of the habitat features, but there are others that are also important that would give a better picture of condition.

2.4.2 It is appreciated that the condition assessments may be undertaken by non-professionals or those with less than ideal site or species knowledge, but the assessment is fundamental to the future successful nature conservation of the site and its habitats and is the pillar on which success of the application of the CMS is based. From this point of view, it is regarded as essential that site assessors have enough ecological and species knowledge to be able to recognise the attributes and assess their condition. If there is doubt in identification ability of the few species selected (and some are easily confused with similar, possibly more common species), then confidence in the assessment will be reduced and comparison with later surveys will be less robust. This could be critical in assessing favourable or unfavourable condition.

2.4.3 The outcome is therefore a strong recommendation that only surveyors who are competent should undertake the site/habitat assessments, and that if this is inadequate, a training programme is instigated to reduce this and repeated regularly for new surveyors to maintain a constant and sufficiently high standard of assessment.

3 DWARF SHRUB HEATHLAND ON LES LANDES

3.1 The HMO

Extent

3.1.1 Maintaining the current extent of the heathland is an appropriate criterion, but it needs to be clear that this could be in different locations as, for example, gorse bushes establish and die, or bracken is controlled or dies for some reason. The dynamics of the habitats need to be recognised.

3.1.2 The upper limit must surely allow for the other habitats to persist on the site, so the upper limit should relate to how much of the site is occupied by other desirable habitats. If the management plan shows large areas of bracken to control or gorse to reduce, then there would be opportunities for more dwarf shrub heath to develop, but this is not limitless.

Quality

3.1.3 The 85% lower limit for quality is in line with other HMOs, and is assumed to allow for the equivalent of a pass mark with room still to improve.

Site Specific Definitions

3.1.4 Instructions are essential here to provide guidance on how to assess the dwarf shrub heath. If the units/patches of heath on Les Landes are large, then a W or multiple W walk should be used with about 10-20 stopping points regularly along it. At these stopping points, the questions can be answered. Is it assumed that the stopping points would avoid the paths? This might be acceptable, but many of the additional species listed occur at the edges of many of the paths and tracks.

3.1.5 The first question to answer is whether the dwarf shrub heath is less than 35cm high. This is very low and dwarf shrub heath further from the western coast may be taller, particularly if sheltered from salt spray and little grazed by rabbits. The essential character of the dwarf shrub heath on the site is its wind and salt-topiaried form. The question might be better phrased as 'give the proportion of the dwarf shrub heath vegetation that shows signs of growth responding to the salt spray and wind topiary (eg flattened or hummocky form, salt blasted facing the west coast, etc.). If the pass mark for this is 85% of all the samples, this would allow for areas that are more protected.

3.1.6 It is important to define dwarf shrub heath species – normally, these would be *Calluna vulgaris* (heather – note that the Latin and English names are wrongly paired and *Calluna* misspelt on the sheet), bell heather (*Erica cinerea*) and western gorse (Ulex gallii) (note that the gorse names are also wrongly paired). This is the characteristic coastal heathland community. European gorse should not be part of the dwarf shrub community, so should not be on this list. It is an invasive species on dwarf shrub heath. Prostrate broom is a useful addition, but as this is not common, needing two species at each stopping point of a 2m radius is fine, but the dwarf shrubs (including western gorse) as a whole should have a % cover of more than 40 in the quadrat. This can then be averaged out for the patch from the total number of sampling point circles.

3.1.7 Asking for at least one (but record them all) of the list of other species is fine as they are not ubiquitous and few may be available in the 2m circle. But a total of 8 from the new list with additional species added for all stopping points across all the heathland patches would be better to reflect the diversity of the site.

3.1.8 The list in the HMO needs some modification as the wrong names have been selected for some species. Dog violet is the correct species, but its Latin is *Viola riviniana*, not *V. canina* – the later is on the heathland but is very rare in Jersey, and is therefore a more important species than dog violet. You could make the identification easier by asking merely for violets, which would combine but not differentiate between the species.

3.1.9 The milkwort that occurs on the heathland is heath milkwort (*Polygala serpyllifolia*), not common milkwort (which tends to occur in more base-rich environments). Tormentil is fine. Two other species to add would be sheep's sorrel (*Rumex acetosella*) and common cat's ear (*Hypochaeris radicata*). There is also heath pearlwort which occurs on Les Landes which is easier to separate from the annual pearlworts which also occur on the heathland.

3.1.10 Wild thyme is on the list, and this tends to occur closer to the coast and with species like bird's-foot trefoil (which could equally be on the list). If this, plus English stonecrop are to be included, then annual rockrose (*Tuberaria guttata*) should also be as this is quite widespread in the central western part of the site and is on the heathland/rock/top of cliff interface. This is one of the most important species on the heathland in this list of associates.

3.1.11 If grasses are to be part of the list, the most obvious are the annual silver and annual hair grasses (*Aira caryophyllea* and *A. praecox*). Both are easy to distinguish when in flower or seed. The other main species are sheep's fescue (*Festuca ovina*) and common bent (*Agrostis capillaris*).

3.1.12 The need to record any bryophyte or lichen is acceptable (although there will be mosses that colonise after wildfire that are not desirable), as these are difficult to identify, the group is better recorded as a whole. However, it should be a separate group and their presence in addition to the higher plants already listed would be better. There are quite a few lichens and mosses on Les Landes.

