



EXECUTIVE SUMMARY

Amphibian and Reptile Conservation

RESEARCH REPORT 18/01

Jersey multi-species distribution, habitat suitability & connectivity modelling

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States 
of Jersey

amphibian and reptile
conservation



CONTENTS

Purpose Statement	4
1. Background.....	5
1.1 Land and species protection in the present	5
2. Summary of report findings	6
2.1 Species selection	8
2.2 Species distributions.....	8
2.3 Wildlife corridors	9
2.4 Connectivity priorities.....	11
2.5 Opportunities.....	18
3. Conclusion	18
4. Key recommendations.....	19
References.....	22

Tables and Figures

- Table 1 Summary of priority Habitat Concentration Areas for protection. Actions are shown in italics and prioritised based on current site designations. Figure numbers reference the detailed maps given in Figures 3a–g. 13
- Figure 1 Species hotspots based on the overlap of Habitat Concentration Areas (HCAs) from 12 species, excluding built-up areas and species associated with built-up areas. Colours indicate the number of focal species' HCAs overlapping in that area. Hotspot cell resolution: 25 metres. Coordinates: Jersey Transverse Mercator. 8
- Figure 2 Wildlife corridor priorities, based on the corridors of 12 non-urban focal species with a dispersal limit of 1000 metres. Warmer colours indicate greater corridor overlap across species. Areas of high corridor overlap are indicated as priority corridors with red arrows. Reference letters (A–N) correspond to routes described in the text. No route is shown for 'L' as this applies generally to woodland corridors. Corridor cell resolution: 25 metres. Coordinates: Jersey Transverse Mercator..... 12
- Figure 3 Maps showing areas of high priority for protection (highlighted in colour). These are: a) the northwest coastline including Les Landes de l'Est, b) Les Mielles and escarpment, c) St Ouen's pond and Le Val de La Mare, d) Les Blanches Banques and St Brelade's Valley woodland, e) the southwest coastline and railway walk, f) St Peter's Valley and g) Waterworks Valley, Bellozanne Valley and La Vallée des Vaux. **Maps continue across three pages.** Priority areas are rated by contribution to connectivity (red = high, blue = low) and the cumulative percentage of the island they cover. 14–16

Welcome to the executive summary of the 'Jersey multi-species distribution, habitat suitability and connectivity modelling' report. This report is the first of its kind and provides an assessment of spatial conservation priorities from species distribution data of multiple species. For further detail please refer to the main report.

The project identified a number of species with a wide distribution across Jersey, comprising both habitat specialists and generalists. Then, using habitat maps and models developed for this project, the distribution of each species was projected against those habitats. Linkages between habitats supporting the suite of species were then determined.

Purpose Statement

The States of Jersey are signatories to a number of multilateral environmental agreements (MEAs), and as such, are obliged to protect and conserve local biodiversity. One of the biggest threats to Jersey's wildlife is a fragmented and changing landscape. A number of species already receive protection under the Conservation of Wildlife (Jersey) Law 2000 and Conservation of Wildlife (Protected Plants) (Jersey) Order 2009. These species occur across the island and within a network of sites subject to varying degrees of statutory protection. However, whether these sites alone are sufficient in conserving Jersey's biodiversity is unclear. Therefore, this report seeks to identify the suitability of this ecological network and make suggestions for improvement. Identifying priority areas for these protected species can inform decisions on spatial planning, protection and management. Ultimately, a well-connected network of important habitats will benefit Jersey's wildlife. This project contributes to the implementation of Jersey's policy requirements under the Revised 2011 Island Plan (specifically Policy NE 1,2,3,4 and 6) and Jersey's draft Protected Areas Strategy, aiming to define the locations and quantity of land which we need to protect for wildlife.

In this report we apply spatial modelling approaches to carry out the following tasks:

- Predict and map the distribution of 17 selected species
- Identify the areas of highest habitat suitability for the 17 species, and evaluate how those areas are currently protected
- Assess which factors (e.g. habitat type) influence the species' distributions
- Separately assess species associated with urban environments, so that conservation priorities can be identified for both urban and non-urban environments
- Map the most likely wildlife corridors
- Identify landscape priorities for protection based on their value to wildlife connectivity and current protected status

Mapping (GIS) files are provided with this report for use by the States of Jersey, to allow for internal use in spatial applications and future replication of this study.

1. Background

Whilst individual species have been assessed on their conservation requirements in Jersey, this is the first time that multiple species have been assessed in the same project. Previous studies have highlighted connectivity issues between subpopulations in the island. This study expands on previous efforts by incorporating a wide range of species of varying forms, ecological roles, traits and conservation status in order to inform an island-wide plan for maintaining, improving and designating wildlife areas; thereby providing a solid foundation for an island-wide conservation strategy of practical value. Furthermore, it highlights areas where improvements to connectivity are most beneficial, and how these may be tied in with other efforts in parallel for maximum return on investment.

This work supports the decision-making processes within Growth, Housing and Environment, States of Jersey, with implications for wildlife conservation, planning and building. We set out to identify key areas of conservation priority for a selection of threatened species based on their distribution, importance for connectivity and current protection status, whilst considering the areas providing the most overall benefit. Furthermore, we identify the driving factors influencing the suitability of Jersey's landscape for those species.

1.1 Land and species protection in the present

Natural Environment, Growth, Housing and Environment is currently responsible for the statutory protection of both land and species in Jersey. These protections are detailed in several planning and policy documents, including the Planning and Building (Jersey) Law 2002, the Revised 2011 Island Plan and the Biodiversity Strategy.

Sites receive the greatest protection as Sites of Special Interest (SSIs), which can be designated on geological, archaeological, historical, architectural or ecological grounds. At present, there are 21 ecological SSIs and 22 geological SSIs, with more proposed. Combined, SSIs cover approximately 4.4% of Jersey's terrestrial surface. The Jersey National Park (JNP) covers a larger terrestrial proportion of the island (16.0%), and affords a high level of policy protection from development. Lastly, the Green Zone covers 69.9% of Jersey and protects areas from development in order to preserve landscape character.

