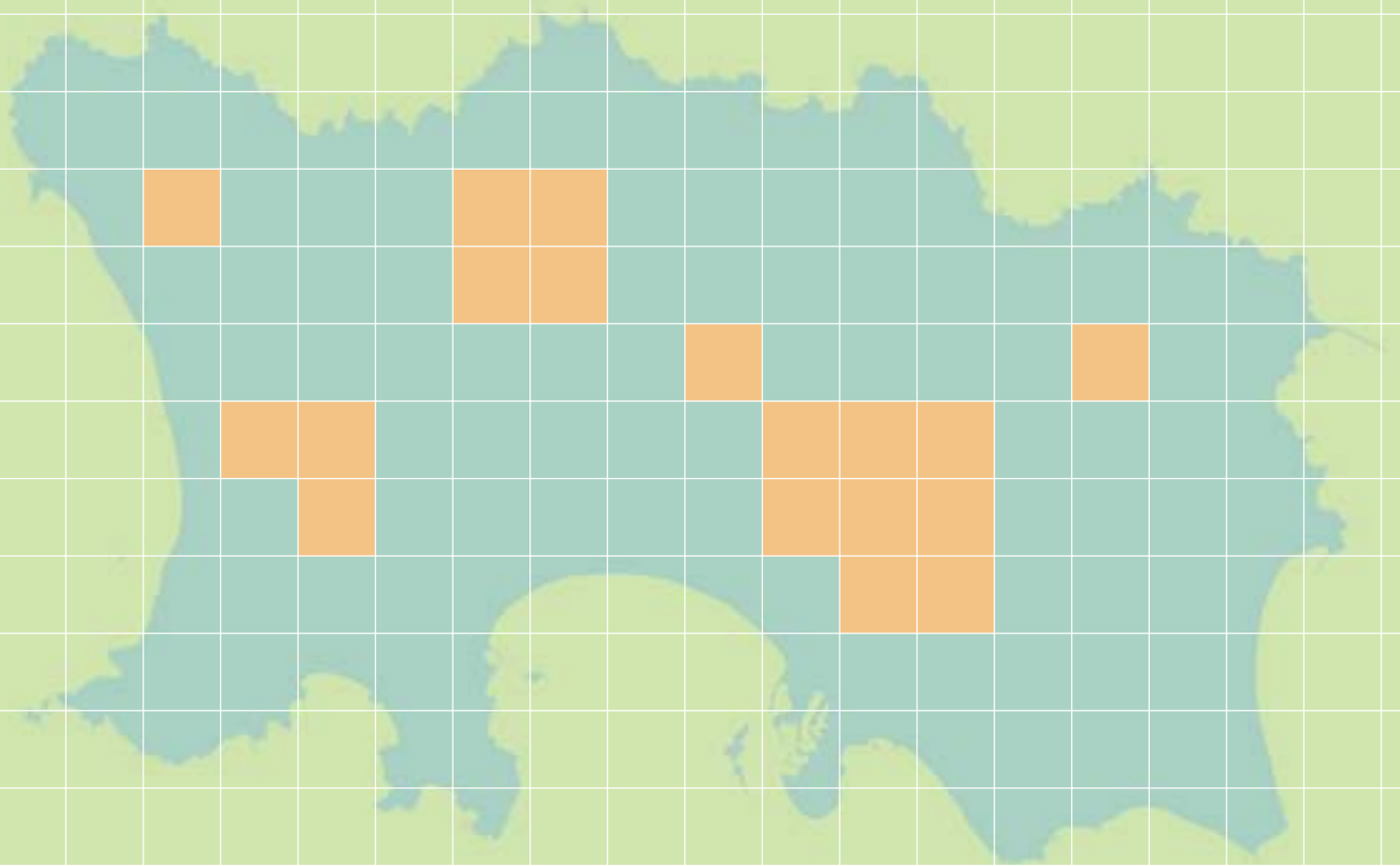
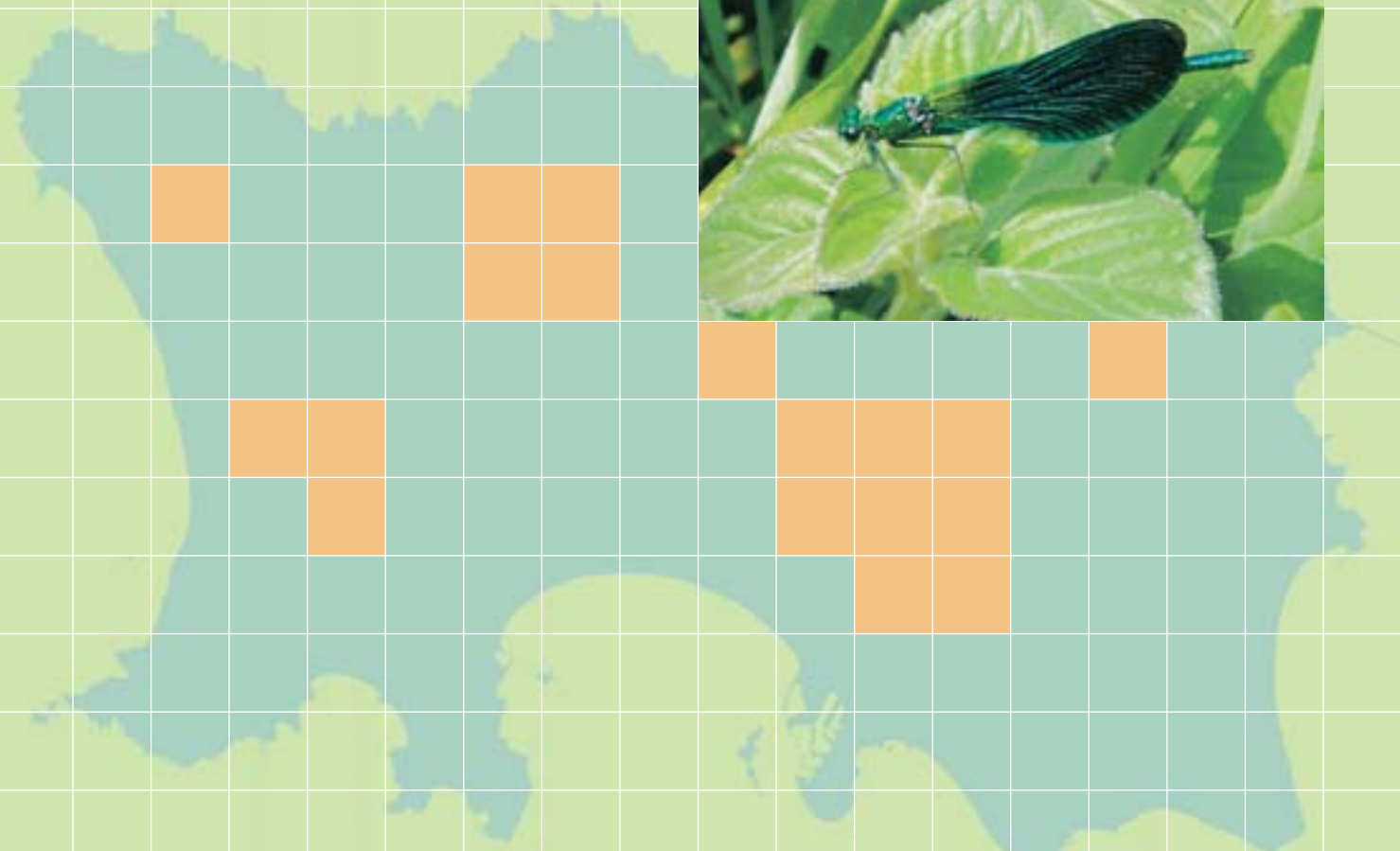


Bio Diversity

Insect Action Plans



Bio Diversity
Beautiful Demoiselle
(Calopteryx virgo)
Action Plan



1. Current status

- 1.1 In the past *Calopteryx virgo* was reported from several valley streams including St Peter's Valley, Vallée des Vaux, Grand Vaux Valley and at Beaumont (R. and M. Long, pers. comm.). Records of *C. virgo* larvae have been made during work carried out by the Environmental Protection on water quality assessment on some of Jersey's streams (Butcher, pers. comm.).
- 1.2 *C. virgo* are found at specific areas along Grands Vaux Valley. The Valley is located in the centre of the Island and runs north to south, as do most of Jersey's streams because of the topography. The stream starts in Trinity and runs to the northern edge of St Helier. Its lower portion is dominated by the Grands Vaux Reservoir run by Jersey Water. The upper portion of the stream winds through agricultural land.
- 1.3 Recently there have been records in at least five new sites.

2. Current factors causing loss or decline

- 2.1 Being very sensitive to water quality it may well be that pollution could have caused a decline in the number of larvae and/or prey. There are no current persistent water quality problems in the catchments but there may have been occasions when *Calopteryx* larvae have been affected. There has been a record of pumped groundwater with hydrocarbons getting into the catchment (L. Butcher, pers. comm.).
- 2.2 The Water Pollution (Jersey) Law 2000 is a comprehensive law in line with those in place in the UK which provides control of pollution in Island waters. The Planning and Environmental Department administer the law, a similar role to the Environment Agency in the UK.
- 2.3 Techniques used are a survey of the aquatic macro-invertebrates which are graded by species or orders according to their sensitivity to water quality (on a scale of 1 to 10). This technique is very useful as the results indicate the cleanliness of the stream, which cannot be achieved with chemical testing. The method of water quality testing does not harm the population of *C. virgo* as the caught specimens are released back in to the stream. Because the population of this species is very low collecting should be avoided.

3. Current action

- 3.1 *C. virgo* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1 To establish and maintain a viable population at this site.
- 4.2 To gain a better understanding of the species' habitat requirements by the year 2007.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed

5.2 Site safeguard and management

- 5.2.1 Pollution should be prevented to allow populations of *C. virgo* to expand as much as possible. The vegetation bordering the stream would benefit from the correct management. The flow in the stream needs to be maintained, so damming or vegetation build up should be avoided. The adults need vegetation such as bushes and trees along the stream edges for perching on and courtship displays. The females need emergent plants in the stream down which to crawl and oviposit within the stem below the surface.

5.3 Species management and protection

- 5.3.1 Habitat maintenance for the larvae and the adult will be the main mechanism for protecting *C. virgo*. A ban on collection of individuals is recommended due to the low population level. More information on the species' ecology is needed before further recommendations for species management can be made (translocations and introductions into other suitable sites for example).

5.4 Advisory

- 5.4.1 Co-ordination between the various landowners along the streams length is essential for maintenance of the habitat.
- 5.4.2 The ED should obtain water quality data from the WRS whenever the surveys are carried out to keep a record for reference to this species. The WRS should be informed of protected species such as *C. virgo* which are directly linked to their work. The ED can then be informed immediately of any pollution events that are likely to affect populations of *C. virgo*.
- 5.4.3 More use could be made of the members of the Société Jersiaise in assisting population range surveys.

5.5 Future Research and Monitoring

- 5.5.1 Species of Odonata are abundant on a particular river when their habitat preferences reflect the overall environmental conditions of that river (Stewart and Samways, 1998). The small numbers of *C. virgo* must reflect on the quality of the habitat. Information on the stream valley is scarce and this species would benefit from a more detailed investigation into its biological requirements. The small size of the population and the limited range prompts recommendation that *C. virgo* be treated as a priority species. This project should take place in the next two years, possibly as a graduate or undergraduate dissertation.
- 5.5.2 Ideally the range should be mapped every year to highlight expansions or contractions. (Action: ED, Société Jersiaise or students)

5.6 Communications and publicity

- 5.6.1 All Jersey's proposed protected invertebrates could benefit from a publicity campaign to increase awareness of their status and even something as simple as how to identify them and basic ecology. (Action: ED)
- 5.6.2 Some ideas are: displays and/or leaflets at the ED's interpretation centres could inform visitors and school groups of species of concern so that they can be looked for in the field. (Action: ED)
- 5.6.3 Since all the species can be relatively easily identified, groups and walks in the field can highlight such species and increase awareness of their special status both within Jersey and in the wider context of Britain and Europe.
- 5.6.4 Run a campaign to raise the profile of Jersey's invertebrates.

5.7 Links with other Plans

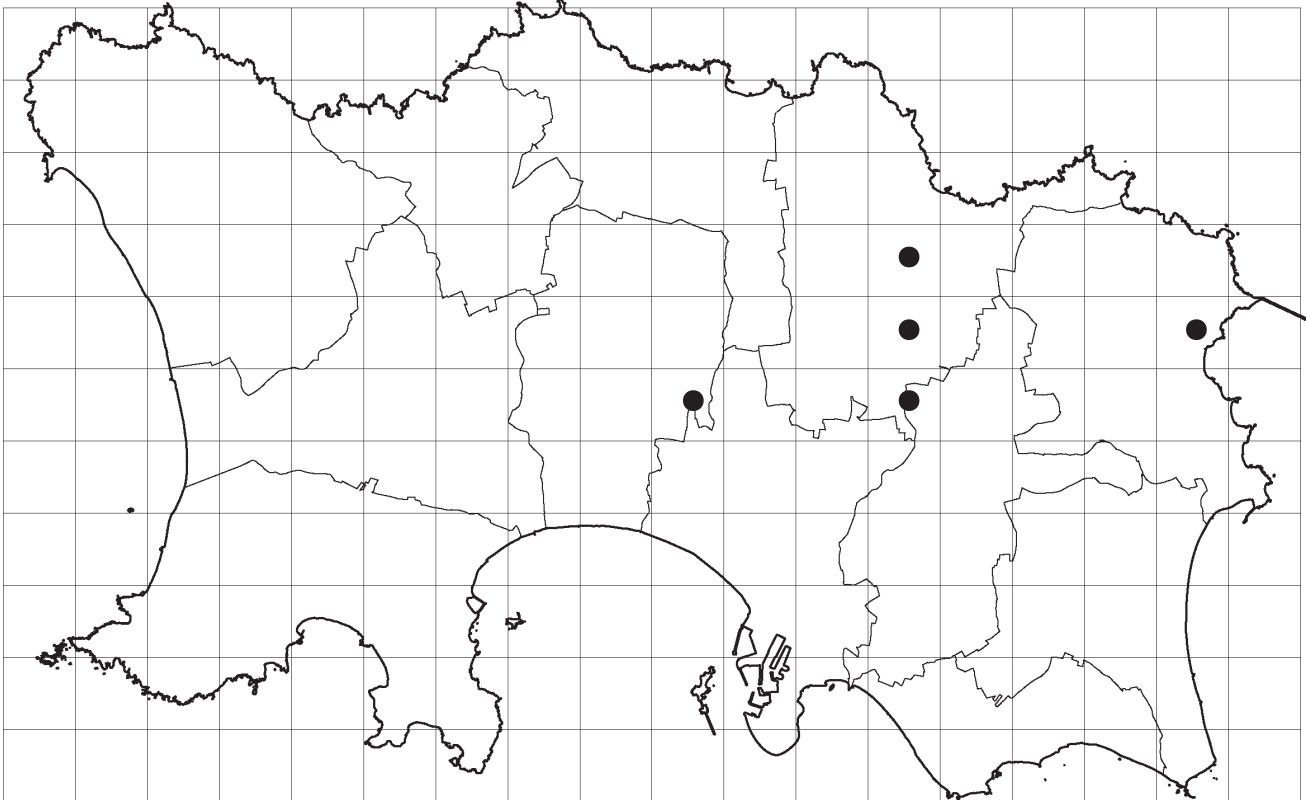
- 5.7.1 None proposed.