3.1.13 Since rabbit grazing is fundamental to the structure and character of Les Landes heathland, evidence for grazing (rabbit faeces or suppressed growth in plants clearly resulting from grazing) in each of the 2m circles would be useful to provide a judgement on overall grazing levels.

3.1.14 The bracken and European gorse cover questions should be answered at the patch scale not the 2m circle. Bracken should not be more than 10% as indicated, but across the patch. However, it needs to be made clear how this should be measured. Since bracken is presumably covered by another HMO, then it is bracken invading the heathland that is to be assessed here. It is suggested that it should be the area of dwarf shrub heath that is invaded, rather than the bracken cover (as this could be just scattered stems within the heath). A comment on whether the bracken is scattered or more dense should be required since this will inform future management needs as well, particularly if recorded over a period of time so that invasion or natural fluctuations (it can take over from gorse after storm damage, and is sensitive to drought and frost) can be distinguished.

3.1.15 Gorse cover should relate to European gorse (*Ulex europaeus*), but this should not be more than 15% cover in the patch as a whole. It is assumed that the 70% cover used relates to western gorse not European gorse. However, western gorse is a natural component of the dwarf shrub heath here and its populations will fluctuate, along with other shrub dwarf species, with variability in climate, salt spray damage etc from one period to the next.

3.1.16 In addition to European gorse, there should be a criterion that asks for no more than 10% tree and other shrub cover at the patch scale as well. This is more relevant if this heathland HMO were to be expanded for use on other heaths, but there is scrub on the land-side of the site invading heathland.

3.1.17 Additional features to record should include the following:

- whether the patch has been burnt or not, when (if it is known) and the state of regrowth. This should note whether dwarf shrub species are recovering or not and whether the soils has been burnt as well (i.e. that the fire has been particularly damaging). This might also be an area where European gorse is invading rapidly;

- small-scale bare ground is a beneficial feature in dwarf shrub heath for a wide variety of invertebrates in particular, but also allows various plants to regenerate through seeding – its cover should be more than 1% and less than 10% of the 2m circle;

- the abundance of Yorkshire fog as a negative species is important as this tends to colonise after damaging fires, or where bracken or gorse has been removed or lost. The abundance of this should be recorded in each stopping point and averaged, but particular areas may need to be targeted for management to reduce it;

- there is also a need to understand better the dynamics of the heathland. This is based on observing whether the dwarf heath plants are regenerating or not. On Les Landes, it is difficult to observe whether plants are of different ages because of the stress of the wind and salt blasted environment. In order to have some idea of whether there is recruitment, whether there are seedling plants (say less than 3cm and simple shape with single main stem) of each of the dwarf shrub species in each of the 2m circles as well as the presence of mature plants could be recorded.

3.2 Using Les Landes Heathlands HMO for Other Sites

3.2.1 There are many parts of the HMO for Les Landes heath that would be applicable for other sites. The Extent and Quality criteria would be standard. The presence of dwarf shrubs is ubiquitous across all the heathlands, so this criterion is common to all sites, north and south plus Les Landes.

3.2.2 The list of other species needs to be modified if it were to apply to all sites, with some identified as for northern coastal heaths only and others southern ones only. Comparisons have been made of the data collected for the recent assessment of SSI potential for the Bonne Nuit/ Bouley Bay stretches of the north coast, plus surveys in the past on Les Landes, Noirmont, Portelet and La Lande du Ouest sites (although the data for these are up to 25 years old). Species that occur regularly across a number of sites are included, although some may be more on the path edges than in the heathland.

3.2.3 The list would be:

Latin	**English**	**All sites or north or southern ones only**
Agrostis capillaris	Common bent	All sites
Aira praecox	Hair grass	All sites
Carex pilulifera	Pill sedge	Northern sites plus Les Landes
Festuca ovina	Sheep' fescue	All sites
Galium saxatile	Heath bedstraw	Northern sites, not Les Landes
Hypochaeris radicata	Common cat's ear	All sites

Latin	English	All sites or north or southern ones only
Jasione montana	Sheep's-bit	All sites
Lotus corniculatus	Bird's-foot trefoil	Southern sites plus Les Landes (although present on Bonne Nuit
Molinia caerulea	Purple-moor grass	Northern sites (wet heath where it occurs on Ouaisné needs to be treated separately)
Polygala serpyllifolia	Heath milkwort	All sites
Potentilla erecta	tormentil	Northern sites only (although does occur on Noirmont)
Romulea columnae	Sand crocus	Southern sites only (but flowers and over very early so may not fit into schedules)
Sagina species	Pearlwort	All sites
Rumex acetosella	Sheep's sorrel	All sites
Teesdalia nudicaulis	Shepherd's cress	All sites
Thymus polytrichus	Wild thyme	Southern sites and Les Landes only
Tuberaria guttata	Annual rockrose	Southern sites plus Les Landes
Viola riviniana	Dog's violet	All sites

3.2.4 The number in any 2m quadrat (assuming the same approach to patch monitoring is adopted) could still be one, but all should be recorded, with a higher total (about 8-10, depending on the site) for each patch across all the stopping points.