Proposed improvements to land protection can be identified through various means, including the presence of important habitats or species. A 2010 report identified a set of Environmentally Sensitive Areas (ESAs) based on the distribution of key habitats, covering 23.2% of Jersey

(Penny Anderson Associates 2010). Though these areas are not formally protected, they provide a useful comparison for this report and are considered in the Island Plan. Where appropriate, we also refer to Character Areas (CAs – identified in red) used in the Countryside Character Appraisal (States of Jersey Planning and Environment Committee 1999).

2. Summary of report findings

Which species did we study? 17 species / species groups: 1 amphibian, 1 reptile, 1 insect, 4 mammals, 2 fungi and 8 plants. 13 of these are currently protected by law.

Where did they occur? Their predicted distribution and the number of locations they have been recorded was variable. Several species were most likely to occur in the west.

What influenced their distributions? All species were influenced by landcover type, but other variables differed. Altogether, species distributions were influenced by natural, semi-natural and human-modified elements of the landscape.

Where were the most important areas? These were defined as parts of the landscape for each species where they were estimated to have the highest habitat suitability. We call these **Habitat Concentration Areas (HCAs)**. These were spread across the island, but showed strong overlap in the west and south-west, as well as in the east and the wooded valleys (Figure 1).

How many species used built-up areas? 5 of the 17 species used built-up areas.

Are the HCAs suitable for a wider range of species? Yes. Occurrence records from 83 other species showed strong overlap with HCA predictions from our 17 study species, or were predominantly in close proximity to HCAs.

How do current protected areas support HCAs? Existing statutory designations regularly overlapped with HCAs, but only covered a small proportion of the HCAs overall. Improvements to landscape protection are recommended.

Where are the most important wildlife corridors? In the west and southwest of the island and among the wooded valleys (Figure 2).

Which HCAs are most important for connectivity? HCAs in the west of the island and within the central wooded valleys (Figure 3).

What needs to be done?

- 1) Extend protection to HCAs currently unprotected and restore degraded habitats.
- 2) Maintain and strengthen protection of areas in the Jersey National Park.
- 3) Maintain protection of SSIs.
- 4) Maintain, restore and protect habitat along wildlife corridors.
- 5) Integrate habitat improvement and protection with parallel initiatives (e.g. LEAF).

2.1 Species selection

A set of 17 focal species or species groups were selected for modelling, consisting of one amphibian, one reptile, four mammals, one insect, two fungi and eight plants. These were the western toad (*Bufo spinosus*), grass snake (*Natrix helvetica*), Jersey bank vole (*Myodes glareolus* ssp. *caesarius*), common pipistrelle bat (*Pipistrellus pipistrellus*), long-eared bats (*Plecotus* spp.), red squirrel (*Sciurus vulgaris*), field cricket (*Gryllus campestris*), waxcap fungi (*Hygrocybe* spp.), scaly stalkball (*Tulostoma melanocyclum*), green-winged orchid (*Anacamptis morio*), pyramidal orchid (*Anacamptis pyramidalis*), southern marsh-orchid (*Dactylorhiza praetermissa*), lizard orchid (*Himantoglossum hircinum*), early-purple orchid (*Orchis mascula*), Jersey buttercup (*Ranunculus paludosus*), ragged robin (*Silene flos-cuculi*) and autumn lady's-tresses (*Spiranthes spiralis*). Of these species, 13 are protected by law and two have been proposed for protection.

2.2 Species distributions

For each species we identified the most important areas of habitat, which we refer to as **Habitat Concentration Areas (HCAs)**. These were identified using the most up-to-date species occurrence data from the Jersey Biodiversity centre and the different habitat types present in Jersey. The predicted distribution of suitable areas for the species varied between them, but several species showed overlapping areas of suitability in the western portion of the island (Figure 1). Five of the 17 species had $\geq 10\%$ of their HCAs within built-up areas and were assessed separately. These were the western toad, common pipistrelle bat, long-eared bats, red squirrel and autumn lady's-tresses.

The HCAs were also strongly supported when cross-referenced against the locations of species occurrence records from 83 other protected species. Only a small proportion (9%) of HCAs fell within SSIs and 30% within the JNP. The remainder are therefore at risk of being lost due to insufficient land protection.