Beautiful Demoiselle *Calopteryx virgo*

● records from 1998

Distribution of Beautiful Demoiselle in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.



Bio Diversity
Heath Grasshopper
(Chorthippus vagans)
Action Plan



1. Current status

- 1.1 *Chorthippus vagans* is relatively common in Jersey's heathland, less common but present on grasslands.
- 1.2 At Les Blanchés Banques/Les Quennevais *C. vagans* was found most often amongst the prostrate, carpet-like burnet rose *Rosa pimpinellifolia* which is widespread on the dunes. The species was found throughout the site.
- 1.3 At the heathland sites Bonne Nuit, Giffard and Les Platons; Bouley Bay, Le Jardin d'Olivet and Vicard; Grouville Marsh; La Lande du Ouest; Les Landes; Noirmont; L'Ouaisné Common; La Tête de Plémont; Portelet; La Pulente headland; and Sorel, *C. vagans* is found in similar circumstances. It prefers the areas of heath vegetation, i.e. the heather communities which are interspersed with grassy patches. *C. vagans* appears to prefer the margin between the heather and grass areas. It is not found in the areas where bracken and gorse have become established.
- 1.4 In Grouville Marsh and La Mielle de Morville *C. vagans* is found in much lower densities probably due to these grassland sites being less suitable.

2. Current factors causing loss or decline

- 2.1 Loss of habitat would be the main cause of decline, through the loss of heath communities by the invasion of heathland scrub. Increases in the population should occur with correct management of the heathlands. Fire is a considerable risk each year on heathlands, depending on the amount of gorse build-up and recreational activities such as barbecues.

3. Current action

- 3.1 *C. vagans* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1 To maintain and increase *C. vagans* habitat.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed.

5.2 Site safeguard and management

- 5.2.1 Jersey's heathlands are a valuable resource for both humans and wildlife. All the heathland sites are worthy of designation under the SSI legislation for their unique wildlife, the important network of sites they form around Jersey for wildlife, and for their representative value of a dwindling habitat throughout Europe.
- 5.2.2 Management of all heathlands follows the same guidelines with the halting of successional processes to retain a mixture of heathland habitats from the dwarf heath communities. Almost all the heathland sites suffer from the need to control disturbance and control scrub invasion.
- 5.2.3 Anderson and Tattersfield (1986) prepared a detailed report on the heathlands of Jersey with recommendations for their management. Historically Jersey heathlands were probably maintained through traditional practices of cutting, grazing and burning. Cessation of such practices will undoubtedly have contributed to the spread of bracken and scrub.
- 5.2.4 At Bonne Nuit, Giffard and Les Platons *C. vagans* is found amongst the dwarf heath communities from the west near to Wolf's Caves, with small isolated areas across the central part of the site to the largest area near Les Platons in the east. Much of the site is dominated by bracken stands and gorse scrub. Management of the habitat needs to concentrate on halting the advance of bracken into the remaining areas of dwarf heath, and the establishment of fire breaks amongst the taller gorse stands. (Action: ED)
- 5.2.5 Bouley Bay, Le Jardin d'Olivet and Vicard are also on the north coast. The site surveyed is split into two by the road and development in Bouley Bay itself. Both areas contain good patches of dwarf heath communities favoured by *C. vagans*. Management again needs to concentrate on bracken and gorse control, and removing other invasive species encountered at these sites such as holm oak *Quercus ilex* and *Rhododendron ponticum* (Anderson and Tattersfield, 1986). (Action: ED – CMT)
- 5.2.6 At Grouville Marsh *C. vagans* is found on the east side of the marsh amongst the heathland type vegetation. This small area is cut to keep bracken under control and *C. vagans* may be resident there, or it may colonise from La Commune de Gorey where there is a larger area of heathland and grassland. The bracken needs to be controlled but it will be more effective with the removal of the litter (Dolman

- and Land, 1995). Grouville Marsh is currently proposed for SSI designation.
- 5.2.7 La Lande du Ouest is on the south-west coast and consists of a good area of a mixture of dwarf heath and grass covering the central and eastern parts of the site. Management needs to address the spread of gorse, the degeneration of the dwarf heath and the invasion of Hottentot Fig along the cliffs. La Lande du Ouest is designated as an SSI. (Action: ED – CMT)
- 5.2.8 Les Landes has the largest extent of dwarf heath/grass communities of the heathland sites, consequently having a widespread population of *C. vagans*. Towards the eastern side the heath is very low due to severe salt burn, and *C. vagans* is less widespread than in the other more sheltered parts. Management involves continuing scrub control. The area is criss-crossed with old concrete access roads built with the coastal fortifications during the Second World War. Ideally they should be removed to allow more regeneration of the heathland. Les Landes is a designated SSI. (Action: ED – CMT)
- 5.2.9 Noirmont is a heathland on the south-west coast which has limited amounts of dwarf heath on the east of the site. There are extensive gorse stands which need management. (Action: ED - CMT)
- 5.2.10 At L'Ouaisné Common *C. vagans* is found mainly amongst the dwarf heath communities on the south-eastern side close to the main pond. It is also found in fewer numbers amongst the dune grassland close to the sea wall. Gorse stands are widespread on L'Ouaisné and need clearance. (Action: ED – CMT)
- 5.2.11 La Tête de Plémont is exposed to salt spray which appears to naturally control the spread of bracken which is dominant along the mainland coastline adjacent to the site. Gorse has colonised but is low and open with patches of grass in which *C. vagans* is found even though heather is almost non-existent. Management needed is minimal but involves monitoring the extent of the bracken and gorse. (Action: ED)
- 5.2.12 Portelet Common is a cliff-top site to the south-east of L'Ouaisné Common. The main extent of dwarf heath is on the west of the site where *C. vagans* is concentrated. Management needs to monitor scrub and tree invasion, clearing where required. Portelet is currently proposed as an SSI. (Action: ED – CMT).
- 5.2.13 La Sergenté is a small area on La Pulente headland where *C. vagans* is found in the remaining open grassy area of the heathland. Recreational pressure is low due to its hidden location but the same concerns over gorse scrub encroachment apply.
- 5.2.14 Sorel is a long strip of north coastal heathland which has extensive bracken and very few areas of dwarf heath, confined to the north-eastern part. Management is needed to expand some of the heath areas to link them up into larger ones. (Action: ED – CMT)

5.3 Species management and protection

- 5.3.1 *C. vagans* is currently present in sufficient numbers at each site to be considered viable. However, action needs to be taken to protect and manage the habitats, particularly the heathland sites, from further degradation. (Action: ED – CMT)

5.4 Advisory

- 5.4.1 Advise the land owners on the situation of *C. vagans*. (Action: ED – CMT)

5.5 Future research and monitoring

- 5.5.1 Regular mapping of the range of *C. vagans* should be carried out to assess expansions or contractions in range and habitat. Habitats should be monitored for scrub invasion, ideally through the use of aerial photographs every three years. This would quickly highlight persistent problem areas and direct management efforts. (Action: ED)

5.6 Communications and publicity

- 5.6.1 *C. vagans* would benefit from a publicity campaign to increase awareness of their status and even something as simple as how to identify them and basic ecology.

5.7 Links with other Plans

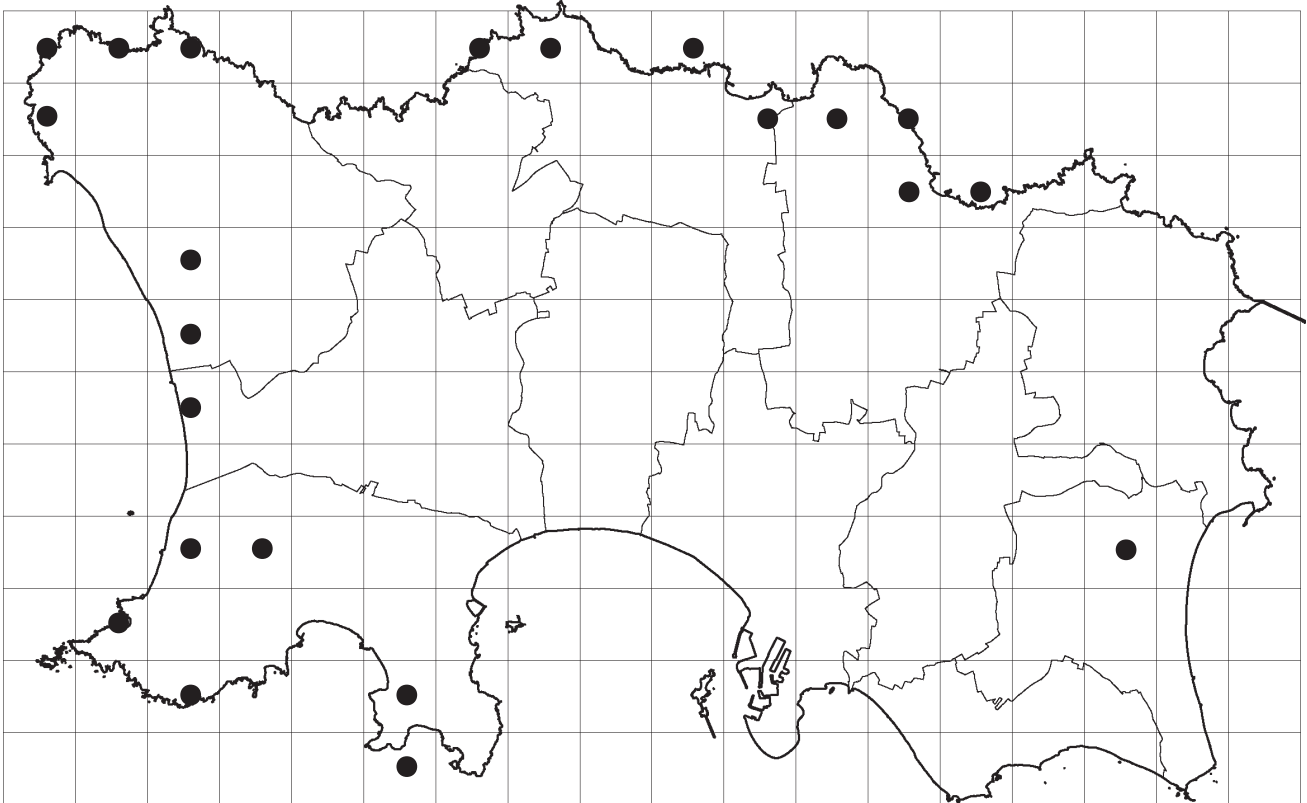
- 5.7.1 None proposed.

Heath Grasshopper *Chorthippus vagans*

● records from 1998

Distribution of Heath Grasshopper in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.



Bio Diversity

Jersey Grasshopper

(Euchorthippus pulvinatus elegantulus)

Action Plan



1. Current status

- 1.1 Endemic subspecies probably evolved from *Euchorhippus pulvinatus* after the land bridge to the European mainland was submerged about 8,000 years ago.
- 1.2 *Euchorhippus pulvinatus elegantulus* is found at Les Blanchés Banques/Les Quennevais, La Commune de Gorey, La Mielle de Morville, L'Ouaisné Common, St Ouen's Pond and La Sergenté on La Pulente Headland .
- 1.3 The stronghold for this species is the dune grassland on the west coast where it is found in almost the whole length of St Ouen's Bay. Preferred habitat is always open grassland in direct sun. At Les Blanchés Banques whilst it is found generally throughout the site it is more concentrated in the dune plain grassland on the north-western half.
- 1.4 At La Commune de Gorey individuals were found in the rough areas of the Golf Course on the east coast, where the dune grassland forms ideal habitat. *E. p. elegantulus* tends to be found in the grass-dominated vegetation, as opposed to *Chorhippus vagans* which prefers the more heathland type vegetation on the same sites.
- 1.5 On L'Ouaisné Common distribution of *E. p. elegantulus* is again restricted mainly to the dune grassland on the western side nearest the sea wall.
- 1.6 At St Ouen's Pond *E. p. elegantulus* was found on the dune grassland between the road and the sea wall (which is particularly important because it could act as an almost unbroken corridor for movement up and down the whole length of St Ouen's Bay), grassland between the pond and the main road, and grassland compartments to the north of the pond (including the orchid field).

2. Current factors causing loss or decline

- 2.1 As mentioned above *E. p. elegantulus* prefers grass dominated vegetation which is not on the increase at any site, apart from St Ouen's Pond where a grazing regime has restored the orchid field and some of the grassland to the north of the pond. At Les Blanchés Banques, L'Ouaisné Common, St Ouen's Pond and La Sergenté scrub invasion (usually gorse) is reducing the area of grassland. At Les Blanchés Banques leaf-litter build-up and succession is creating species-poor rank grassland. At La Commune de Gorey habitat area is dictated by the management of the golf course, which currently appears to be sympathetic to wildlife. Areas of habitat are unlikely to expand at this site, the aim is to keep them at current levels.

3. Current action

- 3.1 *Euchorhippus pulvinatus elegantulus* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1 To maintain a viable population of the species on its known sites through management of the grasslands, and to increase some areas of habitat.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed.

5.2 Site safeguard and management

- 5.2.1 The safeguard of its habitat is of primary importance for this species. St Ouen's Bay is one of the largest relatively unspoiled areas left in Jersey. The whole of the dune grassland would benefit from protection under the SSI designation including the strips between the main road and the sea wall.
- 5.2.2 Management needs to concentrate on the vegetation at each site. At Les Blanchés Banques *E. p. elegantulus* would benefit from the maintenance of the dune plain grassland which covers approximately the north-west half of the area. In many parts of this area rank grassland has developed which is relatively species-poor compared to the more open marram grass *Ammophila arenaria* communities (Anderson, 1984). Sheep-grazing and burning in the past, and rabbit-grazing in the present have all contributed to the maintenance of the grassland on Les Blanchés Banques. Some similar form of management is firmly recommended. Anderson (1984) explains the advantages and disadvantages of grazing and mowing, with sheep-grazing being the best solution ecologically though with concerns over practicality.
- 5.2.3 The grassland at La Commune de Gorey is located on the Grouville Golf Course serving as rough besides the fairway along the sea wall. *E. p. elegantulus* would benefit from leaving this area undisturbed.
- 5.2.4 At the Frances Le Sueur Centre *E. p. elegantulus* is found in the fenced-off enclosure, but it is not considered an area important for this species. The enclosure was primarily for the recovery programme for the Agile Frog *Rana dalmatina*, and the Jersey

Grasshopper is widespread on the surrounding La Mielle de Morville.