3.2.5 The criteria related to bracken cover, European gorse cover, tree and shrub cover, extent of Yorkshire fog, amount of bare ground, age of dwarf shrub plants and evidence of fires and its recovery would apply across the sites.

3.2.6 However, the presence of bryophytes and lichens needs to be expanded for the southern sites (La Lande du Ouest, Portelet and Noirmont), where lichen cover in those patches where dwarf shrub heath and lichens are intermingled should be at least 30% in stopping points in these patches. This does not apply to any north coast site nor to Les Landes.

4 MATURE GORSE ON LES LANDES

4.1 The HMO

4.1.1 The gorse HMO focuses on cover of gorse and its structure. It should be noted that this HMO should apply to European gorse, not to Western gorse since the latter is an integral part of the dwarf shrub heath community. In terms of the extent of European gorse, this needs to be flexible in that it can (and should be able to) move around the site. Thus the total extent but not the exact locations would be a better target. If this is accepted, then the lowest limit should also be 15% below the 1996 extent to allow for dynamic change over time.

4.1.2 The quality criterion of 85% is fine provided it is achievable through natural change and management. However, it needs to be averaged across all European gorse patches as described below.

4.1.3 Assuming each main gorse patch would be evaluated separately, this needs to be stated. The stopping point is therefore the whole patch not a defined area of 2m circle etc. This means that to ensure the targets are achievable, it would be best if the 85% target is achieved as an average across all the gorse patches to reflect change (natural or through management) in certain areas all over a period of time.

4.1.4 The structure for all European gorse on Les Landes is probably too confined as it presumably was developed for Western gorse too which is much shorter. It is therefore suggested that the 25-35% of gorse 40-100cm high and the 25-35% of gorse in the 100-200cms categories are used, but that the cover of European gorse in less than 40 and over 200cms is given approximately for each patch. The total area (% cover roughly estimated) for each of these four categories should be recorded in order to average out all the gorse patches at the end of the exercise. This will also link well with the CMS and any need for management.

4.1.5 Gorse cover will need defining since the canopy can be very open or very dense and impenetrable. What grows underneath and its extent will be determined by this density. Asking for a cover of European gorse in these patches of between 60 and 80% feels about right, but the % should be recorded. It is considered valuable to state what the underlying vegetation community is rather than asking for particular types since what will persist will vary from the coastal cliffs to the inland areas. The options are therefore coastal heathland, coastal grassland, more scrub/bramble, or bracken. A range of all these across the site should be acceptable, but you might want to set criteria for no more than 10% of patches to be other scrub/bracken or bramble (or any combination of these), and more than 50% comprising heathland or grassland where there the gorse is not dense to preclude other vegetation. That leaves some flexibility on what else is recorded plus dense gorse where there is little of anything. This proposal will need to be tested on the ground.

4.1.6 If visible, it would also be worth noting whether there is a rabbit warren in the gorse patch since this is where most will be located which provides the grazing on the adjacent heathland and grasslands. This will provide a useful barometer of rabbit use between assessment years.

4.1.7 If maps of gorse patches are to be taken out into the field, the possibility of any patch being destroyed by fires needs to be added with some comment on what vegetation is replacing the gorse – more gorse, heathland, grassland, or bracken?

4.2 Wider Use of the HMO

4.2.1 The HMO could be widely used in other habitats. The only criteria that would need to be changed would relate to the desirable habitats under or associated with the European gorse – that on the dunes would be dune grassland whilst that on heathland could be similar to that for Les Landes.

5 THE *MOLINIA* BOG ON LA LANDE DU OUEST

5.1 The HMO

5.1.1 This is a very small gully where *Molinia* dominates a small bog. It may be sensible to combine this area with the marsh just near its foot and the adjacent pond since they are likely to be interlinked hydrologically and the marsh supports a wide range of species, some of which should be desirable in the *Molinia* if it can be restored adequately. This may depend on the wetness though. This needs to be explored to see if it can be manipulated and if the water quality is good.

5.1.2 Since the area is small, it might be prudent to suggest about 10 stopping points along its route to record the criteria. It is assumed that all criteria need to be met across 90% (ie. 9 out of 10) of the stops for the habitat to be in favourable condition. Alternatively, since the habitat is limited, the assessment could be of the whole patch.

5.1.3 *Molinia* is not a common species in Jersey, but its dominance in a habitat is usually regarded as negative, it being regarded more favourable when there is a greater mixture of species. It is also dependent on flushed soils with water passing though just below the surface. If bracken is invading, this suggests that the soils are too dry and the water table is lower than necessary as bracken avoids wet soils. It is therefore more important to check water sources – quantity and quality – than to remove bracken, which would reduce if the site was wet enough without human input. Similarly, if hemp agrimony is increasing in dominance, this suggests increased nitrogen input into the water source. Again, without managing this, it will be difficult to manage the hemp agrimony and any other tall, vigorous damp ground species.

5.1.4 In the light of these comments, it may be better to have a broader objective in terms of say 45-60% *Molinia* cover with the remaining being occupied by water, mosses, and flush or bog plants such as marsh pennywort, sharp-flowered rush etc. The hemp agrimony criterion then sits well within this.

5.1.5 Recording that there is no bracken, ivy or bramble is reasonable, but the percentage cover, if they occur, would also be useful to know to link with management needs.