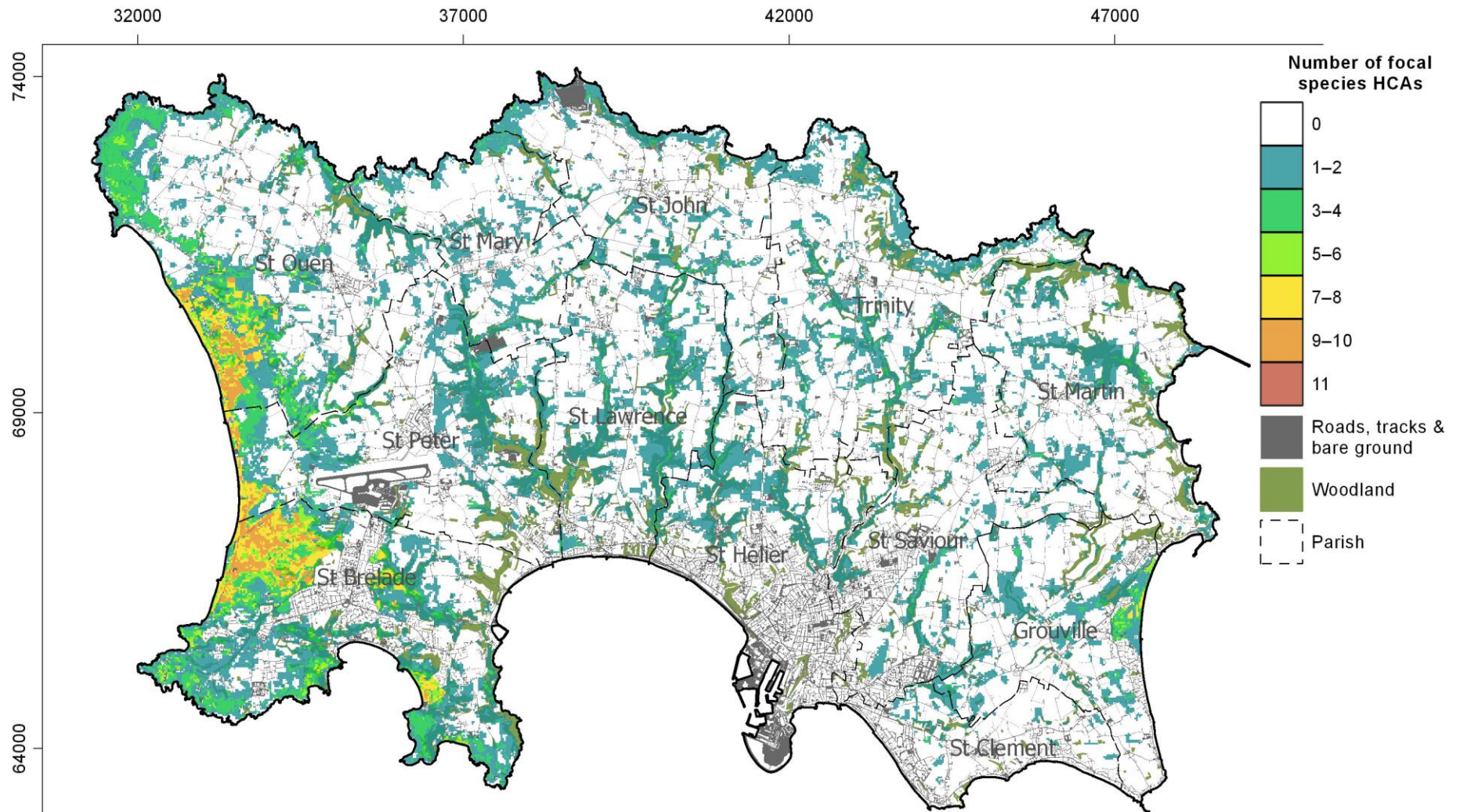


Figure 1 Species hotspots based on the overlap of Habitat Concentration Areas (HCAs) from 12 species, excluding built-up areas and species associated with built-up areas. Colours indicate the number of focal species' HCAs overlapping in that area. Hotspot cell resolution: 25 metres. Coordinates: Jersey Transverse Mercator.

2.3 Wildlife corridors

A cost-based approach was used to identify the most likely routes (wildlife corridors) through which species may travel between HCAs, under different habitat requirement and dispersal capability scenarios. The implementation of any corridor should be carefully assessed using detailed imagery and expert knowledge to identify barriers at a local level.

Overlapping the corridors across species revealed the areas of greatest value to our study species (Figure 2). These were mostly in the west of the island and among the wooded valleys when considering all 17 species, or the 12 species that weren't associated to urban areas. Corridor priorities from the five urban-dwelling species were less restrictive with associations to built-up areas (aside from St Helier) and with less relation to the wooded valleys.

Based on the 12 species that had little association to built-up areas being able to disperse 1000 metres, overall priorities for connecting non-urban HCAs are corridors running:

- A. From La Corbière, eastward to St Brelade's Bay
- B. From west to east following the escarpment behind St Brelade's bay seafront (eastern portion of **CA C2: South Coast Urban Escarpment**)
- C. Between Le Mont Sohier, Ouaisné, Portelet and Noirmont; linking these areas
- D. North from St Brelade's bay (midbay carpark) to the southeastern corner of the airport (including northern part of **CA D3: St Brelade Enclosed Valley**)
- E. Along the southern edge of the airport through Les Ormes Golf Club and on to Les Blanches Banques
- F. From above Pont Marquet (Maison St Brelade residential home), going west / northwest across the top of Les Quennevais and through Creepy Valley on to Les Blanches Banques
- G. North along St Ouen's Bay escarpment and valleys (**CA C3**) and in parallel along St Ouen's Bay coastal plain (**CA B5**) from Les Blanches Banques (**CA B4: Quennevais Dunes Coastal Plain**) to La Saline and Les Pres D'Auvergne
- H. From the wooded area along Route du Marais, south to La Ville au Bas
- I. Eastwards from Les Pres D'Auvergne to Route du Marais
- J. Northwest from Les Pres D'Auvergne to Les Landes de l'Est (northern portion of **CA C3: St Ouen's Bay Escarpment**)
- K. From the wooded area along Route du Marais, northeast to Grève de Lecq and then west along the coast to Plémont (incorporating the western portion of **CA D4: North Coast Valleys**)
- L. Throughout the enclosed wooded valleys (**CAs D1–5**)

- M. Between Rozel woods (CA D5: St Martin's Valleys) and Jersey Zoo (at the northwestern tip of the woodland running from St Helier to Trinity) (CA D2: Eastern Valleys)
- N. Through Grouville Marsh and parts of Royal Jersey Golf Club (CA B1: Grouville Coastal Plain)

These routes and their corresponding letters are shown in Figure 2.

2.4 Connectivity priorities

In addition to the wildlife corridors between HCAs, the HCAs themselves were assessed based on their contribution to overall connectivity across the island, and contrasted against existing landscape designations in order to prioritise the areas of greatest value but also at highest risk of loss. These steps ensure maximum return on investment and facilitate prioritisation, decision-making and implementation of conservation efforts. We also considered land ownership as a potential choice in the decision-making process.