- 5.2.5 La Mielle de Morville is another major site for *E. p. elegantulus* which is found throughout the area. The grassland faces similar threats to other sites in the form of scrub invasion and recreational pressures.
- 5.2.6 At L'Ouaisné Common *E. p. elegantulus* is found amongst the dune grassland found closest to the sea wall on the southern side. The main threat to the habitat is the spread of the gorse scrub which dominates the main area of the common. The grass areas should be kept from becoming rank by appropriate management, i.e. cutting or grazing.
- 5.2.7 At St Ouen's Pond *E. p. elegantulus* inhabits the grassland areas found between the road and the sea wall, and grassland around the extent of the reed bed. A grazing/mowing regime has been implemented to restore the orchid field and other grassland areas and appears to be successful (Anderson and Longsdon, 1997). Continuation of this is important to maintain the right habitats. Recreation pressure seems to be of little concern, the grass areas by the sea wall probably receive the most trampling.
- 5.2.8 La Sergenté is a small area of heathland at La Pulente headland. The scrub is interspersed with many small grassy patches which contain *E. p. elegantulus*. Access to the site is not easy which will mean that recreational pressure is low. There were no apparent signs of management to the vegetation but there had been large stones placed by the track to prevent cars from driving on to the heathland. Gorse scrub clearance would be recommended as it is dense in places and carries a significant fire risk. (Action: ED - CMT)

5.3 Species management and protection

- 5.3.1 The current status of *E. p. elegantulus* appears to be in good enough numbers and locations not to need drastic action. Attention to the habitats is needed to prevent further degradation takes place which should be sufficient to provide for a viable future.

5.4 Advisory

- 5.4.1 The Grouville Golf Course should be contacted to notify them of the importance of their site on the east side of the Island. Changing management regimes, notably the reduction in long grass, has probably resulted in the Cirl Bunting being no longer found in this area. It would be unfortunate if *E. p. elegantulus* suffered the same fate. (Action:ED)

5.5 Future research and monitoring

- 5.5.1 Monitoring the extent of habitat, maybe by aerial photography, would keep a track of scrub encroachment and the need for management. More investigation is needed into the specific type of grassland (e.g. mix of species, food plant, etc.) that *E. p. elegantulus* favours. Some clearer picture of the relationship between the Jersey Grasshopper and its competitors such as the Meadow Grasshopper *Chorthippus parallelus* and the Field Grasshopper *Chorthippus brunneus*. It is recommended that a pilot study should be conducted on the viability of grazing as a management tool. (Action: ED)

5.6 Communications and publicity

- 5.6.1 *E. p. elegantulus* is perfect for use as a locally distinctive species. The name itself, Jersey Grasshopper, brings attention to its status as an endemic subspecies. A publicity campaign to increase awareness of their status and even something as simple as how to identify them and basic ecology.

5.7 Links with other Plans

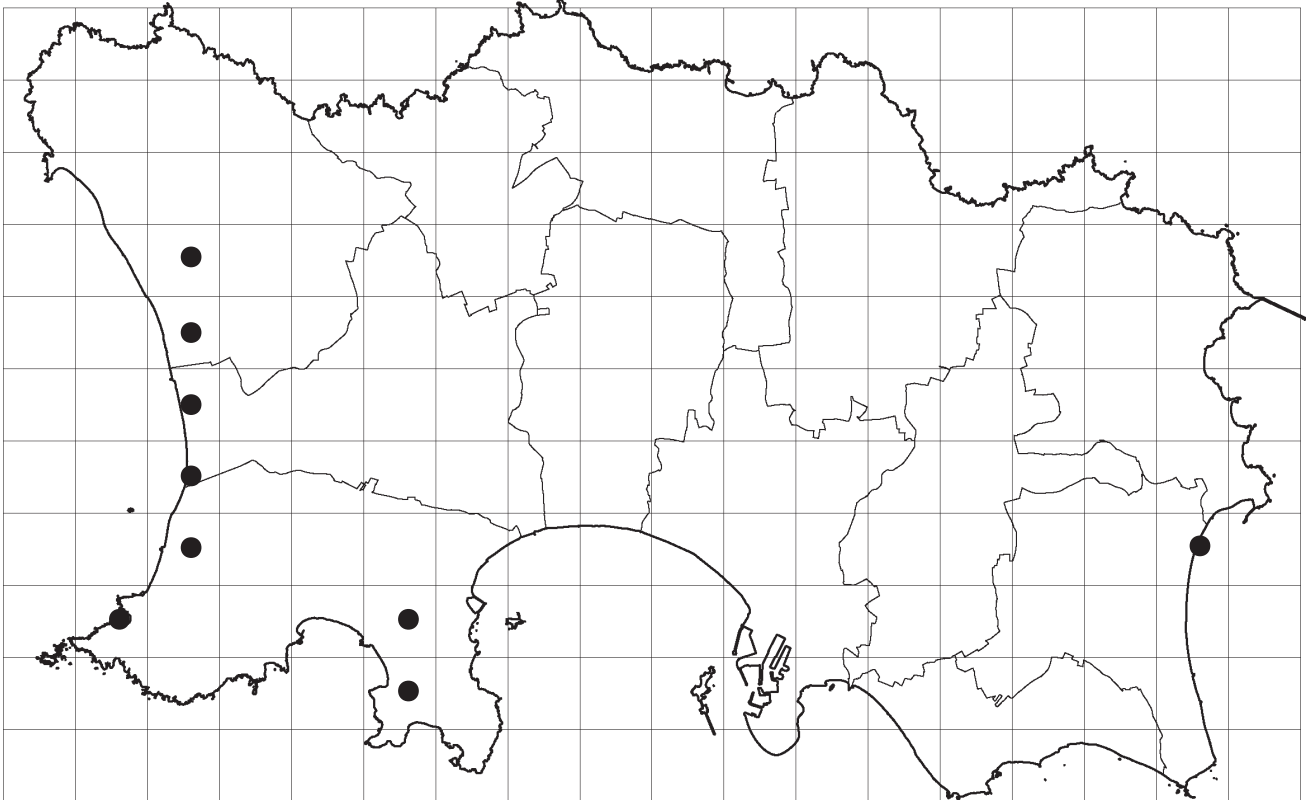
- 5.7.1 None proposed.

Jersey Grasshopper *Euchorthippus pulvinatus elegantulus*

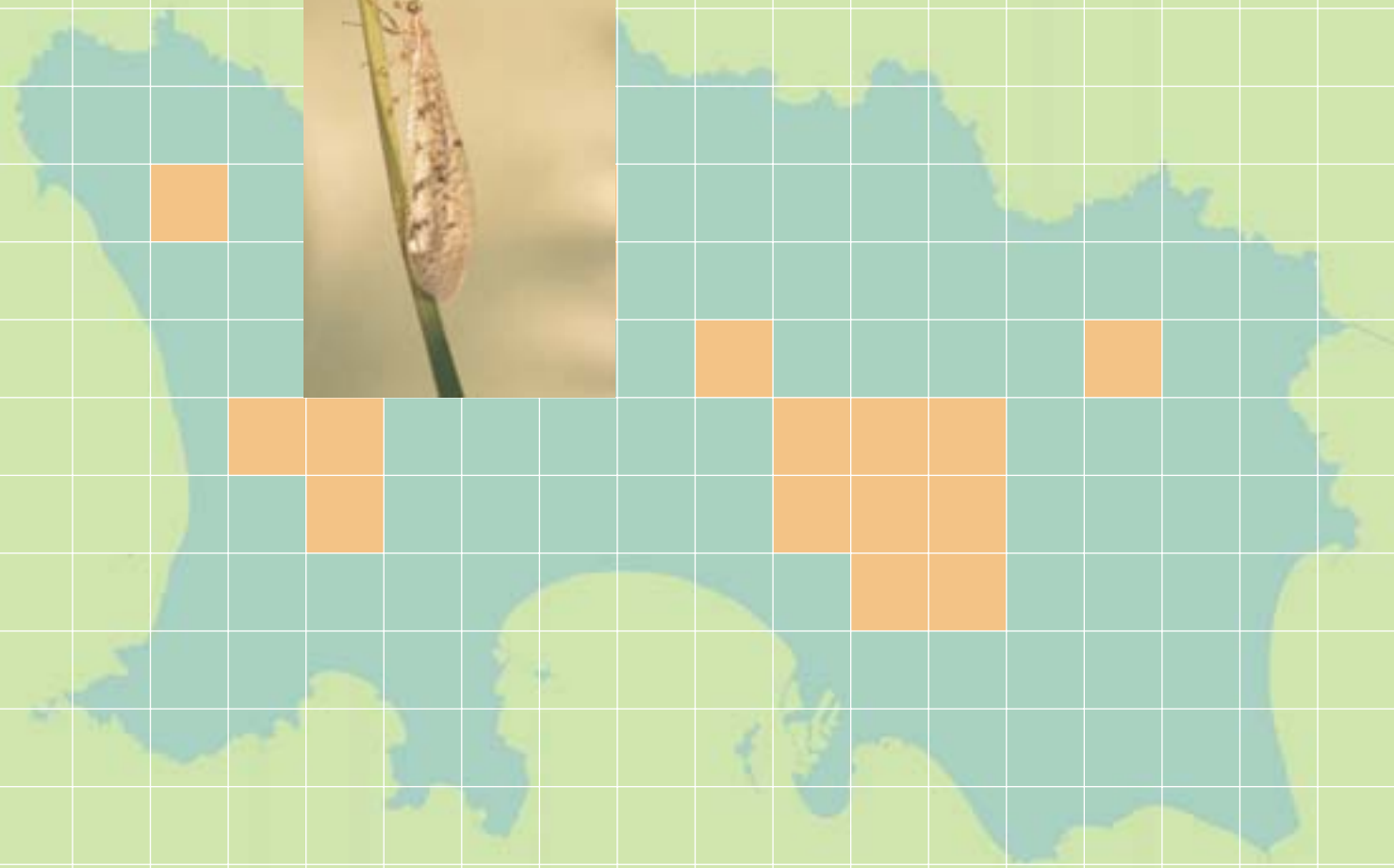
● records from 1998

Distribution of Jersey Grasshopper in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.



Bio Diversity
Ant-lion
(Euroleon nostras)
Action Plan



1. Current status

- 1.1 *E. nostras* is rare in Jersey; it was first recorded in 1958 by W.J. Le Quesne (Le Quesne, pers. comm.), but there is strong anecdotal evidence of its being well established at Belcoroute in the 1930s. (R. Long, pers. comm.). Colonies tend to average about 60 pits in suitable locations, but are distant from each other.
- 1.2 *E. nostras* is found at Les Blanches Banques/Les Quennevais, La Mielle de Morville La Grande Thiébault, L'Ouaisné Common, Simon's Sand Pit, Portelet Common and St Brelade's Bay.
- 1.3 At Les Blanches Banques/Les Quennevais *E. nostras* is found in small numbers across the dune system. Larval pits are found in groups of 1-10 unlike most other sites where pit numbers are 50+. Pits are found on the south-facing side of dunes, where the sand is bare and the vegetation on the top of the dune provides some shelter from wind. Pits were not found where the sand was too mobile, evident from wind deposits, or where rabbits had burrowed into the bare dune face, again presumably due to disturbance.
- 1.4 At the Frances Le Sueur Centre at La Mielle de Morville there is a colony of approximately 110 pits in the sandy soil on the south-facing side of the building, in a fenced-off enclosure, where it is sheltered from the wind. Rain drip down the side of wall will have an impact on some of the pits, but during the main rainy part of the year the larvae will be overwintering and in less need of a functioning pit. The Frances Le Sueur Centre was built recently, before that a mobile office was in use. The ant-lions used to be close to the previous office, and moved to their current site on completion of the new centre.
- 1.5 At La Grande Thiébault there is a colony of 60 larval pits on the south-facing side of a bridle path which has worn through the vegetation creating a bank and revealing the silty soil. Once again the larvae are just off the main area of erosion and are sheltered from the wind and rain by the vegetation on the top of the bank.
- 1.6 At L'Ouaisné Common *E. nostras* is found on paths through the gorse scrub where the trampling has kept the sandy soil bare. Pits are dug in the south-facing side of the path where the vegetation shelters the site.
- 1.7 The coastal footpath from L'Ouaisné Common up to Portelet Common is the site of another colony of about 76 pits, along with a few individual ones. The footpath cuts through a bank near the top and has exposed the fine silty soil. The colony is on the south-facing side where the bank vegetation provides good shelter from strong winds, on the exposed path.
- 1.8 On Portelet Common a colony of 25-30 pits extends over 4-5m on a south-facing bank at the entrance to the car park. The bank is being undercut by traffic.

- 1.9 Surveys associated with the Environmental Impact Assessment for the extension of the Simon Sand Pit in 2004 revealed the presence of about 50 pits in the quarry area (Colin Plant for Atkins Ltd 2004). Measures to maintain and monitor these sites are included in the extension plans.

2. Current factors causing loss or decline

- 2.1 The status of *E. nostras* is not clear as sites are continually being found. Ant-lions' habitat is characteristic of disturbed, early successional stages where the disturbance has opened a patch of suitable ground. The frequency and magnitude of disturbance is important, too high and there is not enough continuity of feeding and development, too low and the habitat will disappear. Stabilisation of the surface by vegetation is probably the biggest factor causing reduction in the amount of habitat.

3. Current action

- 3.1 *Euroleon nostras* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1 To increase and maintain a viable population at each of the known sites.

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 None proposed.

5.2 Site safeguard and management

- 5.2.1 At Les Blanches Banques/Les Quennevais there is little action needed. At the middle and western side of the site there appears to be enough disturbance on the dunes to keep suitable locations open for colonisation. At the eastern edge of the site there is scrub invasion which needs management to be kept under control.
- 5.2.2 The colony at the Frances Le Sueur Centre is adequately protected by the fenced enclosure, and all that needs to be done is to keep vegetation from colonising the area. The Countryside Manager is aware of the importance of the colony at the centre and monitors it.
- 5.2.3 Some protection is needed for the site at La Grande Thiébault. It will be difficult to fence it off due to the narrowness of the bridle path. Informing riders and/or erecting an

information board at the site would help to keep riders to the south side of the path. Management of the bridle path such as trimming back the loose soil should be avoided on the south-facing side. Overhanging vegetation needs to be trimmed back.

- 5.2.4 At L'Ouaisné Common path maintenance practices need to be changed to prevent vegetation from shading out the sites. Parties carrying out path repairs (usually the Countryside Management team) should be made aware of the locations of colonies and the different practices required.
- 5.2.5 The colonies at Simon Sand Pit are maintained and monitored as part of the development of the quarry.

5.3 Species management and protection

- 5.3.1 Not enough is currently known about the population of *E. nostras* in Jersey. A key requirement is information on the dispersal abilities of adult females, which dictates whether there is any gene flow between colonies. Current action will concentrate on habitat protection and management. (Action: ED – CMT)

5.4 Advisory

- 5.4.1 Advise path maintenance teams of the species habitat requirements. (Action: ED)

5.5 Future research and monitoring.

- 5.5.1 The ED should monitor each site for the number of larval pits each year to assess population fluctuations. More information on the species' ecology is needed, particularly that of dispersal as mentioned above. Establishing a link with Colin Plant, who is carrying out a detailed investigation into the ecology of *E. nostras* at the Minsmere site in Suffolk, would be very useful. (Action: ED)
- 5.5.2 Potential sites of colonies are difficult to find since they can be small enough to fit into a plot 0.5m x 0.5m, as long as the soil and aspect is right. It is recommended that an advertisement is run in the Jersey Evening Post with a blank map of the Island (with 1km grid squares). Readers would be invited to mark the location of colonies and return the maps to the ED. Colonies have been recorded from gardens, particularly in the St Brelade area, where the soils are suitable. The contribution of gardens to the overall population figures could be important, and needs further investigation. (Action: ED)

5.6 Communications and publicity

- 5.6.1 *E. nostras* would benefit from a shared publicity campaign along with the other species proposed for protection. A newspaper advertisement would also help to create awareness amongst the public on this fascinating species, which needs monitoring.