5.1.6 The bog margin grassland seems to represent the interface between adjacent heathland and the bog and presumably also reflects the species present on the site. This level of information was not collected in the 1986 or later surveys by PAA. However, 50% hemp agrimony sounds rather overpowering right next to a *Molinia* bog and may be too high a figure. This depends on whether there are opportunities to reduce it.

5.1.7 If the marsh at the bottom of the gully is included, this requires further criteria. The vegetation should be less than 60-70cms tall, and support a range of marsh species, including:

- marsh pennywort – *Hydrocotyle vulgaris;*
- marsh thistle – *Cirsium palustre;*
- sharp-flowered rush – *Juncus acutiflorus;*
- soft rush – *Juncus effusus* (which should be less than about 20% cover);
- common fleabane – *Pulicaria dysenterica;*
- lesser spearwort – *Ranunculus flammula;*

- hemp agrimony – *Eupatorium cannabinum* (at less than 20% cover).

5.1.8 For all the habitats on this HMO there should be no trees or shrubs invading. Any present should be assessed in terms of their % cover in the habitat as a whole, rather than at the stopping points. This would then also link with management requirements.

5.1.9 There also needs to be a comments box in case the area has been burnt or shows other damaging features such as vehicle tracks, heavy trampling etc.

6 SCRUB HABITATS

6.1 The HMO

6.1.1 This HMO relates to all scrub in any habitat within the SSIs where this habitat is a feature and of importance – this may be as a habitat in its own right, or for invertebrates and birds. The criteria relate primarily to its structure and composition.

6.1.2 As for European gorse, there needs to be some flexibility in the extent criterion so that scrub can develop and move around in a habitat where this is a natural part of succession and change (as a result of salt spray on coastal grasslands for example). The overall extent is a better criterion than scrub in exactly the same places, but this will depend on what it displaces. In order to cover management of scrub patches, the criterion should be judged as the average of all the scrub patches on a site once they have all (or a subset of them) been assessed.

6.1.3 It is assumed that scrub is dense, with shrubs rather than trees present, although the latter may colonise and the patch change into woodland at some point with natural succession. Scrub is usually a habitat that the surveyor cannot walk under, compared with woodland. If this is the case, the HMO will need to cover a wide range of scrub density and height in different habitats. It is questionable that the structure provided is achievable in many of the scrub patches such as on the coastal cliffs, St Ouen's Pond, Grouville and the sand dunes. Gorse scrub is usually managed to comply with the structure given, but the gorse scrub HMO developed for Les Landes is applicable elsewhere so need not be part of this HMO. It is recommended that this HMO is for scrub excluding European gorse but that it should be suitable for all habitat types.

6.1.4 If this is accepted, then the scrub patches should be identified on the site map, and each assessed using the criteria without quadrats, but by assessing the whole patch in one.

6.1.5 If the assumptions made here hold, there seems little to gain by using structure as a criterion since most of the scrub is not managed and European gorse has been excluded. This means that some scrub will be very short from wind and salt blasting along the coast, but other patches will not be constrained in this way and will be tall and thick, such as on Les Blanches Banques and at the back of St Ouen's Pond. This points the way to have criteria that better fit this variation.

6.1.6 It is suggested that the first criterion would be better as the specified composition:

- the scrub should have a 60-90% cover for the patch;
- the species should be native and consist of shrubs not trees of at least two of the following species (list all that apply):
    - hawthorn (*Crataegus monogyna*)
    - blackthorn (*Prunus spinosa*)
    - willows (*Salix* species, except crack willow)
    - elder (*Sambucus nigra*)
    - wild privet (*Ligustrum vulgare*)
    - dog rose (*Rosa canina*)

- Broom (upright) (*Cytisus scoparius*)
- Holly (*Ilex aquifolium*);

- any open ground should support species typical of the adjacent valued habitats e.g. heathland or grassland
- if there is sufficient light beneath the scrub, woodland species should be present such as ferns, ivy, garlic mustard (*Alliaria petiolata*), wood avens (*Geum urbanum*);
- there should be no trees, e.g. Holm oak, oak, ash, sycamore, elms, cherry, pines etc. Note the cover of any trees and their species if known. (If there are trees present, then decisions would need to be made on whether to allow the scrub to develop into woodland, or to remove the trees and retain it as scrub;
- there should be no non-native shrubs eg. Rhododendron, tamarisk, apple, conifers, Japanese privet, buddleia. List all that apply and note their abundance.

6.1.7 It may be desirable to add a criterion that identifies any negative activities on the scrub such as rubbish dumping, burning, destruction, vehicle movements etc since these will then feed into the CMS.

7 MIXED WOODLAND

7.1 The HMO

7.1.1 The mixed woodland HMO covers all areas of this habitat within the SSI system in Jersey. There is no HMO for deciduous woodland, yet most of the woodland in the SSIs only includes small areas of conifers. The definition given in the Natural England Higher Level Stewardship Farm Environment Plan handbook suggests 10% cover of conifers is the threshold for a woodland still to be labelled as deciduous. Since conifers are generally not a feature of importance woodlands designated for nature conservation in Jersey except for red squirrels, then it may be better to adopt this definition and retain this HMO as that for woodland in general.