HCAs providing the greatest connectivity to Jersey's ecological network were situated along the west coast, with further connectivity found through the island's wooded valleys. HCAs of high connectivity for urban-dwellers were also found along the east coast, in the southwest of the island and particularly within St Brelade's bay.

Giving priority to areas of high connectivity outside of Sites of Special Interest (SSIs) and the Jersey National Park (JNP) where there is greater risk of habitat loss and alteration, the island's enclosed wooded valleys are of high value (CAs D1–5). In particular, high connectivity was seen in the enclosed woodland valleys and surrounding areas along the railway walk from St Aubin to Pont Marquet (CA D3), St Peter's valley and Waterworks valley (CA D1), and the southern ends of Bellozanne Valley and La Vallée des Vaux (CA D2). Many of these areas have been highlighted by previous work to identify Environmentally Sensitive Areas (ESAs) (Penny Anderson Associates 2010).

Within the JNP but outside of SSIs, Les Mielles Nature Reserve and other areas north of St Ouen's pond held strong value for connectivity (CA B5: St Ouen's Bay Coastal Plain). Land to the west and north of Le Val de La Mare Reservoir was also of high value (CA C3: St Ouen's Bay Escarpment and Valleys), however the reservoir itself only showed importance for urban-dwellers, namely toads. An area to the north of St Mary's village also showed high priority across the board, and may provide a valuable linkage between urban areas and the north coast. High connectivity for urban-dwellers within the JNP was also seen for Beauport, Grouville and the coastline between St Catherine's and Gorey.

Many of the areas of highest connectivity occurred within SSIs, with Les Blanches Banques being of particular value. Other areas that fell partially, or completely within existing SSIs were St Ouen's pond and the area north of it within Les Mielles (**CA B5: St Ouen's Bay Coastal Plain**), between Les Quennevais and La Corbière along the railway walk and nearby headlands, Les Landes de l'Est and La Lande du L'Ouest. Ouaisné, Portelet and Noirmont showed lower overall connectivity values unless assessing the five urban-dwelling focal species.

These priority areas within and outside of current statutory designations are owned by a multitude of landowners including various departments within the States of Jersey, the National Trust for Jersey, Jersey Water, several golf courses, the agricultural sector and as part of private residences. Engaging these varied stakeholders is therefore essential in supporting appropriate land management in perpetuity.

Priorities for protection

Below we provide a summary table (Table 1) and maps (Figure 3) highlighting the most important areas for wildlife connectivity as priorities for protection and management. We use a scenario based on 12 non-urban focal species with priority measured based on a metric known as the Integral Index of Connectivity. Priority areas are broken down in to different colours (red–blue) based on their connectivity score and the amount of land cumulatively protected in each colour band. For instance, if resources allowed for 5% of the island to be protected, we recommend protection of areas falling within the first six colour bands (0.1%, 1%, 2%, 3%, 4% and 5%). Several highlighted areas already have SSI status, are part of the JNP or both. Therefore, we recommend areas that currently receive no protection are prioritised first, followed by those that do not have SSI status but that have some other form of protection (e.g. JNP).