5.7 Links with other Plans

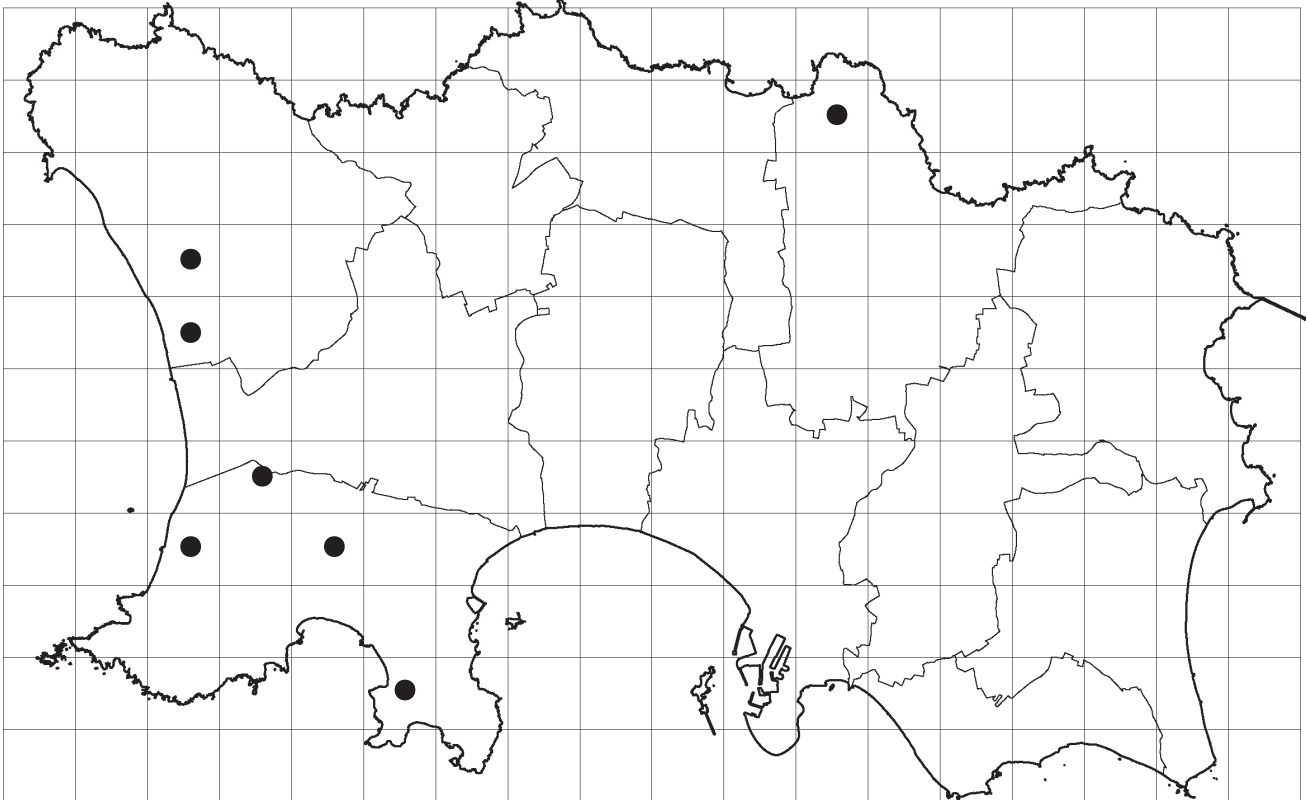
- 5.7.1 None proposed.

Ant-lion *Euroleon nostras*

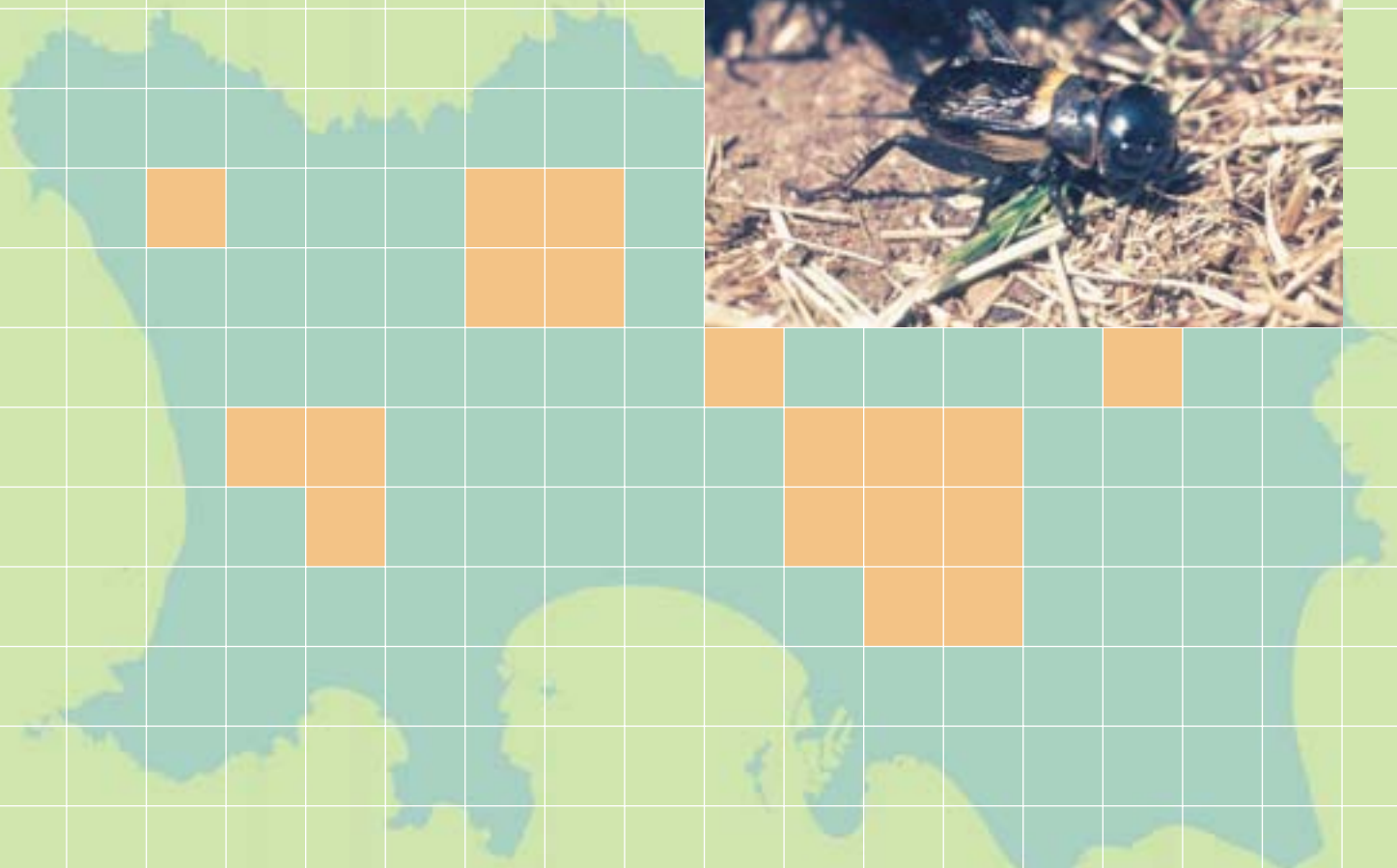
● records from 1998

Distribution of Ant-lion in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.



Bio Diversity
Field Cricket
(Gryllus campestris)
Action Plan



1. Current status

- 1.1 Rare in Jersey mostly confined to sandy, coastal areas in the west and south-west.
- 1.2 *G. campestris* is found on Les Quennevais/Les Blanches Banques, Le Mielle de Morville and L'Ouaisné Common. Adults have also been heard in uncultivated fields elsewhere in the western half of the Island. (M. Long, pers. comm.).
- 1.3 At Les Quennevais/Les Blanches Banques *G. campestris* is found at scattered locations across the site. Favoured habitats, as expected, are sunny and south facing, mostly sloping, ground such as banks or dune sides. The whole area is a dune system where the sandy soil is ideal for burrowing, and there is plenty of bare ground. *G. campestris* is also recorded at Simon Sand and Gravel, where it is found in similar areas to those on the Les Blanches Banques complex.
- 1.4 La Mielle de Morville is similar in that it is a sandy, dune type grassland. Overall it is flatter than Les Blanches Banques but there are still small undulating banks and slopes. There is less heathland vegetation and more grassland vegetation than Les Blanches Banques.
- 1.5 L'Ouaisné Common is also a suitable habitat being a mixture of heathland, grassland and scrub on stabilised sand dunes. There are patches of bare ground and the site is south facing.

2. Current factors causing loss or decline

- 2.1 *G. campestris* requires suitably disturbed habitat that contains about 50% bare ground. This means that the ideal habitat is susceptible to succession and vegetation invasion which shade out the cricket. In Britain, the Netherlands and Jersey the spread of bracken *Pteridium aquilinum*, mature heathers, scrub, pine and coarse grasses along with the intensification of agriculture have all played a part in the extinction of colonies (Edwards *et al.*, 1996).
- 2.2 *G. campestris* used to be found in the stream valleys throughout Jersey where a rotational form of agriculture (potato crops alternated with cattle grazing) formed suitable habitat. Changing practices and intensification have removed this type of opportunity for the Field Cricket (M. Edwards, pers. comm.). Scrub intrusion and stabilisation of the land surface will all reduce the amount of suitable habitat for *G. campestris*.

3. Current action

- 3.1 *G. campestris* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1 To maintain a viable population of this species at its known sites.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed.

5.2 Site safeguard and management

- 5.2.1 Since *G. campestris* is characteristic of a disturbed, early successional habitat mechanisms to simulate this need to be incorporated in habitat management plans. Methods used in the UK have included tree clearance and the spraying of bracken along with the removal of the litter (M. Edwards, pers. comm.) which resulted in almost immediate colonisation.
- 5.2.2 The Les Blanches Banques/Les Quennevais site is protected by SSI legislation and appears to be one of the only sites where there is a significant amount of natural disturbance. Disturbance of the vegetation layer such as by human trampling, rabbit grazing or burrowing opens the surface to deflation, where wind erosion of the surface creates a mix of open spaces amongst the vegetation. At Les Blanches Banques/Les Quennevais this appears to occur frequently enough to avoid the need for intensive management. The high diversity of all species on this site and its national importance makes management decisions difficult. Reducing the scrub (good for some invertebrates) and leaf litter (good for invertebrates, but detrimental to floristic diversity) affects the composition of many other species.
- 5.2.3 There is a trend at this site of scrub and rank grass invasion which needs to be addressed. One suggestion (Anderson, 1984) is to restore sheep grazing to the dunes (particularly the dune plain areas) to control the rank grassland. Sheep have grazed the dunes for centuries and have helped select for the dune vegetation, and trampling by the animals may also keep the surface open. Rabbit grazing is not sufficient as it promotes moss and lichen growth which insulates the ground from the sun making the survival of *G. campestris* eggs

unlikely (M. Edwards, pers. comm.). A grazing regime could be drawn up to take into account public access and controlling the amount of pressure in the right areas. It is acknowledged that there are advantages and disadvantages to such schemes, but when compared to the cost and time, a feasibility study could be recommended. Gorse and bracken control is necessary in parts of the site but mainly to stop further spread than reclaiming large areas of land. Management proposals such as put forward by Anderson (1984) should be seriously reconsidered for implementation. (Action: ED – CMT)

- 5.2.4 The dune grassland at Les Mielles needs the same type of management as Les Blanchés Banques. Disturbance of the site by human trampling may aid in opening the vegetation but could be negative in disrupting behaviour. Crickets retreat into their burrows when disturbed. Due to the site's lower topography it is less exposed, and the frequency of blowouts is reduced. Rabbit grazing and human trampling may be more important in keeping bare ground.
- 5.2.5 At L'Ouaisné Common the locations for *G. campestris* are both on the proposed SSI part of the common and the privately-owned area. Safeguards to the site will be in place through the SSI legislation if the proposal is accepted. The privately-owned land however is not protected and would benefit from a management agreement to avoid changes to the habitat such as planting conifers. The gorse stands on L'Ouaisné are quite extensive and could do with some control to allow the spread of the dune grassland and heath communities. Chapon (1986) has recommended a rotational gorse cutting regime that takes into account the requirements of other species such as the Dartford Warbler which breeds in the gorse stands. (Action: ED)

5.3 Species management and protection

- 5.3.1 *G. campestris* responds well to captive breeding. The concerns about mutations expressed by Marshall and Haes (1990) appear to be unfounded providing the right living conditions, particularly for the developing eggs, are provided. However the considerations for the species are currently dependent on the introduction of the correct management regime for the habitat.

5.4 Advisory

- 5.4.1 Advise the owner of the land neighbouring central L'Ouaisné Common about the importance of the species on the property, and try to negotiate a management agreement sympathetic to this and the other proposed protected species needs. (Action: ED)

5.5 Future Research and monitoring

- 5.5.1 Continued monitoring of the range of *G. campestris* is needed, ideally on an annual basis. The species does go through boom and bust cycles depending on the warmth of spring and summer and the availability of disturbed habitat (Edwards *et al.*, 1996). Investigating the relationship between population cycles and climate would be useful in predicting future trends. It is suggested that the Field Cricket be one of the higher priority species due its declining status, low numbers and limited distribution. (Action: ED)

5.6 Communications and publicity

- 5.6.1 *G. campestris* is a rare and fascinating insect which would benefit from a campaign of awareness raising amongst the public.