7.1.2 Assuming this to be acceptable, then the extent lower limit is fine. Its upper limit should be to unlimited unless it spread into habitats of greater value such as heathland or species-rich grasslands.

7.1.3 In terms of quality, there should be a defined number of stops such that the acceptable proportion meets them as an average. The upper limit is then 100%. It has to be asked why the threshold selected should be 75% when higher levels of attainment are expected for other habitats of equal value elsewhere on the Island. The only obvious argument would be the longer time scale for management to take effect. Nevertheless, it is felt that a target of 80% might be more consistent with other habitats.

7.1.4 As for other HMOs, it is vital that the way monitoring stops should be recorded is important. If 80% of stops are to pass, there need to be enough to calculate this. The size of the woodland would determine this, but there could be a number of different units related to stand type (beech dominant in one area, oak in another, oak/sycamore in another etc) or there could be variation in the topography changing the soils and therefore the ground flora and understory. If each stand type can be delineated and each assessed as a single entity, this would be best. However, if the wood cannot be divided then a W or multiple W walks should be undertaken through the site ensuring that the major variation is covered such as opposing valley sides, valley bottom, anywhere with rock outcrops or other distinctive features. There should be 10-20 stops per site, depending on its size, to make the percentage quality mark achievable.

7.1.5 There needs to be a clear definition of the area to be assessed at each stop or it would be easy to be biased, include positive features but avoiding those that were negative. The circle of assessment should be about 25-30m radius from the person for trees and shrubs (it will be difficult to see this far in some stands and much easier in others), and 5m radius for the ground flora. Two people surveying together can mark 25-30m from the stop and gain a feel for how far this is for judgement without measuring at future stops.

7.1.6 The woodland structure is an important feature in any wood, although obviously any criteria have to allow for woodland change over time as trees mature and fall. Either the structure will need to be adapted for each wood, or there will need to be quite a wide range in order to cover all woodlands in the SSI system.

7.1.7 The first criterion could be that 90% of the canopy should be broadleaved species not conifers, with DBH over 20cm. This size covers quite young trees since some only 15-20 years old will be larger than this, so mature is not the correct term. Establishing, mature and veteran would be an appropriate term, but if the criterion is restricted to canopy only, how large the trees are is immaterial if they have reached the canopy. Provided surveyors understand which layer the canopy is, then no more detail is needed. If an 80% threshold is required, that allows 2 out of 10 stops to have more than 10% of conifers.

7.1.8 The presence of mature and especially veteran trees is important. It is assumed that the surveyors are able to identify a veteran or ancient tree of different species – there is useful guidance in the JNCC Common Standards Monitoring for woodland. The criterion should be worded to record any veteran trees found in each unit, and for these still to be present when next assessed, or others retained to take their place when death and decay take over.

7.1.9 Asking for >70% of the canopy to be dappled shade is not an easy criterion to judge. Leaf density will vary with season, disease, climate etc and some trees may be much leafier in one year than another. It might be preferable, therefore, to adopt a criterion related to the sub-canopy/understory that is dependent on the consistency of this dappled canopy. Thus a better criterion could be to have the understory/sub-canopy (the layer that is about 2-5m high) to have at least a 20% cover in each unit or at each monitoring stop. The 20% should cater for relatively thick woods, although this cannot be expected under a dense beech canopy.

7.1.10 A criterion that refers to seedling growth could be expanded to encompass the age structure of the wood as well. Thus, signs of seedlings growing into saplings (i.e. that both seedlings and saplings are present) of native species sufficient to maintain the canopy density and species range should be noted. List the species in this category.

7.1.11 Another structural feature is dead wood. There should be at least one dead tree >20cm diameter per unit (either fallen or hung partly fallen), with plenty of small pieces (5-50cm long) within each 25m radius circle on the ground. Scarce amounts of even this size in the smaller area would be a poor result and not meet the target.

7.1.12 The better value woodlands will be dominated by native species. In Jersey, there are some species that will be tolerated and others regarded as invasive or non-native and undesirable. Using the Flora of Jersey (Le Sueur 1984), the lists of trees and shrubs could be regarded as follows (this does not cover all species, but those found in the main woods of value):

Native or probably native	Tolerated, not or possibly not native	Introduced and undesirable
Ash	Sycamore	Horse chestnut
Aspen	Silver birch	Monterey cypress
Alder	Beech	Norway spruce
Holm oak	Downy birch	Other poplars
Pedunculate oak	Hornbeam	Turkey oak
Sallow and other bushy willows	Field maple	Western red cedar
Hawthorn	Yew	Common lime
Holly	Common dogwood	Buddleia
Crack Willow	Medlar	Snowberry
Elder	Yew	Apple

Native or probably native	Tolerated, not or possibly not native	Introduced and undesirable
Elms	Rowan	Cherry laurel
Sweet chestnut	Cherry	Rhododendron
Dog rose		Spotted laurel
Field rose		
Hazel		
Blackthorn		

7.1.13 Local experience may need to be used to alter the list (sycamore is not always acceptable for example, but is so abundant in some of Jersey's woods that it may need to be tolerated for practical reasons). The criterion should be to have 90% or more of the wood canopy and understory dominated by the species in the first two columns above and <10% by those in the last column. The abundance of native, tolerated and undesirable species should be noted for future comparison. This assessment is ideally carried out in a stand or unit rather than a stopping point, but the latter would be acceptable if there are enough of them. The results of this will also lead to management needs in each stand or unit.