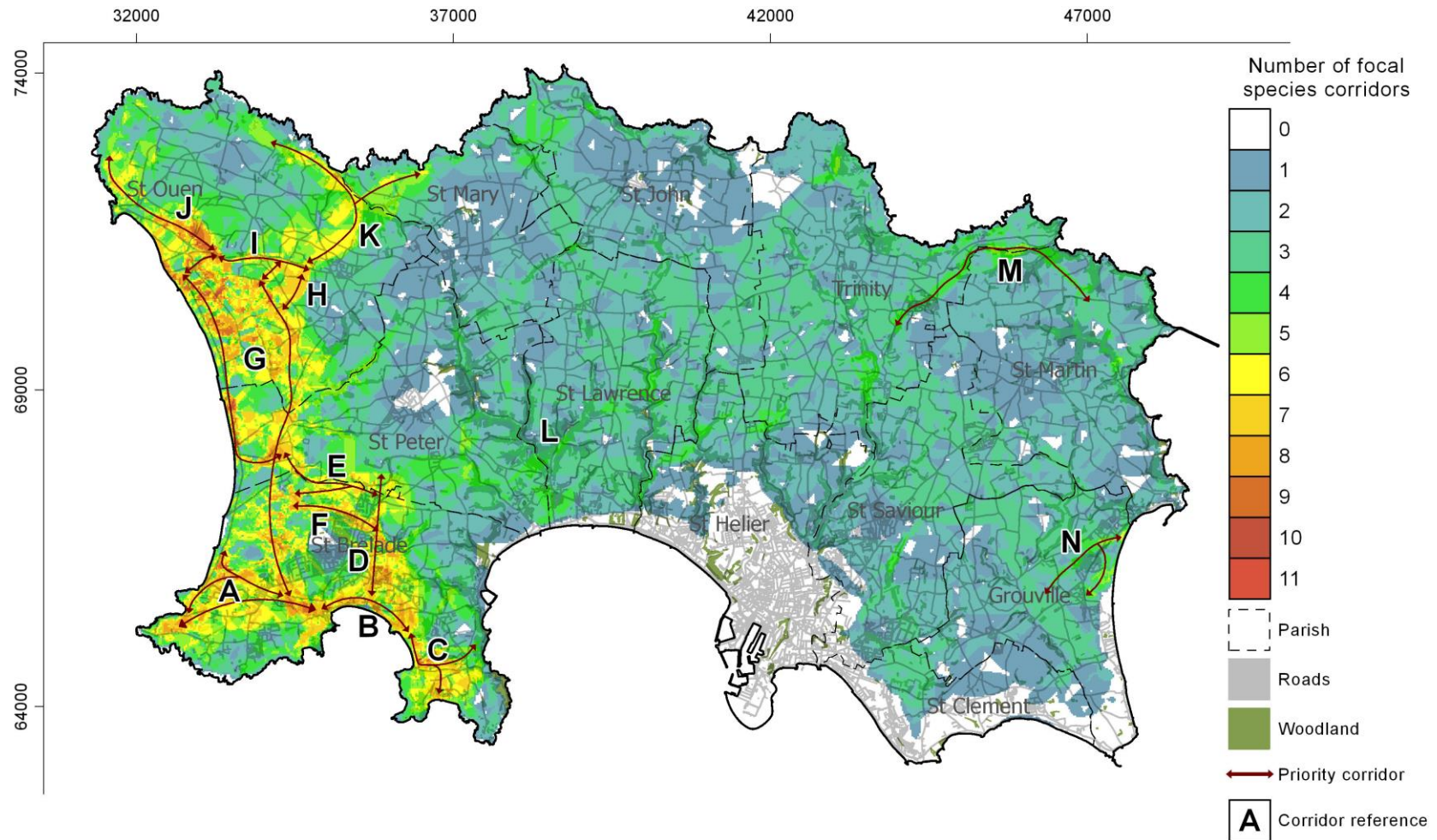


Figure 2 Wildlife corridor priorities, based on the corridors of 12 non-urban focal species with a dispersal limit of 1000 metres. Warmer colours indicate greater corridor overlap across species. Areas of high corridor overlap are indicated as priority corridors with red arrows. Reference letters (A–N) correspond to routes described in the text. No route is shown for 'L' as this applies generally to woodland corridors. Corridor cell resolution: 25 metres. Coordinates: Jersey Transverse Mercator.

Table 1 Summary of priority Habitat Concentration Areas for protection. Actions are shown in italics and prioritised based on current site designations. Figure numbers reference the detailed maps given in Figures 3a–g.

Location	Figure	ACTIONS AND PRIORITIES			
		HIGH	MEDIUM–HIGH	MEDIUM	LOW
		<i>Undesignated areas</i>	<i>Non-JNP areas</i>	<i>Non-SSI areas</i>	<i>Retain SSI</i>
Wooded valleys: Waterworks Valley, Bellozanne Valley & La Vallée des Vaux (CAs D1 & D2: Main Interior Valleys & Eastern Plateau Valleys)	3g	X			
St Peter's Valley woodland (CA D1: Main Interior Valleys)	3f	X			
Les Mielles & St Ouen's Bay escarpment (CAs B5 & C3: St Ouen's Bay Coastal Plain, Escarpment & Valleys)	3b		X	X	X
St Ouen's pond & Le Val de La Mare (CAs B5 & C3: St Ouen's Bay Coastal Plain, Escarpment & Valleys)	3c		X	X	X
Les Blanches Banques & enclosed wooded valley from St Aubin to Pont Marquet (along the railway walk) (CAs B4 & D3: Quennevais Dunes Coastal Plain & St Brelade Valley)	3d		X	X	X
Southwest coastline & railway walk (CA A2: South West Heathland)	3e		X	X	X
Northwest coastline including Les Landes de l'Est (CAs A1 & C3: North Coast Heathland & St Ouen's Bay Escarpment and Valleys)	3a			X	X