5.7 Links with other Plans

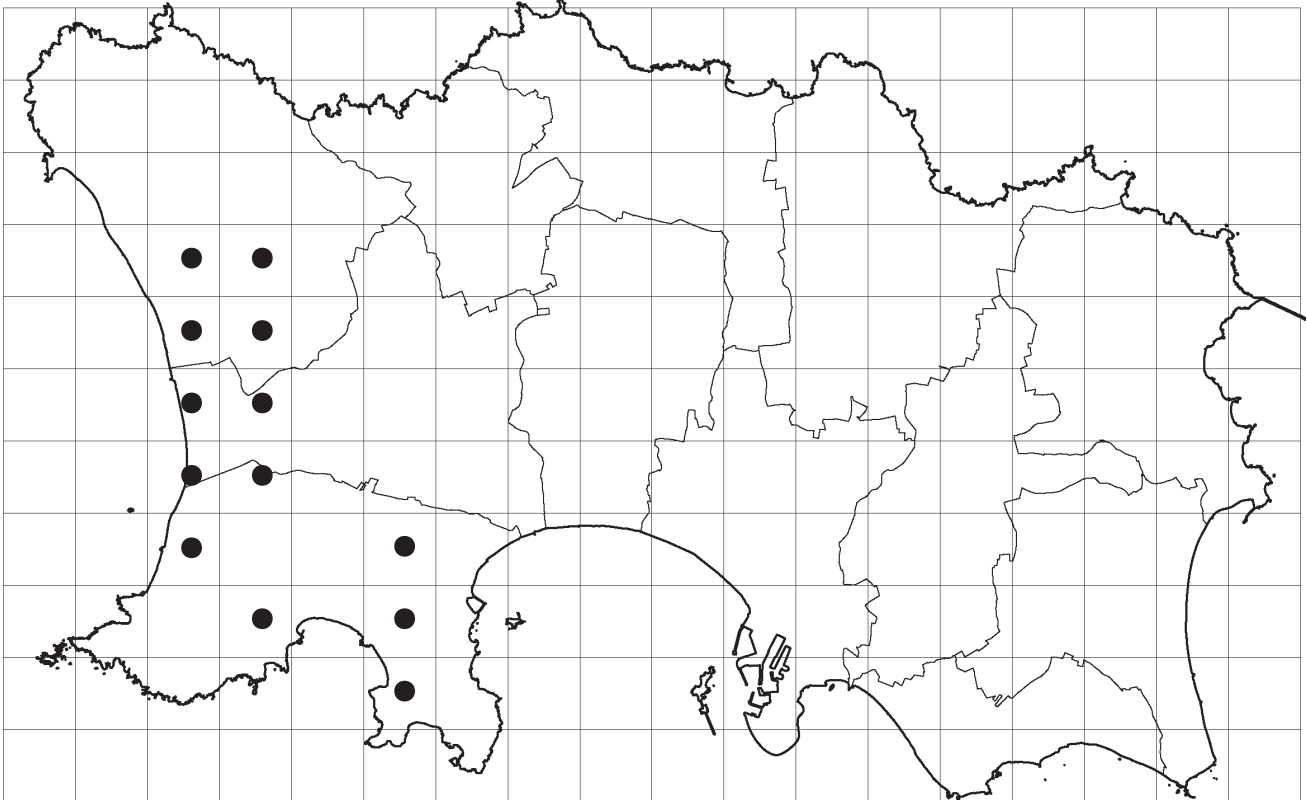
- 5.7.1 None proposed.

Field Cricket *Gryllus campestris*

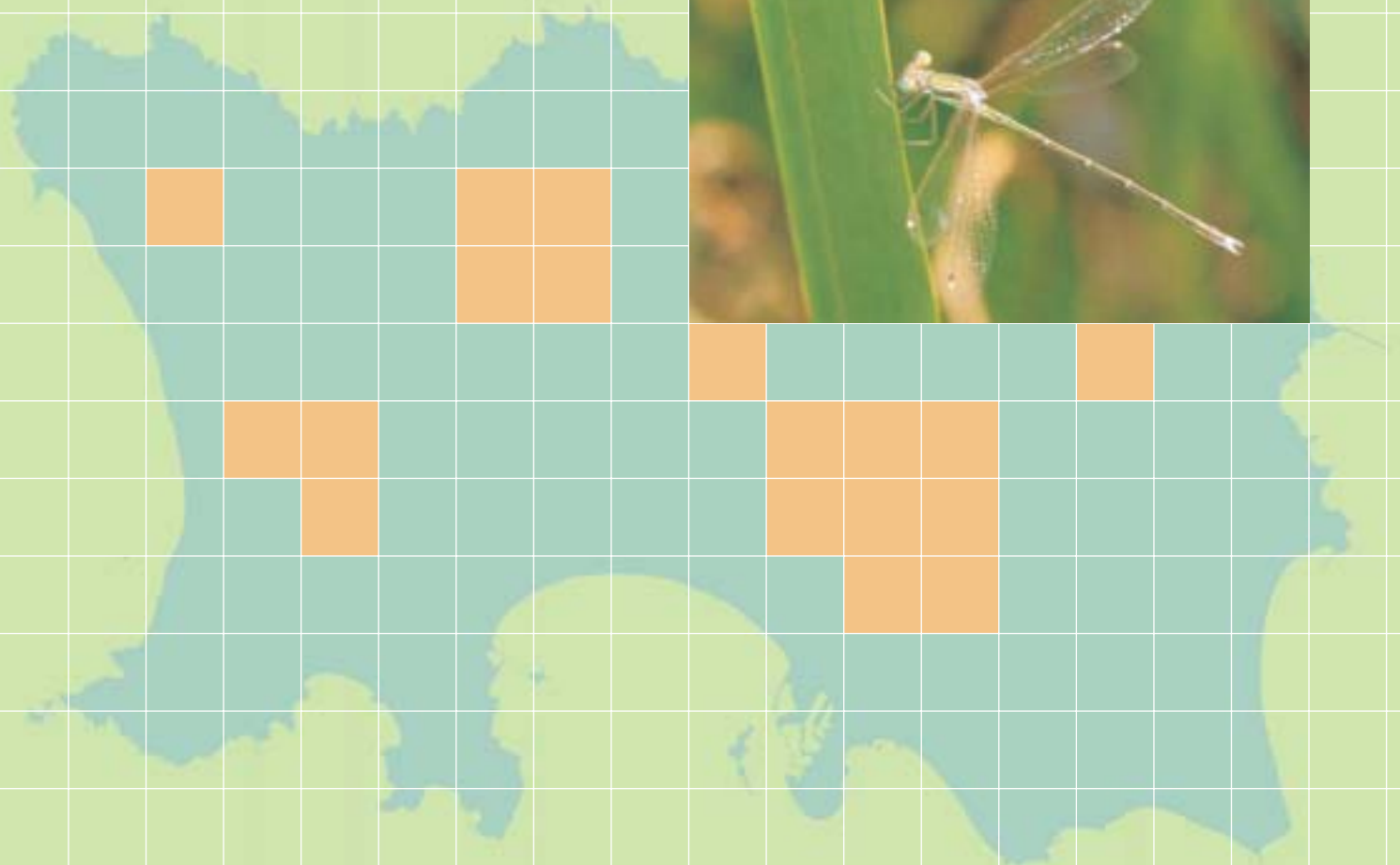
● records from 1998

Distribution of Field Cricket in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.



Bio Diversity
Southern Emerald Damselfly
(Lestes barbarus)
Action Plan



1. Current status

- 1.1 Rare in Jersey; restricted to two sites.
- 1.2 *Lestes barbarus* is found at two sites in Jersey, a pond at Noirmont and the main pond at L'Ouaisné Common.
- 1.3 The pond at Noirmont is situated just above the sea cliffs and below some agricultural land. The field was once heathland which was cleared for cultivation. Herbicide applications have been washed off the field by rain in the past killing a large number of Agile Frogs and Toads in the pond. The farmland may be left to revert to heathland (J. Pinel, pers. comm.). The pond is the only site for the Jersey Forget-me-not *Myosotis sicula* which grows on the dried out margins in summer, when the water level drops about 30-50cm. The pond is severely choked by sweet flag *Acorus calamus* and surrounded by bracken and gorse. Up to half a dozen *L. barbarus* may be seen perched in the vegetation on the western side, which is more sheltered from the prevailing wind.
- 1.4 The pond at L'Ouaisné Common is on the east side near the car park. It is bordered by a dominant stand of the common reed *Phragmites australis* which makes approach to the pond edge difficult until the summer when the water level drops significantly. Adult *L. barbarus* individuals were recorded sheltering in the gorse, bracken and bramble scrub and on the reeds on the western edge of the pond.

2. Current factors causing loss or decline

- 2.1 Pollution of the pond water and limited ability to colonise other areas (Jersey has few bodies of open water). It is unknown how much open water is needed and whether the choking of the pond by vegetation, such as at Noirmont, may restrict expansion in the population of *L. barbarus*.

3. Current action

- 3.1 *L. barbarus* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1 To increase and maintain a viable population of this species at its known sites.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed

5.2 Site safeguard and management

- 5.2.1 Noirmont would benefit from SSI designation considering the importance of the pond in particular to wildlife. Currently the pond is subject to a study for the Jersey Forget-me-not. One-metre-wide strips of Sweet Flag have been cleared from the western edge of the pond over successive seasons to allow an increase in the population of the Jersey Forget-me-not. Plans are to increase the clearance of Sweet Flag and maybe deepen the pond (J. Pinel, pers. comm.). (Action: ED – CMT)
- 5.2.2 It is unclear whether *L. barbarus* will benefit from an enlarging of the pond and clearing of the vegetation. Females oviposit in overhanging, nearby or floating vegetation and larvae tend to hunt in and around pond vegetation. A compromise is clearly needed to take into account the needs of the different wildlife at the pond. Until more detailed information on the conflicting requirements of each species is compiled, it is recommended that the clearance of the vegetation should proceed as a study with strips being cleared each year, rather than in one drastic manoeuvre.
- 5.2.3 At L'Ouaisné Common some clearance of the reeds is done to stop the pond becoming overgrown. This needs to be continued. (Action: ED – CMT)

5.3 Species management and protection

- 5.3.1 *L. barbarus* could be considered for introduction into other pond sites due to its limited dispersal abilities and low number of habitats. This needs further research into habitat requirements such as water quality and suitable pondside vegetation.

5.4 Advisory

- 5.4.1 None proposed.

5.5 Future research and monitoring

- 5.5.1 A more detailed investigation into habitat requirements and population numbers is needed soon. Of the species in this report *L. barbarus* must be considered a priority case due to the extremely low numbers of adults found and the limited number of sites it inhabits. This species should be considered for further under/postgraduate projects or other research.

5.5.2 Water quality monitoring has been undertaken at each site in the past. This needs to be continued for these and the other pond sites in Jersey, both to keep a record of possible pollution events and for determining the requirements of *L. barbarus* and whether other sites would be suitable for colonisation. The sampling frequency should be at regular intervals and for the same variables each time to get a useful time sequence of data. Comparisons with other pond sites could highlight potential introduction sites with similar water quality characteristics.

5.6 Communications and publicity

5.6.1 *L. barbarus* would benefit from being a part of a publicity campaign for Jersey's endangered invertebrate species, to raise awareness of the importance and acceptance of insects in the environment.

5.7 Links with other Plans

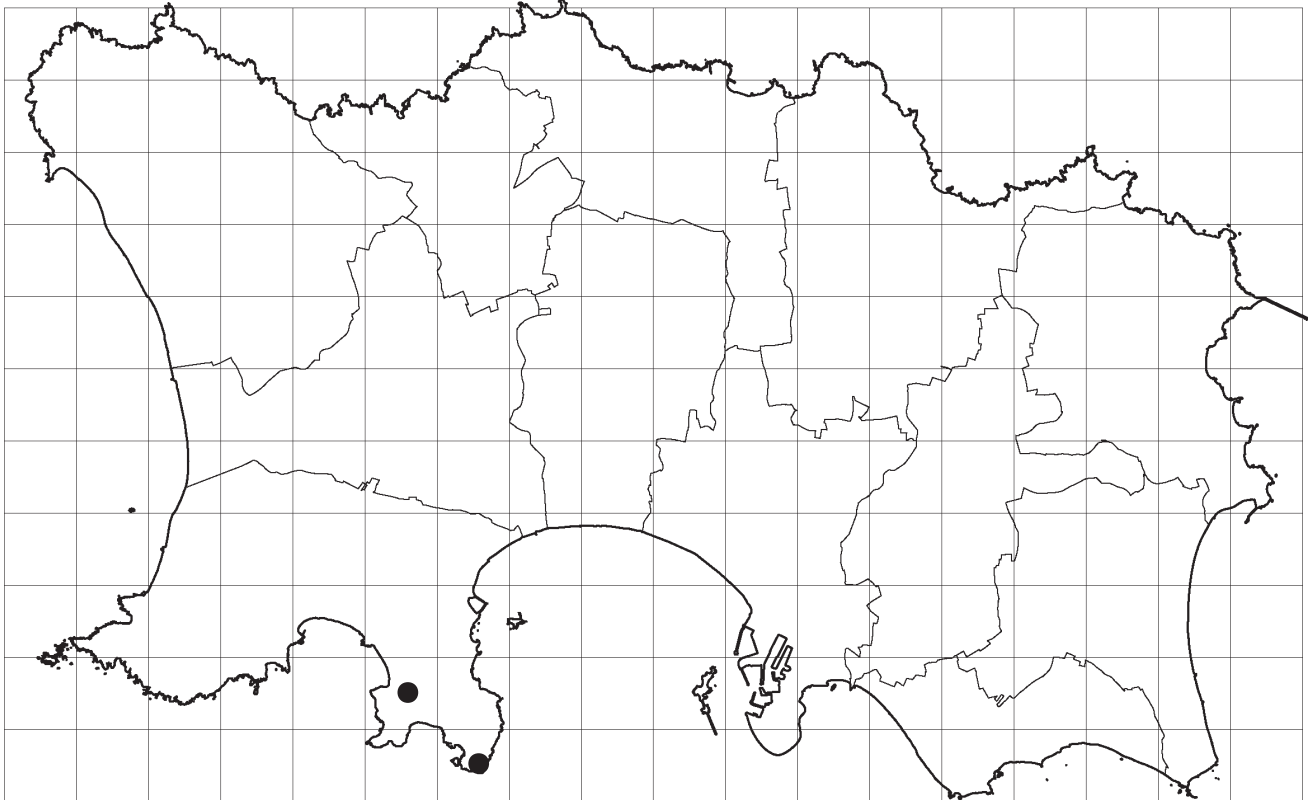
5.7.1 None proposed.

Southern Emerald Damselfly *Lestes barbarus*

● records from 1998

Distribution of Southern Emerald Damselfly in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.