7.1.14 The ground flora in the woods is an important element. It would not seem to be useful to target bracken and bramble as both are abundant throughout the woods. Since they are a natural component and not easy to manage, it might be better to note the more desirable species rather than focus on those that are already abundant and which are unlikely to change significantly. It is therefore suggested that the following species are scored for each stop/unit:

Scientific name	English name	General abundance in high value woodlands
Athyrium felix femina, Dryopteris felix mas & D. dilatata, Phyllitis scolopendrium, Polystichum spp, Polypodium	Larger terrestrial ferns (lady fern, male fern, broad buckler fern, harts tongue, shield ferns, polypody,	Generally abundant
Arum spp	Lords and Ladies – all spp	Italian spp feature of Jersey, rare
Carex spp	Sedge spp, pendulous sedge, remote sedge, wood sedge	Rare – need to note presence
Chrysosplenium oppositifolium	Opposite-leaved golden saxifrage	Only in wet areas, therefore distinctive there
Circaea lutetiana	Enchanter's nightshade	frequent
Conopodium majus	pignut	Rare to occasional, but ancient woodland indicator

Scientific name	English name	General abundance in high value woodlands
Digitalis purpurea	foxglove	Rare to frequent
Euphorbia amygdaloides	Wood spurge	Rare to occasional
Geranium robertianum	Herb Robert	frequent
Geum urbanum	Herb Bonnet	occasional
Hyacinthoides non-scripta	bluebell	Frequent
Iris foetidissima	Stinking iris	Occasional
Lamiastrum galeobdolon	Yellow archangel	Locally abundant St Catherine's, possible ancient woodland indicator
Lonicera periclymenum	Honeysuckle	Abundant
Mercurialis perennis	Dog's mercury	Locally frequent, St Catherine's, possible ancient woodland indicator
Oxalis acetosella	Wood sorrel	Absent to occasional
Primula vulgaris	Primrose	Rare
Ruscus aculeatus	Butcher's broom	Occasional to frequent
Silene dioica	Red campion	Frequent
Stellaria holostea	Greater stitchwort	Rare to Frequent
Viola riviniana	Common dog violet	Only violet likely to be seen, absent to locally frequent

7.1.15 Ideally this list should be separated for different woods using the amalgamated surveys so that the distinctiveness of each can be assessed. It is the ground flora that is likely to reflect the variation in soils and slopes more than the canopy. Once listed for each wood, the burden of species identification reduces, but those chosen are generally grouped (eg larger ferns) or are fairly well known and distinctive. Grasses have been omitted, but some sedges have been included since these are important species in the woods. If the surveyors can identify which are present (there are not many species in this habitat), that would be helpful since pendulous sedge is rare in Jersey and very distinctive to identify.

7.1.16 Species that are cosmopolitan and not distinctive in woods or are difficult to determine have been omitted. Focus has been placed on species that are distinctive woodland ones and not common in other habitats.

7.1.17 The criterion should be to record more than three in the list from each stopping point or five from each stand/unit when this is larger than the 25m radius suggested for the stopping points. This needs to be tested and may be able to be raised, or increased in the richer woods, which would again test their distinctiveness against other sites.

7.1.18 An additional criterion, already in the HMO, that would be useful would be the presence of polypody, mosses and lichens on the tree trunks – at least occasional on the trees at the stopping point – the abundance should be stated – i.e. on every tree, on half or less etc of trees. The total cover is an important possible indicator of change such as in air pollution or rainfall/humidity in the woods.

7.1.19 An additional related criterion should be for ground cover of mosses to be at least occasional – with the cover stated for future comparison.

7.1.20 A criterion should be added to relate to the ground cover of any invasive, undesirable species. The species, abundance and location should be noted of any, not only at stopping points but throughout the wood. The main ones in the surveys are periwinkle (*Vinca* spp) and winter heliotrope (*Petasites hybridus*), and these are generally well-established and spreading. The incidence of Spanish bluebell and various forms of daffodils are invasive but may be acceptable in Jersey as they are so widespread. Nevertheless there should be concerns where Spanish bluebells are close to their wild cousin in case of genetic dilution of the native species if they were to hybridise. There may be other species that are better known locally that need to be added to this list.

7.1.21 The last criterion on the HMO relates to local distinctiveness. This has been covered to a degree by the suggestion to tailor the ground cover to species found in the individual woods. If there are other features, then these need to be spelt out and added to the HMO.

7.1.22 A final criterion should note any undesirable features that could lead to damage and will need management. These could include vehicle tracks that are unauthorised, rubbish dumping, garden waste (a major source of invasive species), water pollution (such as septic tanks or discharge polluting streams), unauthorised stock grazing or other damaging features.

8 MARITIME GRASSLAND

8.1 The HMO

8.1.1 There are two HMOs for coastal grassland, the difference between them being the percentage of vegetation that should meet the criterion for the quality target, one suggesting 40% of the vegetation being maritime grassland and 80% of site meeting the criterion, while the second suggests 60% of the vegetation being maritime grassland. The size of the radius at stopping points also differs in the long grassland along with the height of the short grassland.