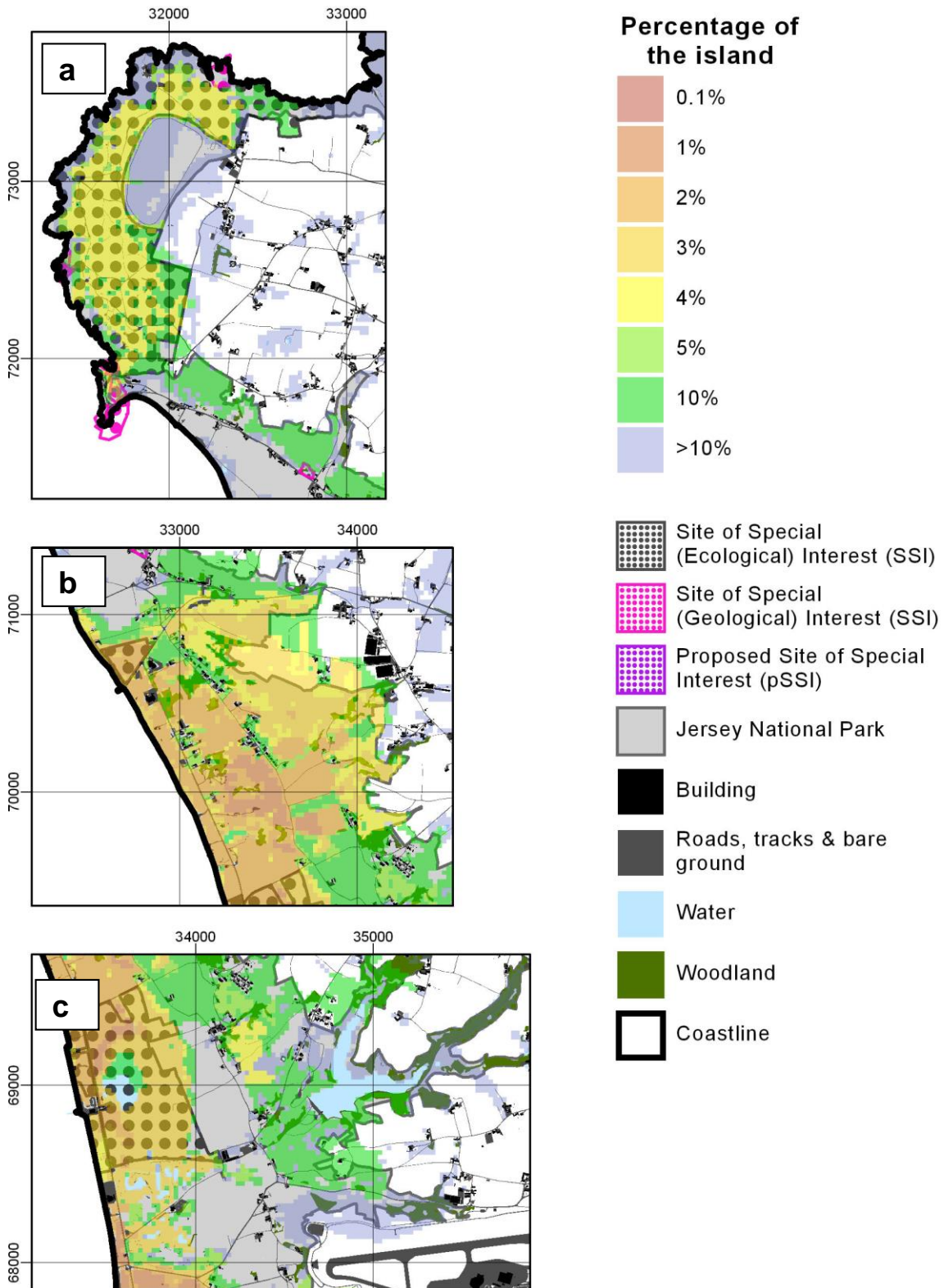
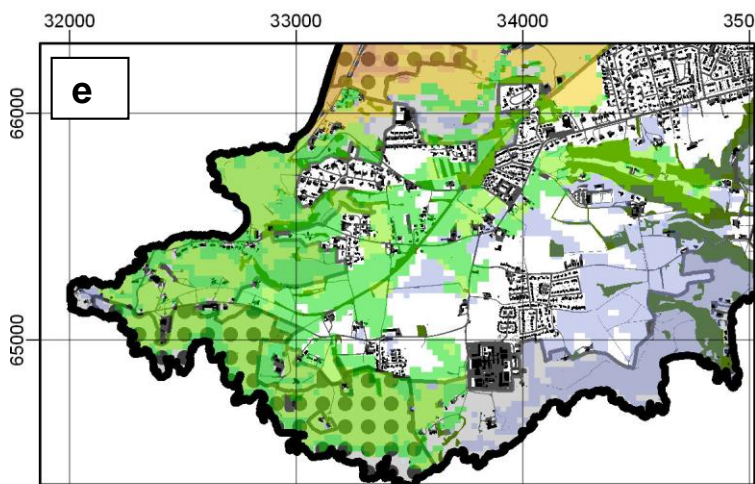
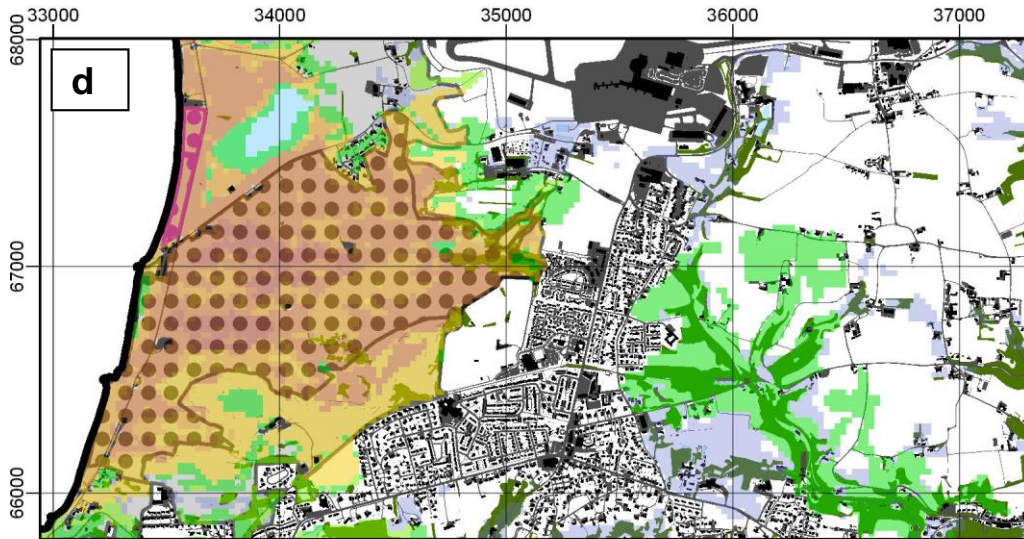