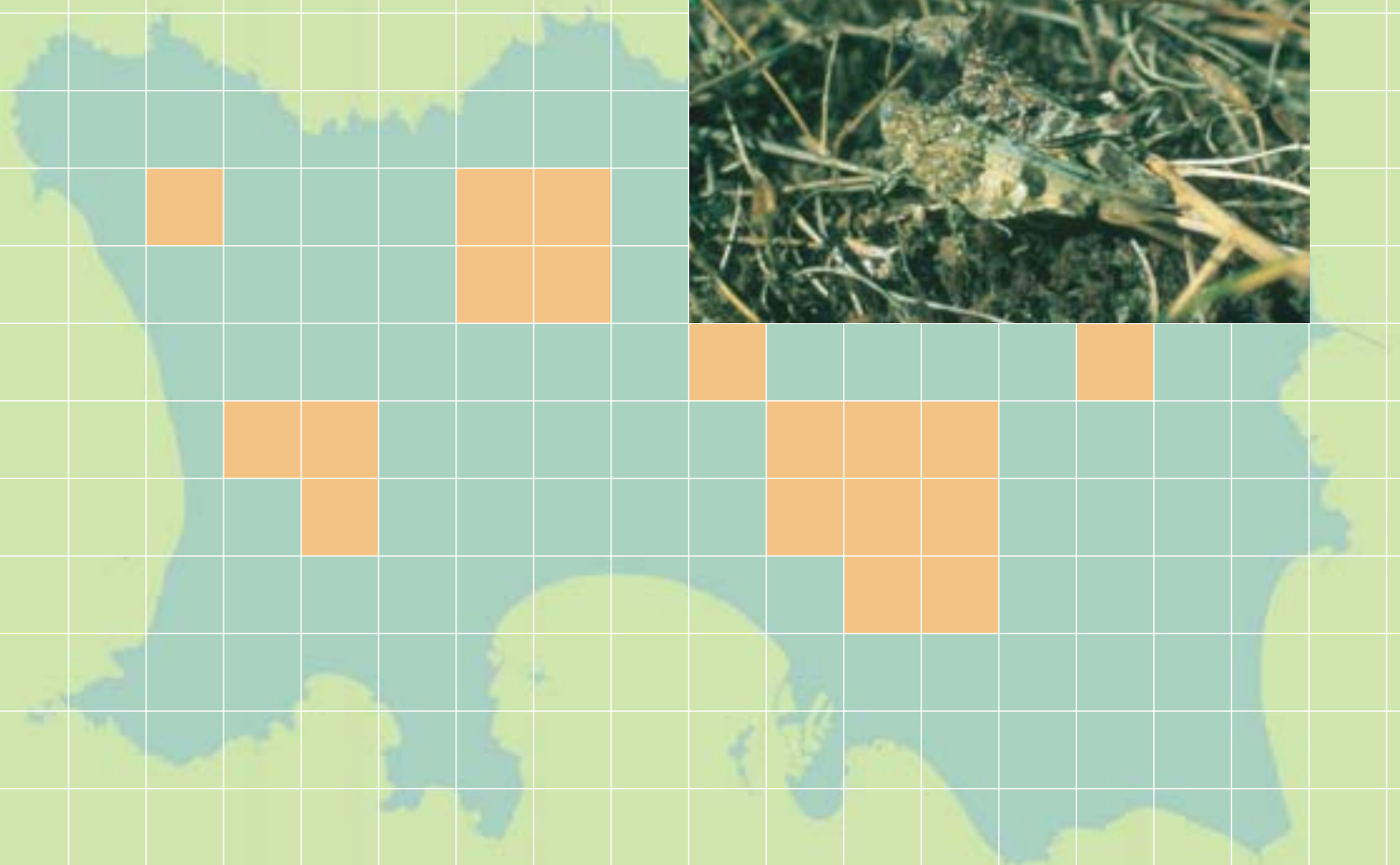


Bio Diversity

Blue-winged Grasshopper

(Oedipoda caerulescens)

Action Plan



1. Current status

- 1.1** The Blue-winged Grasshopper is relatively common in Jersey on sandy dunes and heaths on the west and south-west of the Island.
- 1.2** *Oedipoda caerulescens* is found at Les Blanchés Banques/Les Quennevais, La Lande du Ouest, La Mielle de Morville, L'Ouaisné Common and St Ouen's Pond.
- 1.3** Les Blanchés Banques seems to be the stronghold of this species with the highest density found at all the sites. Preferred habitat is amongst the dune grassland and the mats of burnet rose *Rosa pimpinellifolia* in the central and south-eastern parts of the site where its mottled colour serves as effective camouflage. The Simon Sand and Gravel site also supports populations
- 1.4** At La Lande du Ouest *O. caerulescens* is found amongst the more open matrix of dwarf heath and grass which dominate the central and eastern parts of the site.
- 1.5** At Les Mielles the hot, dry grassland is an ideal habitat for this species. It can be found throughout the site where the grass is open.
- 1.6** At St Ouen's Pond *O. caerulescens* is found in the grassland to the north and west of the pond (up to the sea wall). The individuals found by the sea wall near La Tour Carré show a distinct colour form. Instead of being (on average) a mottled tone of mid to dark greys and browns, the individuals in this area are almost pure black, this difference being evident over a distance of only 100m (across the main road). A large quantity of seaweed is thrown up over the sea wall where it gradually dries and goes a deep black colour. The grasshoppers live amongst the mixture of grass, dune plants, shingle and seaweed. The colour form probably serves as better camouflage amongst the seaweed; it is not known whether the grasshoppers feed on the seaweed.

2. Current factors causing loss or decline

- 2.1** Degeneration of the grass-dominated vegetation through succession and scrub invasion at all sites has reduced the area of habitat and thus the population size.

3. Current action

- 3.1** *Oedipoda caerulescens* is on the proposed list of species to be protected by the Conservation of Wildlife (Jersey) Law 2000.

4. Action plan objectives and targets

- 4.1** To maintain viable populations of this species at its known sites.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed.

5.2 Site safeguard and management.

- 5.2.1 Sites where *O. caerulescens* occurs are also those containing *E. pulvinatus elegantulus* (Jersey Grasshopper). The two species are found in similar habitats, namely hot, dry, grassland. Habitat protection and management can be considered as the same for both species.

5.3 Species management and protection

- 5.3.1 Correct habitat management should be sufficient to maintain viable populations of this species. The colour forms found in St Ouen's Bay merit further investigation. (Action: ED)

5.4 Advisory

- 5.4.1 None proposed.

5.5 Future research and monitoring

- 5.5.1 Annual mapping of the range of the Blue-winged Grasshopper is recommended for long-term monitoring of the species and to compare with management practices in assessing successful techniques. (Action: ED)
- 5.5.2 An investigation into the different colour forms of *O. caerulescens* should be undertaken to establish whether any specific habitat management is required.

5.6 Communications and publicity

- 5.6.1 *O. caerulescens* would benefit from a publicity campaign particularly in light of the interesting adaptations part of the population is displaying in the St Ouen's Bay area.

5.7 Links with other Plans

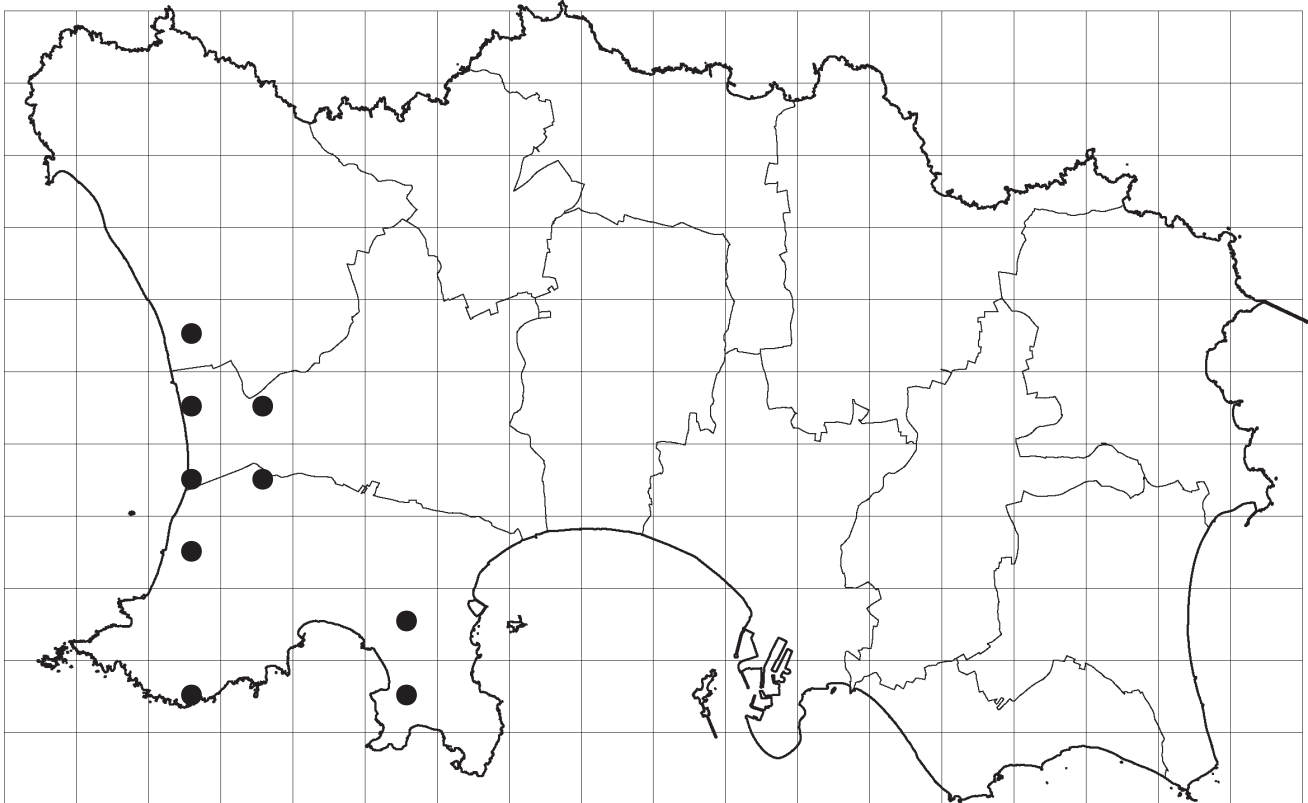
- 5.7.1 None proposed.

Blue-winged Grasshopper *Oedipoda caerulescens*

● records from 1998

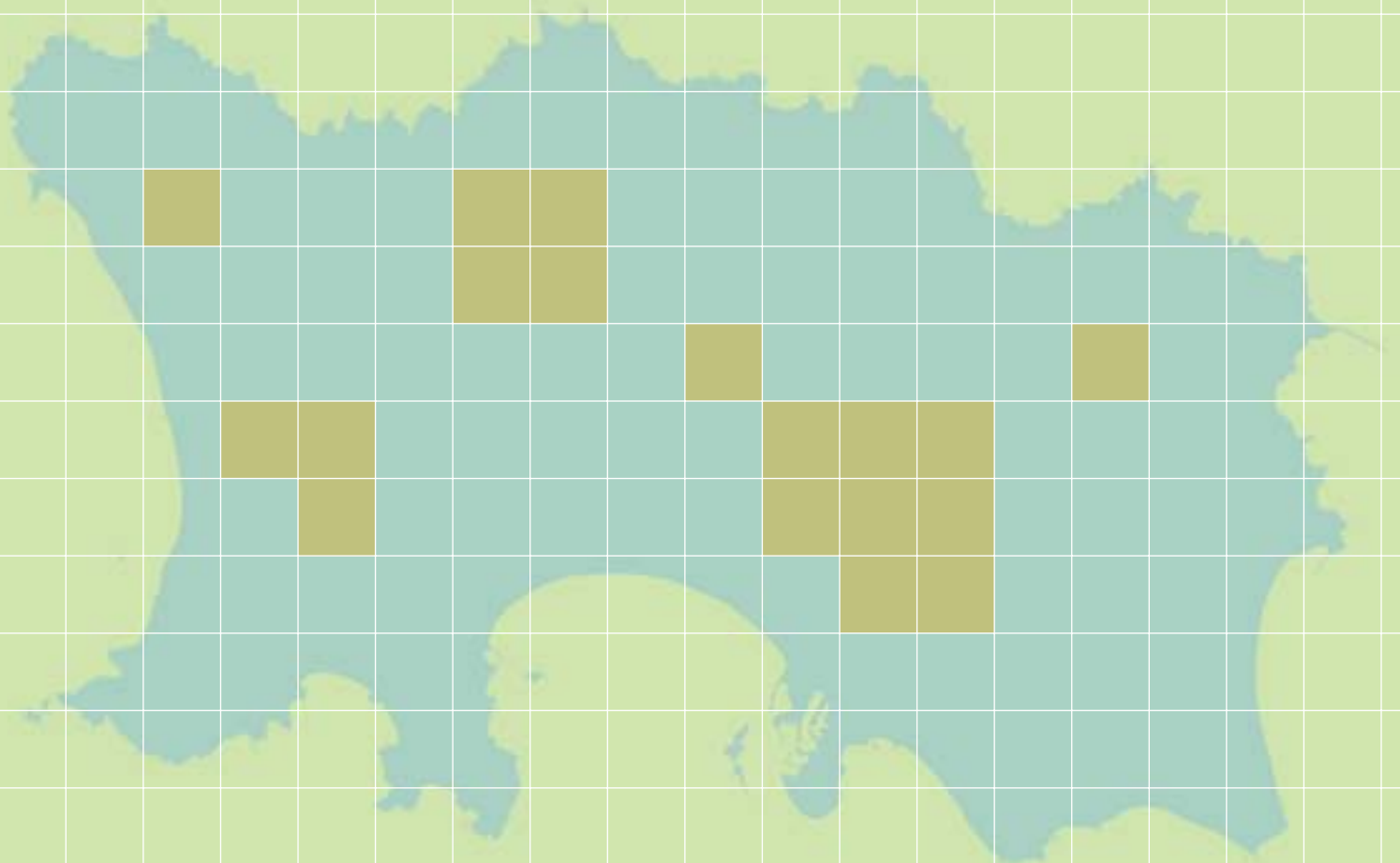
Distribution of Blue-winged Grasshopper in Jersey, by 1 Km square.

Source: 'Species Action Plans for Threatened Invertebrates in Jersey', Murray, 1998.



Bio Diversity

Amphibian Action Plans



Bio Diversity
Agile Frog
(Rana dalmatina)
Action Plan



1. Current status

- 1.1 The Agile Frog's European habitat consists of woodlands and wet meadows and, unlike the Common Frog *Rana temporaria*, it is rarely found in fields or gardens. Breeding ponds are usually in or near the edge of deciduous woodland (Ahlen, 1984; Holeman and Wederkinch, 1988).
- 1.2 The above ecological profile is in contrast to the present observed habitat in Jersey. Although recorded historically in some numbers in the St Peter's Valley woodlands, Mont Mado and Handois, those populations which survived into the 1980s were in coastal heath and gorse habitats at Noirmont and L'Ouaisné Common in the south-west of Jersey. However, both sites have small areas of woodland within 1,000m of the breeding ponds, which may provide suitable habitat for foraging at other times of the year.
- 1.3 The Agile Frog in Jersey is at the north-western limit of its range in Western Europe (Partridge, 1995).
- 1.4 Both young and adult frogs have been observed around the main dune slack areas at L'Ouaisné and, in the case of toads over-wintering, at the bottom of ponds.
- 1.5 The Agile Frog in Jersey is now confined to only one natural site at L'Ouaisné Common and has been reintroduced to a second site at Noirmont, where its ephemeral breeding ponds were depleted by a lowering of the water table and a run of dry winters during the early and mid 1990s. The habitat here is lightly disturbed by walkers and their dogs and feral ducks have also spread to the ponds.

2. Current factors causing loss or decline

- 2.1 Habitat loss and fragmentation due to the development of semi-natural habitat in Jersey and, in addition, small-scale turnover of semi-natural habitats, including domestication and conversion of heathland and marginal farmland to agricultural land, mean that important habitat areas are being continually lost.
- 2.2 The development of the Island's road system and increasing levels of traffic also serve to fragment intact areas and present potentially lethal obstacles for migrating amphibians during the breeding season.
- 2.3 Deterioration of sites through agricultural pollution and run off. In Jersey the pollution of groundwater arises from two primary sources, agriculture and domestic wastes.
- 2.4 Agricultural and domestic factors may have led to the lowering of the water table now being experienced in Jersey. The loss of any ephemeral ponds and the fact

that seasonal ponds dry up earlier in the year as a result of any lowering of the water table will have wide-ranging repercussions, including a negative impact on the opportunity for our three amphibian species to breed.