8.1.2 The HMO criteria focus on the character of the vegetation in terms of structure as well as species composition. Two types of grassland, long and short have been differentiated. The HMOs are designed to cover the maritime grassland in the North Coast SSIs, on Les Landes and on the south coast where this habitat occurs on Noirmont, Portelet and La Lande du Ouest. 'Acid' in the label for the HMO is misleading as it is designed to cover all coastal grasslands. These are varied and can be more acidic with common bent and sheep's fescue as the main grasses, or more base-rich with red fescue and a wider mixture of coastal plants like thrift, sea campion and wild carrot in the sward. This depends on the extent of the influence of salt spray and the underlying rock type. The key feature is that the sward consists of grassland with species characteristic of the salt spray influence of the maritime environment. This differentiates the vegetation from other grasslands inland where these maritime species are missing.

8.1.3 The species listed do not all occur on the same site, nor always together in the coastal grassland communities and may be better modified to include the main species and some special ones for particular areas. In addition, it may be better to have only one grassland length since when and where grazing occurs depends mostly on rabbits except on the few areas where sheep or pony grazing have been re-established on the north coast. The height of the grassland could instead be inferred through indicator species or a commentary on grazing levels.

8.2 The Vegetation

8.2.1 The coastal grasslands can be understood by considering the degree of exposure to salt spray, the rock types on which they occur and the grazing levels. On the west coast of Les Landes where the salt spray effects are greatest, the coastal grasslands can extend further up the cliffs, whereas on the more sheltered north coast, coastal grasslands may be much more limited and do not extend up the cliffs to the same extent (rather many are dominated instead by bracken).

8.2.2 The classic coastal grassland in Jersey comprises a mixture of red fescue and thrift. This is the main community that is affected most by salt spray and can occur close to the sea just above the coastal cliffs where the vegetation is sparse, with more rocks exposed. This maritime grassland community often also contains, but is not dominated by Yorkshire fog, but other species such as sorrel, common cat's ear, ribwort and stag's horn plantains and different pearlworts also occur. This is a key maritime grassland component in the National Vegetation Classification (NVC - Rodwell 2000) which seems to fit the main communities in Jersey. There is also a red fescue/Yorkshire fog community in the NVC as well which tends to occur further away from salt spray than the thrift community, but this has very few other species associated with it except for ribwort plantain and thrift. However, there is a more species-rich yarrow sub-community of this vegetation type with common bent, lady's bedstraw, sea plantain, common cat's ear and tormentil. A version of this also occurs in Jersey.

8.2.3 In order to appreciate the range of these communities in Jersey, all the main species in coastal grasslands recorded in PAA surveys since 1986 have been amalgamated. This reveals that there

is a list of main species that occur in most of the sites, but which may be more abundant in some than others. There are many species that occur only in a few or one site, and a few that are quite distinctive in their northern or southern distribution. This provides the basis for modifying the HMO.

8.3 The Proposed Changes to the HMO

8.3.1 The HMO should focus on all coastal grassland whether it is acidic or base-rich. This needs to be differentiated from neutral grassland which tends to be dominated by coarser grasses like Yorkshire fog and cock's-foot without the fescues. The latter type tends to be further from the salt spray effect as well.

8.3.2 The Conservation Objective for maintenance management should therefore be 'To maintain the maritime grassland habitat in favourable condition'. If the Objective is also for restoration management, then this should be included, but the Conservation Objective as stated on the form currently is for maintenance management only.

8.3.3 The Lower Limit for Extent is fine as the 1996 aerial photograph assuming that there are not areas where restoration is required. The Upper limit is not set, but presumably will need to incorporate areas where coastal grassland should be restored.

8.3.4 The quality criterion needs to be re-set since the two versions offer different thresholds. The issue of 40% or 60% of the vegetation being coastal grassland can be overcome by making a judgement on the proportion for each patch before starting the assessment and then only assessing the coastal grassland proportion on this form. PAA's surveys suggest that coastal grassland is not often mixed with other communities – only coastal heathland and scrub – the heathland is a feature of importance in its own right. It is suggested therefore that the HMO for coastal grassland has as a first question an assessment of the proportion of coastal grassland in the patch and proportion of what other habitats are also present that cannot be easily separated out at the scale the vegetation is mapped. This other vegetation may need to be subject to a different assessment sheet. The mixture of vegetation types is in itself often of value (eg coastal grassland mixed with coastal heathland is a desirable mixture), so the proportion that is one or the other is not really material to the assessment and is likely to vary from year to year depending on environmental conditions and the weather (salt-laden gales can reduce heathland for a few years for example).

8.3.5 As many of the patches of coastal grassland are small and discrete, but occur regularly within the sites concerned, the 80% of the area meeting the criteria seems to be appropriate and would match, in terms of the overall objective, those applied for other important vegetation types in the SSIs. There are not many factors that would result in unfavourable condition apart perhaps from lack of grazing, so it would support a high threshold.

8.3.6 It is recommended that there is no differentiation between short and tall grassland. This is difficult to define owing to the time of year the assessment may be carried out, which may or may not include the flowering period of the taller plants like some of the grasses, and may be affected by drought, winter salt spray as well as grazing pressure.