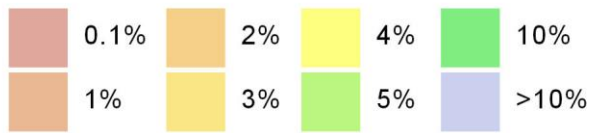


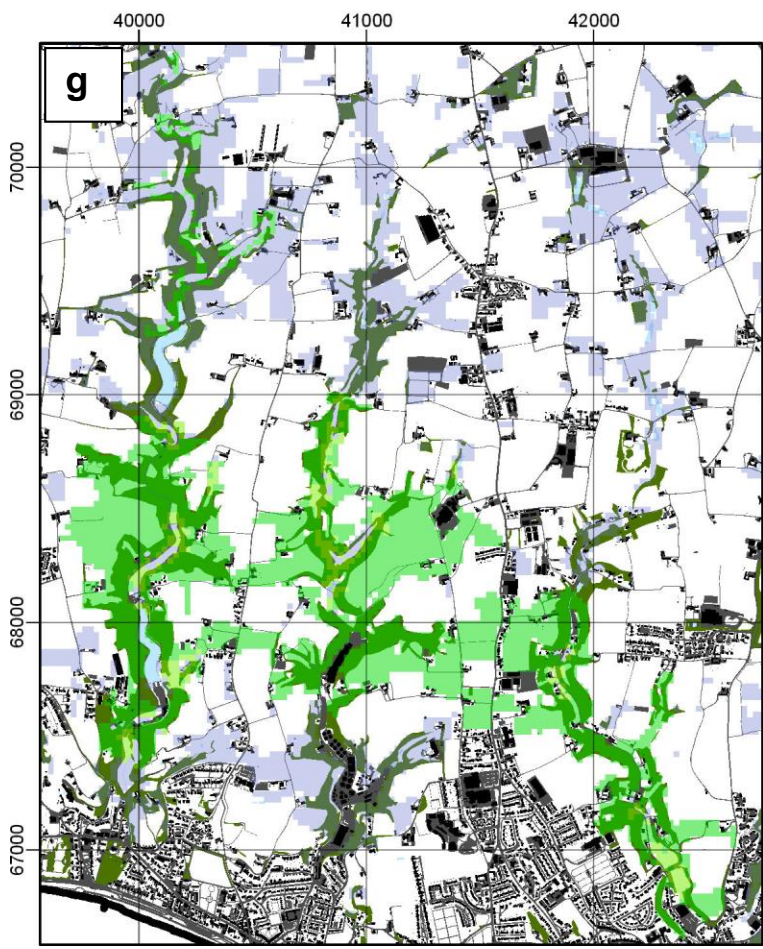
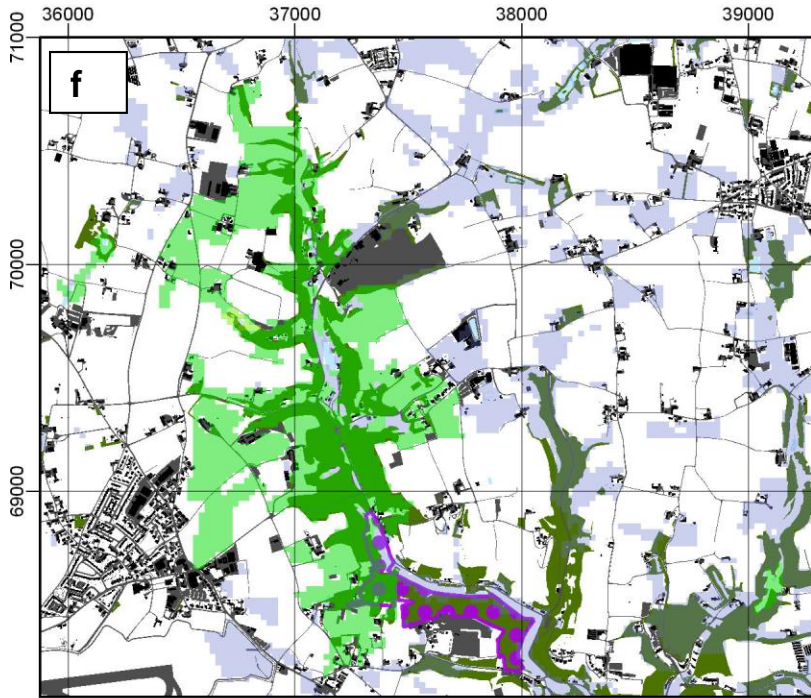
Figure 3 Maps showing areas of high priority for protection (highlighted in colour). These are: a) the northwest coastline including Les Landes de l'Est, b) Les Mielles and escarpment, c) St Ouen's pond and Le Val de La Mare, d) Les Blanchés Banques and St Brelade's Valley woodland, e) the southwest coastline and railway walk, f) St Peter's Valley and g) Waterworks Valley, Bellozanne Valley and La Vallée des Vaux. **Maps continue across three pages.** Priority areas are rated by contribution to connectivity (red = high, blue = low) and the cumulative percentage of the island they cover.



-  Site of Special (Ecological) Interest (SSI)
-  Site of Special (Geological) Interest (SSI)
-  Proposed Site of Special Interest (pSSI)
-  Jersey National Park
-  Building
-  Roads, tracks & bare ground
-  Water
-  Woodland
-  Coastline

Percentage of the island





- Site of Special (Ecological) Interest (SSI)
- Site of Special (Geological) Interest (SSI)
- Proposed Site of Special Interest (pSSI)
- Jersey National Park
- Building
- Roads, tracks & bare ground
- Water
- Woodland
- Coastline

2.5 Opportunities

New opportunities to support the maintenance, restoration and creation of core and connective habitat for wildlife are currently emerging. These include integration of priority conservation areas into the development of Jersey's Countryside Access Strategy, and the LEAF (Linking Environment and Farming) assurance system. Overall we have highlighted multiple opportunities for prioritising and improving areas for conservation management, restoration and protection related to meeting environmental objectives and improving Jersey's landscape for wildlife.

We recommend that priority is given to protecting undesignated Habitat Concentration Areas that are vulnerable to development and degradation to avoid their loss, followed by maintenance of areas already protected in some form. Future work can expand on this report by focusing recording on a selection of species representative of Jersey's wildlife, thereby providing a more robust dataset on which to base similar modelling approaches. We provide a number of outputs that can be incorporated in to GIS applications to assist with future environment and planning efforts.

3. Conclusion

Our results highlight the importance of utilising a multi-species approach to identify terrestrial spatial conservation priorities, they provide support to existing designations and to previous opportunity mapping work, and identify priorities for protection, management and restoration expected to be suitable for a wide range of Jersey's wildlife. Importantly, we highlight a number of areas of high importance for providing connectivity and habitat to a wide range of species that do not currently receive protection or directed management.

The high overlap of HCAs occurring within the west and southwest of the island shows how important these areas are for Jersey's wildlife, and was further validated by other approaches. Many of these areas already benefit from SSI designations, however those that remain unprotected are high priorities for improved protection.

The current SSIs and the Jersey National Park are of high value for biodiversity, but do not provide sufficient coverage to protect the majority of the HCAs and corridors identified in this study. We propose that a wider SSI network is developed, with the findings of this report providing justification for several areas. Alternatively, where appropriate, new designations may be developed (e.g. Local Wildlife Sites / Sites of Importance for Nature Conservation and Areas of Special Protection) that will ensure the appropriate protection and management of sites not currently residing within the protected network.