- 2.5 Amphibians have a wide range of natural predators. The predation on spawn by Palmate Newts is often observed, and it is assumed that water beetles, other macro-invertebrates, small mammals, and a variety of birds predate on amphibians at one stage or another of their life cycle. Grass Snakes are also recognised as predators.
- 2.6 In recent years a further threat has arisen with the arrival of non-native frogs to the Island. Exotic introductions, being more fecund, are likely to out-compete the depleted Agile Frog population at L'Ouaisné.
- 2.7 The Jersey population of the Agile Frog has been, and still is, going through a severe 'population bottleneck'. In the longer term, however, any surviving population may become exposed to so-called 'genetic risk factors', such as inbreeding depression and susceptibility to disease.

3. Current action

- 3.1 Captive breeding takes place at a number of outdoor compounds around the Island, with the intention of maintaining a self-sustaining captive 'safety net' and to generate surplus tadpoles and frogs for reintroduction.
- 3.2 In 2000 a first step was taken to reintroduce captive bred tadpoles into Noirmont pond. The animals metamorphosed successfully, and further releases will follow in coming years.
- 3.3 Headstarting is the harvesting of spawn from the remaining wild site, and the new 'wild' site, hatching the tadpoles, and then releasing them back into the wild, with the aim of increasing recruitment to the wild population. The success of this method is virtually impossible to gauge, but the theoretical advantages would suggest that it is a technique which, for the time being, should be continued.
- 3.4 Wild spawn is, in the main, kept *in situ*, but protected from newt and duck predation using plastic mesh baskets or willow 'corrals'. In the face of the number of spawn predators such a technique may prove vital to the long-term survival of the species.
- 3.5 In 2000, spawn at L'Ouaisné was protected from ducks with rough corrals of willow branches, but this technique does not protect against newts and invertebrates. However, the spawn did develop successfully and with the lower abundance of newts at L'Ouaisné it may prove to be the favoured technique at this site. It is also a less obvious method, unlikely to draw the attention of frog spawn collectors.

It is however, likely that the large size of the pond made the chances of survival higher than would be the case in drier years with a smaller pond size.

- 3.6** The amount of spawn is monitored annually.
- 3.7** It is essential to monitor water quality and other environmental factors Island-wide, and their effects on the Island's amphibians. Also, continued collection of data is of great importance as, in the event of spawn or animal mortality, the possession of water quality data may provide a greater understanding of the reasons behind it.
- 3.8** Habitat and species management techniques at L'Ouaisné Common include a range of projects which aim to provide suitable conditions for the survival of the Agile Frog in this site.
- 3.9** Management plans for both L'Ouaisné and Les Landes are presently being drafted by ED.
- 3.10** Television, radio and newspaper coverage, visits to local schools and colleges, and printing of posters and leaflets have all attempted to raise the public's awareness of the predicament of Jersey's amphibians.
- 3.11** A research programme by a PhD student (Racca, 2004) from Durrell Institute of Conservation and Ecology at Kent University, supported by the Jersey Ecology Fund, produced a comprehensive study of the ecology of the Agile Frog.

4. Action plan objectives and targets

- 4.1** To ensure that there is protection of, and a conservation management programme for, all existing natural sites, introduction sites or reintroduction sites.
- 4.2** To increase the number of populations and widen the animal's distribution through introductions/reintroductions.
- 4.3** To maintain a viable captive population of frogs with a minimum of 20 adult animals at a minimum of three locations (a minimum of 60 adults in total).
- 4.4** To further investigate the threats to, and autecology of, this species in Jersey.
- 4.5** To raise the profile, and level of awareness, of the Agile Frog's plight in Jersey.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 The States of Jersey have embraced the concept of sustainable development, (Strategic Policy Review 1995). Stated objectives include: to integrate pollution control and waste minimisation to prevent environmental deterioration; to protect the Island's natural ecosystems, and to conserve their associated flora and fauna.

5.2 Site safeguards

- 5.2.1 'Stop feeding the ducks' campaign to make people aware of the negative effect feral ducks have on local native wildlife. (Action: AFG)
- 5.2.2 Investigate the potential to locate duck deterrents at 'at risk' sites. (Action: AFG)
- 5.2.3 A campaign to make people aware of the dangers of pet and feral cats, and to work with local groups who care for and seek to sterilise the local feral cat population. (Action: AFG)
- 5.2.4 The pond at Noirmont is the most important site for a reintroduction programme. The water quality needs to be monitored, and the surrounding land should not return to agricultural use. (Action: ED & AFG)
- 5.2.5 Signs and, where necessary, fences and gates to reduce disturbance will help to protect wild sites. (Action: ED)
- 5.5.6 Pond deepening should be carried out at sites where it is thought that an increased volume of water will extend the periods that ephemeral ponds remain flooded. (Action: ED & AFG)
- 5.5.7 Control of invasive vegetation where it is thought that this impacts on water quantity, or amount of open water. (Action: ED & AFG)
- 5.5.8 Deepening of other dune slacks at L'Ouaisné. (Action: ED & AFG)

5.3 Species management and protection

- 5.3.1 The Agile Frog is protected under the Conservation of Wildlife (Jersey) Law 2000. This law also forbids the release of non-native species in the Island.
- 5.3.2 Protection of all sites where the animal occurs is a priority.
- 5.3.3 Designation of important conservation areas as SSIs, and other designations to protect small, isolated sites.

- 5.3.4 Work with other States of Jersey Departments and the farming industry to encourage the adoption of 'Countryside Renewal Schemes' and other wildlife enhancing efforts.
- 5.3.5 Trial releases of toad spawn and toad tadpoles as well as trial releases of Agile Frog spawn and tadpoles to 'test' water quality. (Action: AFG)
- 5.3.6 Translocation of animals between sites and captive compounds to ensure a degree of 'outbreeding'. Caution: disease transmission must be investigated. (Action: AFG)
- 5.3.7 Continued development and maintenance of captive breeding compounds. (Action: AFG, ED & DWCT)
- 5.3.8 Revised and improved monitoring programme. (Action: AFG, ED & DWCT)
- 5.3.9 Refinement and continued use of spawn protection mesh cages. (Action: ED, AFG & DWCT)
- 5.3.10 Identify the proposed future of agricultural fields surrounding Noirmont pond, and identification of at least one other site for introduction/reintroduction in addition to the pond at Noirmont . (Action: ED, AFG & DWCT)

5.4 Advisory

- 5.4.1 Continue to advise on conditions to any new planning applications for reservoirs or other developments which might affect the population.

5.5 Future research and monitoring

- 5.5.1 Study the interactions with other species present in the pond (toads, newts, invertebrates, Grass Snakes) and in the surrounding area (Grass Snakes, small mammals, birds).
- 5.5.2 Determine the frog's over-wintering preferences.
- 5.5.3 Continue to monitor captive breeding and carry out an investigation of potential reintroduction sites.

5.6 Communications and Publicity

- 5.6.1 A media and public awareness campaign will act to raise the profile of the Agile Frog in Jersey. As part of this campaign it must be made widely known that members of the Agile Frog Group are available to provide advice to landowners and tenants on good management of ponds and water courses and for the management of all amphibians.

5.7 Links with other Plans

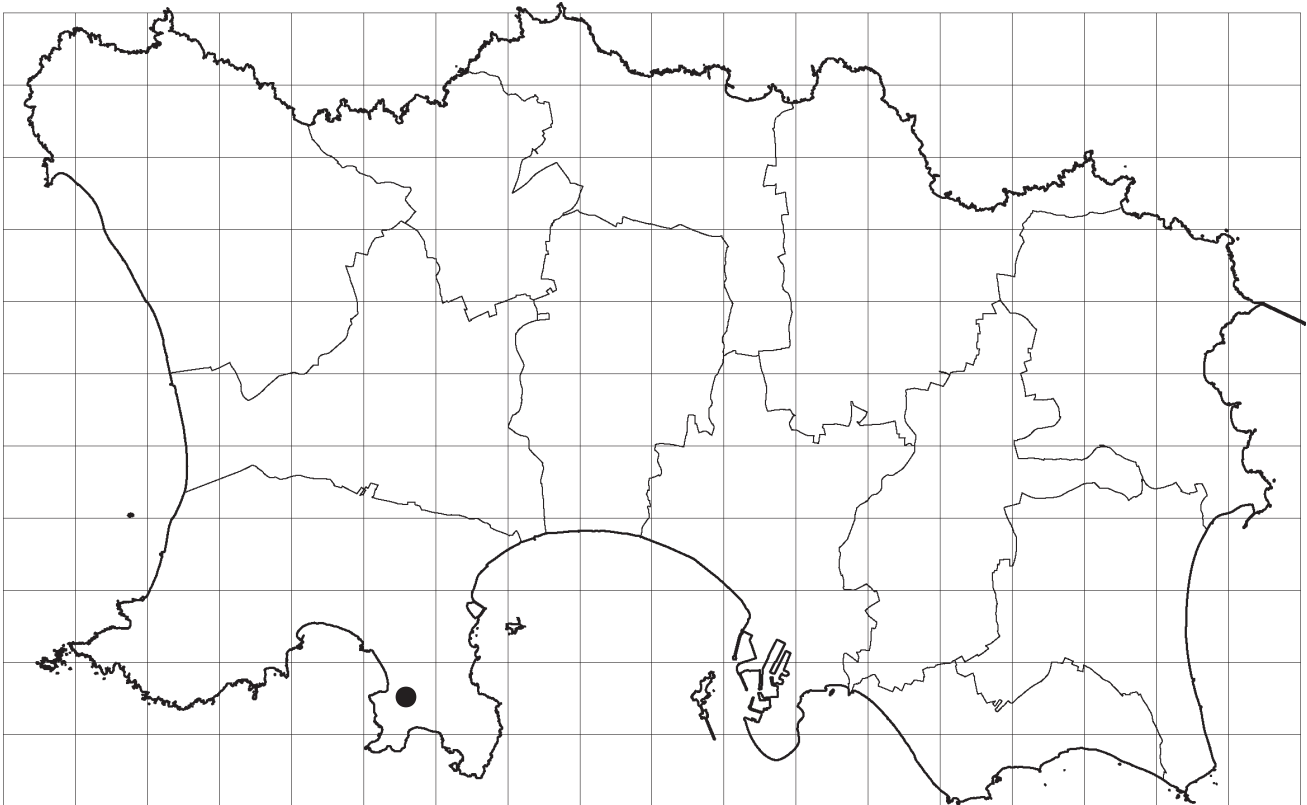
- 5.7.1 This plan should be considered in conjunction with that for the Toad or crapaud (*Bufo bufo*).

Agile Frog *Rana dalmatina*

● records from 2000

Distribution of Agile Frog in Jersey, by 1 Km square.

Source: 'Species Action Plan for the Agile Frog *Rana dalmatina* in Jersey, Channel Islands', The Environment Department, 2000.



Bio Diversity

European Common Toad or Crapaud

(Bufo bufo)

Action Plan



1. Current status

- 1.1** Formerly very common in the Island, the Toad *bufo bufo* has declined substantially in the latter half of the twentieth century and is now restricted to possibly as few as three remaining natural breeding sites in the west of the Island and to one reintroduction site. A site at which the species was formerly abundant (L'Ouaisné Common), and at which it co-occurred with the Agile Frog, appears to no longer support a reproducing population of toads.
- 1.2** The vast majority of toad breeding populations in the Island now appear to be small, privately-owned garden sites which, although often more protected from potential development, frequently only support small (and possibly in the long-term non-viable) breeding populations of single numbers of spawning females. Many of these garden sites are also in the west or south of the Island.
- 1.3** The Toad is fully protected under the Conservation of Wildlife (Jersey) Law 2000. This law also forbids the release of non-native species in the Island
- 1.4** Islanders generally identify positively with the Toad ('crapaud') and, as such, the species virtually occupies the status of a national animal.
- 1.5** Reasons for the decline of this species in Jersey are poorly understood but mirror similar declines in the UK. Suspected factors include:

2. Current factors causing loss or decline

- 2.1** Reduction in suitable breeding sites, either through availability (use of mobile livestock waterers in preference to traditional reservoirs) or quality (increases and/or changes in the use of agricultural and other chemicals) preventing reproduction in, or recolonisation of, water bodies. Changes in local conditions could possibly lead to the premature drying of breeding ponds.
- 2.2** Reduction in quality of terrestrial habitat through changes in land use or decreased connectivity of landscape caused by continuing development pressure.
- 2.3** Potential genetic problems as a result of isolation of very small reproductive populations restricted to breeding in small, private ponds.
- 2.4** Increased predation from feral ducks and/or pheasants (on spawn, tadpoles and possibly metamorphs).

3. Current action

- 3.1** Known natural breeding sites are monitored and managed by members of staff from the Environment Department.
- 3.2** The species is currently the subject of a 3-year programme of intensive study by a PhD student from the University of Kent, supported by the Jersey Ecology Fund.

4. Action plan objectives and targets

- 4.1** Maintain breeding populations at remaining natural reproduction sites and support and enhance these populations through appropriate action as required.
- 4.2** Establish reasons for recent Island-wide declines and assess long-term viability of populations reproducing in gardens.
- 4.3** Enhance, if possible, the population breeding at the reintroduction site (the pond at Noirmont) and re-establish at other suitably protected 'natural' sites.
- 4.4** Educate garden pond owners on toads in garden ponds, as well as raising awareness of the species' protected status in the Island.

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 No further legislation is currently required. Future action may include the provision of specific protection for the species' key reproduction sites (some of which may be in garden or other private locations).

5.2 Site safeguard and management

- 5.2.1 Ensure suitable and ongoing management at breeding sites under public control (Les Landes, Les Blanches Banques). (Action: ED)
- 5.2.2 Act appropriately on findings of current intensive study to restore suitable natural sites and create conditions for improvement in other/private ones. (Action: ED)

5.3 Species management and protection

- 5.3.1 Carry out local translocation of spawn and/or tadpoles (under licence) where conditions would otherwise result in breeding failure in a given year.