8.3.7 It is also recommended that the sample unit is the patch, or a division of a larger area of coastal grassland into smaller patches. An area of about 0.5-1ha should be manageable. This avoids the need for the 1m or 2m diameter stopping point.

8.3.8 The first criterion can then relate to the structure of the grassland and factors affecting this.

Grassland proportion in patch (these should stay roughly the same from survey to survey)	Proportion of coastal grassland Proportion of coastal heathland Proportion of scrub Proportion of maritime cliff
Grassland structure in patch (this can vary from year to year, it provides an idea of structure without it being a criterion)	Proportion of grassland under 10cms (excluding grass flowering stems) Proportion of grassland over 10cms (excluding flowering grass stems) Presence of rabbits (note abundance and spread of droppings), ponies and /or sheep
Flowering (a criterion that reflects grazing levels and is related to structure)	Grassland plants (including grasses) should have over 60% in bud, flower or seed

8.3.9 There should also be a criterion that sets out the tolerance limits for scrub within the grassland. This should be no more than 10% of bracken, gorse, blackthorn or other tall scrub species (ie not the shrubs that occur on dwarf shrub heath). There should be no trees either.

8.3.10 The next criterion should relate to the standard species likely to be present in most of the coastal grassland patches. These form the bulk of the vegetation. They should together be present over at least 60% of the coastal grassland patch (excluding the other habitats that might be present) and at least 10 should be present on each site. Their abundance should be marked (dafor) for the baseline survey and compared with this in future surveys. The species are:

Aira caryophyllea	Silver hair-grass	*Lotus corniculatus*	Bird's-foot trefoil
Aira praecox	Early hair-grass	*Rumex acetosa*	Common sorrel
Anthoxanthum odoratum	Sweet vernal grass	*Plantago coronopus*	Buck's-horn plantain
Armeria maritima	Sea pink	*Sagina spp*	Pearlworts
Cochlea danica	Danish scurvy-grass	*Sedum anglicum*	English stonecrop
Festuca rubra or ovina	Fine leaved fescues	*Silene uniflora*	Sea campion
Hypochaeris radicata	Common cat's-ear	*Umbilicus rupestris*	Navelwort
Jasione montana	Sheep's-bit	*Viola riviniana*	Common dog's violet
Leucanthemum vulgare	Ox-eye daisy		Mosses (on the ground)
			Lichens (on the ground)

8.3.11 A second criterion related to floristic diversity would be relevant that would differentiate the sites better and ensure that the special species are present. Again, dafor or even head counts of rare species should be added for the baseline surveys for future comparison. At least 3 species for the northern sites, 4 or 5 for the south coast and 10 for Les Landes should be present. For Les Landes, as the main distinguishing and rare species (in Jersey) are listed, these should be surveyed each time and their distribution noted. The same or a greater extent or population should be present in future assessments.

Sites		
North Coast	**South Coast**	**Les Landes**
Mouse-ear hawkweed, *Hieracium peleteriana*	Scarlet pimpernel, *Anagallis arvensis*	Scarlet pimpernel, *Anagallis arvensis*
Nottingham catchfly, *Silene nutans*	Early sand-grass, *Mibora minima*	Early sand-grass, *Mibora minima*
Ivy, *Hedera helix*	Mossy stonecrop, *Crassula tillaea*	Mossy stonecrop, *Crassula tillaea*
Hare's foot clover, *Trifolium arvense*	Annual rockrose *Tuberaria guttata*	Annual rockrose *Tuberaria guttata*
		Horse-shoe vetch, *Hippocrepis comosa*
		Spotted cat's-ear, *Hypochaeris maculata*
		Cowslip, *Primula veris*
		Devil's-bit scabious, *Succissa pratensis*
		Dwarf rush, *Juncus capitatus*
	Sea plantain, *Plantago maritima*	Sea plantain, *Plantago maritima*
Saw-wort, *Serratula tinctoria*		Saw-wort, *Serratula tinctoria*
	Saw-wort, *Serratula tinctoria*	Saw-wort, *Serratula tinctoria*
	Autumn squill, *Scilla autumnalis*	Autumn squill, *Scilla autumnalis*

8.3.12 The number of species present is much higher than the lists provided and species difficult to separate have been grouped (fescues and pearlworts for example) but there are still a large number of species that would need to be indentified for these assessments. In addition, some of the species are more conspicuous early or late in the year and may be missed depending on the survey period. On the other hand, most of the species selected are fairly distinctive.

8.3.13 A final criterion should relate to invasive species that would need to be removed. The main one is Hottentot fig or its relatives that occurs mostly on the south coast. There should be less than 5% cover of any of these on any patch. The amount should be noted as this then indicates a management requirement.

8.3.14 Having assessed each patch which will need to pass the criterion listed above, it will then be possible to determine the proportion of patches that are above the thresholds and therefore in favourable condition. The analysis will also be able to map these and to identify any patches that required future management.

8.3.15 A final criterion or comments box should be available for any damaging features. Most of the coastal grassland is not easily accessible, but there could be garden or farm rubbish dumped, wildfire or other damaging activities that need to be noted.

9 REFERENCES

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Penny Anderson Associates Ltd

CONSULTANT ECOLOGISTS

Park Lea, 60 Park Road, Buxton, Derbyshire SK17 6SN

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