Areas selected as SSIs and for other protected site designations for wildlife are often done so simply because those are the semi-natural areas that remain. The findings of this study can be combined with current SSI-selection criteria and contribute to the decision-making process when identifying future priorities for protection, ensuring that the resulting network has improved connectivity. This inclusion of connectivity is important to ensure that protected areas don't simply become isolated islands rich in biodiversity. The provision of 'stepping-stone' habitats can help alleviate these issues, and can be a more cost-effective approach than trying to generate continuous corridors of habitat.

The value of Jersey's landscape to natural capital and human wellbeing can also be incorporated in to future prioritisation strategies by conducting an evaluation of ecosystem services within the island including the potential for carbon storage, water purification, flood prevention, crop pollination, and benefits to mental and physical health. Similarly, consideration should be given over the contribution of natural areas to climate change resilience within the island.

4. Key recommendations

Jersey's wildlife occurs in a variety of habitats, with areas of high importance for connectivity and habitation centred within the west and southwest of the island, and the island's wooded valleys. Though existing protected areas provide support to Jersey's biodiversity, they only cover a small proportion of priority conservation areas and are therefore in need of expansion.

Greater structure and support is needed to guide biological recording in the island in order to provide more complete datasets for future analyses of the island's conservation status. Improvements to the current ecological network should be combined with monitoring before and after implementation to assess the effects of any interventions. To conclude, we provide the following recommendations:

1. Extend protection to HCAs currently unprotected and restore degraded habitats. High priorities are:
 - St Peter's Valley woodland
 - Waterworks Valley
 - Bellozanne Valley
 - La Vallée des Vaux
 - St Brelade's Valley woodland (from St Aubin to Pont Marquet along the railway walk)
 - Railway walk and surrounding areas (from La Corbière to Les Quennevais)

2. Maintain, and strengthen support for protection of areas within Jersey's National Park and restore degraded habitats. Based on our HCAs, high priorities are:
 - Les Mielles Nature Reserve
 - St Ouen's Bay escarpment
 - The coastal plain between Les Blanchés Banques and La Mare au Seigneur, including Simon Sand and Les Mielles Golf and Country Club
 - Extension of Les Blanchés Banques SSI on to La Moye Golf Course

3. Maintain protection of the existing SSI network.

4. Maintain, restore and where possible protect habitat along wildlife corridors identified to improve the function of Jersey's ecological network (Figure 2). High priorities include:
 - **St Brelade**
 - From La Corbière, eastward to St Brelade's Bay (A)
 - From west to east following the escarpment behind St Brelade's bay seafront (B)
 - Between Le Mont Sohier, Ouaisné, Portelet and Noirmont; linking these areas (C)
 - North from St Brelade's bay (midbay carpark) to the southeastern corner of the airport (D)
 - Along the southern edge of the airport through Les Ormes Golf Club and on to Les Blanchés Banques (E)
 - From above Pont Marquet (Maison St Brelade residential home), going west / northwest across the top of Les Quennevais and through Creepy Valley on to Les Blanchés Banques (F)

 - **St Peter / St Ouen**
 - North along St Ouen's bay escarpment and valleys and in parallel along St Ouen's Bay coastal plain from Les Blanchés Banques to La Saline and Les Pres D'Auvergne (G)
 - From the wooded area along Route du Marais, south to La Ville au Bas (H)
 - Eastwards from Les Pres D'Auvergne to Route du Marais (I)
 - Northwest along the escarpment Les Pres D'Auvergne to Les Landes de l'Est (J)
 - From the wooded area along Route du Marais, northeast to Grève de Lecq and then west along the coast to Plémont (K)

- **Trinity / St Martin**
 - Between Rozel woods and Jersey Zoo (at the northwestern tip of the woodland running from St Helier to Trinity) (M)
 - **Grouville**
 - Through Grouville Marsh and parts of Royal Jersey Golf Club (N)
 - **Island-wide**
 - Throughout the enclosed wooded valleys (L)
5. Provide financial and logistical support to the structured collection of biological records for future repeats of this and other analyses to assess the status and needs of Jersey's biodiversity.
 6. Focus species monitoring on a small set of diverse species to provide thorough datasets for future analyses. We recommend inclusion of the following species:
 - Western toad (*Bufo spinosus*)
 - Common shrew (*Sorex coronatus*)
 - Lesser white-toothed shrew (*Crocidura suaveolens*)
 - Red squirrel (*Sciurus vulgaris*)
 - Beautiful demoiselle (*Calopteryx virgo*)
 - Black-backed meadow ant (*Formica pratensis*)
 - Glow worm (*Lampyris noctiluca*)
 - Ragged robin (*Lychnis flos-cuculi*)
 - Southern marsh-orchid (*Dactylorhiza praetermissa*)
 - Autumn lady's-tresses (*Spiranthes spiralis*)
 - Pepper Pot (*Myriostoma coliforme*)
 7. Carry out monitoring to detect changes following improvements to connectivity.
 8. Conduct detailed mapping and quality assessment of landscape features (e.g. hedgerows) currently contributing to landscape connectivity.
 9. Engage stakeholders (e.g. land owners and managers) in conducting habitat improvements works by providing clear and accessible recommendations.
 10. Incorporate priority conservation area recommendations in to LEAF accreditation and countryside access planning.

11. Inform island plan and terrestrial spatial planning.
12. Incorporate the findings of this report in to environmental and planning investigations such as EIAs and planning applications as an additional source of guidance for areas of environmental sensitivity.

References

Penny Anderson Associates (2010) Protection of Ecologically Sensitive Areas (PESAP) Project. Unpublished report to the States of Jersey Department of the Environment.

States of Jersey Planning and Environment Committee (1999) Jersey Countryside Character Appraisal. Final Report.