- 5.3.2 Following results of study and action to restore/protect sites, reintroduce the Toad to parts of the Island from which it has disappeared but where it can reasonably be expected to persist in the future. (Action: E D)

5.4 Advisory

- 5.4.1 Produce guidelines for garden pond-owners and other landowners on creation and maintenance of ponds and habitats for toads. (Action: ED, Jersey Ecology Fund)
- 5.4.2 Involve public groups (e.g. schoolchildren, Parish groups, other community organisations) in Toad monitoring and protection and ensure the access of these groups to information on the species' iconic and protected status on the Island. (Action: DWCT, ED)

5.5 Future research and monitoring

- 5.5.1 Continue research on causes of the species' decline specific to Jersey. (Action: Students, ED)
- 5.5.2 Following management actions, extend monitoring programmes to routinely include any enhanced/reintroduced populations and significant garden sites. (Action: Students, ED)
- 5.5.3 Periodically reassess toad breeding success on the Island at private breeding sites in general through media appeals etc. (as has been done successfully in the past) and maintain a database on such sites. (Action: ED)

5.6 Communications and publicity

- 5.6.1 Maintain links with University of Kent and its research students. (Action: ED)
- 5.6.2 Maintain and develop links with local media (JEP, Channel TV etc.) and keep them informed of initiatives on conservation of the Toad. (Action: ED, other partners as appropriate)

5.7 Links with other action plans

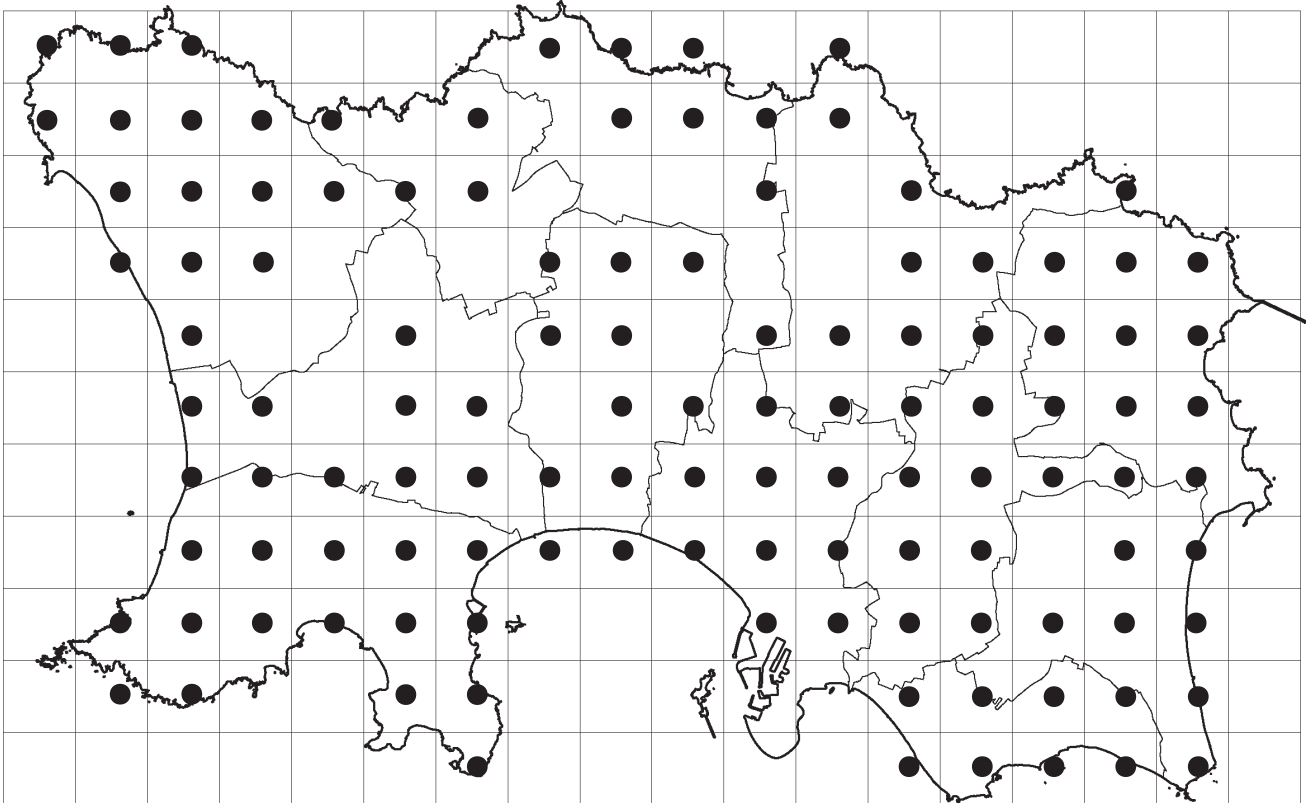
- 5.7.1 Should be considered with respect to the Agile Frog *Rana dalmatina* Species Action Plan, as well as that of the Grass Snake *Natrix natrix* – a species which may have suffered as a result of the Toad's decline in the Island.

European Common Toad or Crapaud *Bufo bufo*

● records from 1995 - 2000

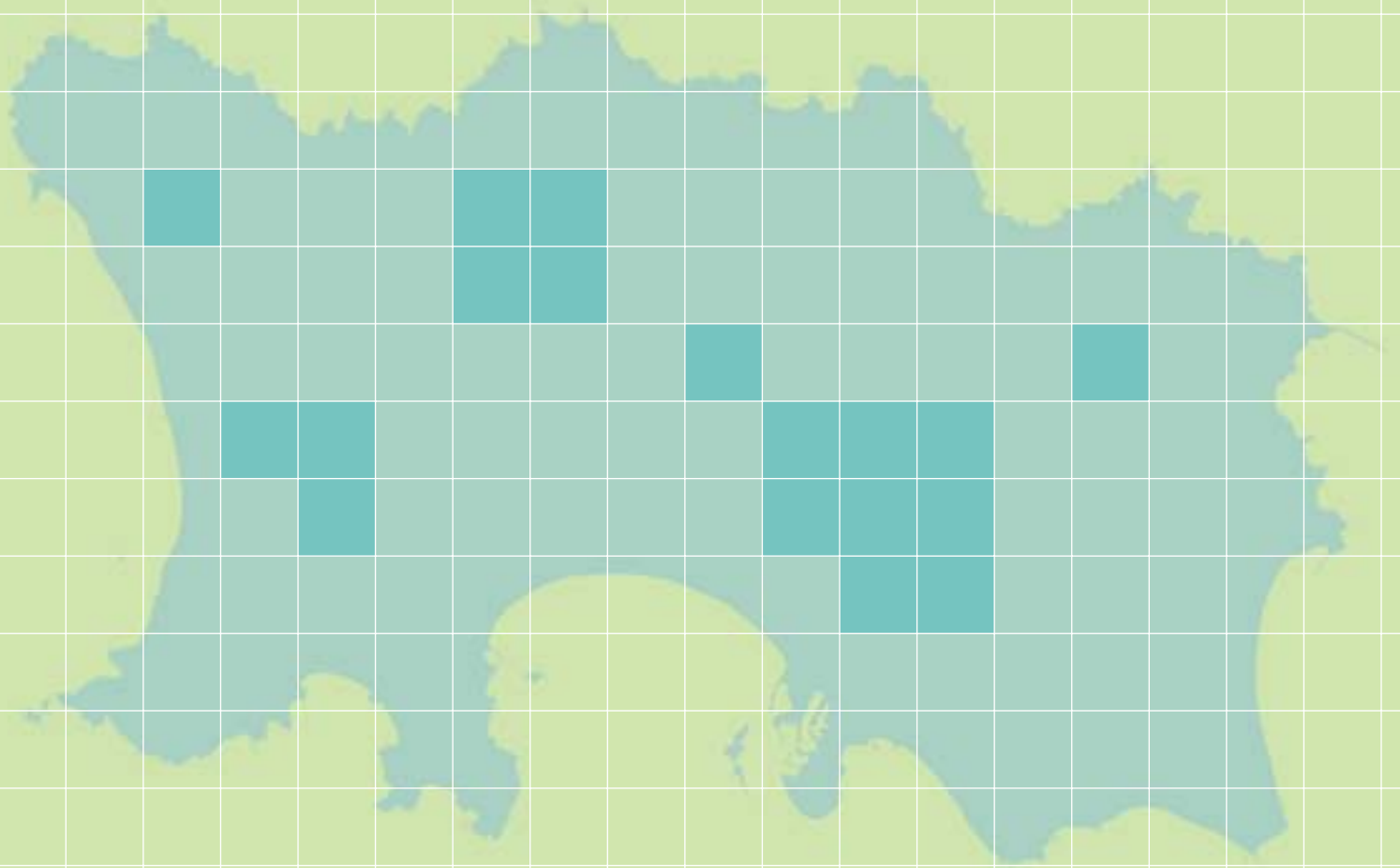
Distribution of European Toad in Jersey, by 1 Km square.

Source: Unpublished data, The Environment Department, 1995 - 2000.

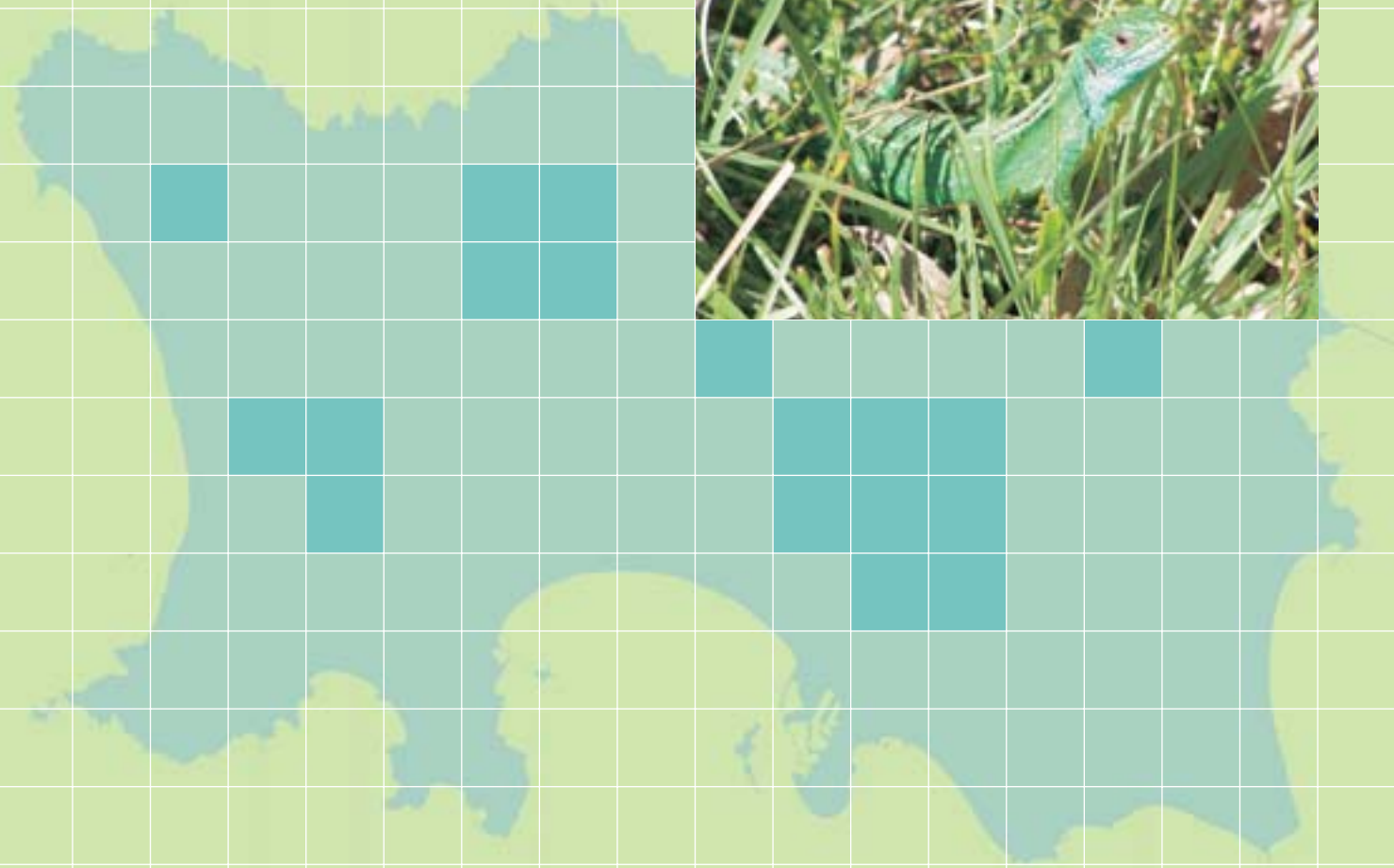


Bio Diversity

Reptile Action Plans



Bio Diversity
Green Lizard
(Lacerta bilineata)
Action Plan



1. Current status

- 1.1 Within Jersey, *Lacerta bilineata* is found predominantly on dune systems and cliff and coastal heaths. It also occurs in small numbers in inland areas, including private gardens. Within these habitats, there needs to be an invertebrate food source cover, protection from predation, options for hibernation and a suitable substrate for egg laying.
- 1.2 The largest populations exist in the west and the south-west of the Island, Les Blanchés Banques and L'Ouaisné Common being strongholds. Small populations are scattered throughout the rest of the Island.
- 1.3 Jersey is the only part of the British Isles in which *L. bilineata* naturally occurs. Within Jersey *L. bilineata* is classed as common, appearing in more than sixteen 1-km grid squares..
- 1.4 Outside the UK, *L. bilineata* is widespread throughout Western Europe, and further east.
- 1.5 *L. bilineata* is fully protected under the Conservation of Wildlife (Jersey) Law 2000. This law also forbids the release of non-native species in the Island

2. Current factors causing loss or decline

- 2.1 Loss and fragmentation of sites through development and agricultural intensification.
- 2.2 Isolation of sites through development and agricultural intensification.
- 2.3 Deterioration of sites through agricultural pollution and run off, drainage, salt water ingress and fire and trampling.
- 2.4 Loss of potential or actual sites through bracken *Pteridium aquilinum* and scrub encroachment.
- 2.5 Declines caused by cat predation: - *L. bilineata* are susceptible to cat predation, especially populations which occur in low densities, have fragmented distributions and are found in areas where cat numbers are high.

3. Current action

- 3.1 Little direct management for *L. bilineata* although scrub and bracken control are undertaken on Les Blanchés Banques and at L'Ouaisné.

4. Action plan objectives and targets

- 4.1 Maintain all breeding populations at current levels, and enhance where possible.
- 4.2 Where possible, increase connectivity between isolated populations by the creation of suitable habitat corridors.
- 4.3 Identify possible sites for lizard introduction along the north coast. After appropriate management, translocate of individuals from similar heathland populations (La Landes du Ouest, Les Landes) to the north coast, with the result being monitored.
- 4.4 Provide site protection at L'Ouaisné by 2008.
- 4.5 Commence research into the impact of cat predation on vulnerable populations of *L. bilineata*.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 Within the Countryside Renewal Scheme, offer incentive payments for the maintenance and restoration of habitats important for lizards. (Action: ED)

5.2 Site Safeguard and Management

- 5.2.1 Consider designation of all important sites for lizards in Jersey. (Action: ED)
- 5.2.2 Implement scrub and bracken clearance along the north coast in an effort to expand the current range of *L. bilineata*. (Action: ED)
- 5.2.3 Recognise the value of non-designated land in the conservation of *L. bilineata* and identify important areas for consideration in planning applications. (Action: ED)

5.3 Species Protection and Management

- 5.3.1 Maintain all breeding populations at current levels, and enhance where possible. (Action: ED)
- 5.3.2 Ensure *L. bilineata* are catered for in programmes of cutting, burning or grazing management on sites supporting populations. (Action: ED)
- 5.3.3 Identify suitable areas on the north coast for the translocation of lizards in an effort to increase the range of the species. (Action: ED)

5.4 Advisory

- 5.4.1 Ensure managers of golf courses which hold important populations of lizards (Grouville Golf Course, La Moye, Les Ormes, Les Mielles) are aware of its conservation needs and offer management advice. (Action: ED)

5.5 Future Research and Monitoring

- 5.5.1 Monitor existing populations annually. (Action: ED)
- 5.5.2 Undertake full survey of north coast to establish presence or absence of lizards. (Action: ED)
- 5.5.3 Monitor success of translocated populations. (Action: ED)
- 5.5.4 Undertake research into the effect of cat predation on small, vulnerable populations. (Action: ED)

5.6 Communications and Publicity

- 5.6.1 Publicity campaign to highlight threat of cat predation on *L. bilineata*, with recommendations on how to reduce their impact. (Action: ED)

5.7 Links with other Action Plans

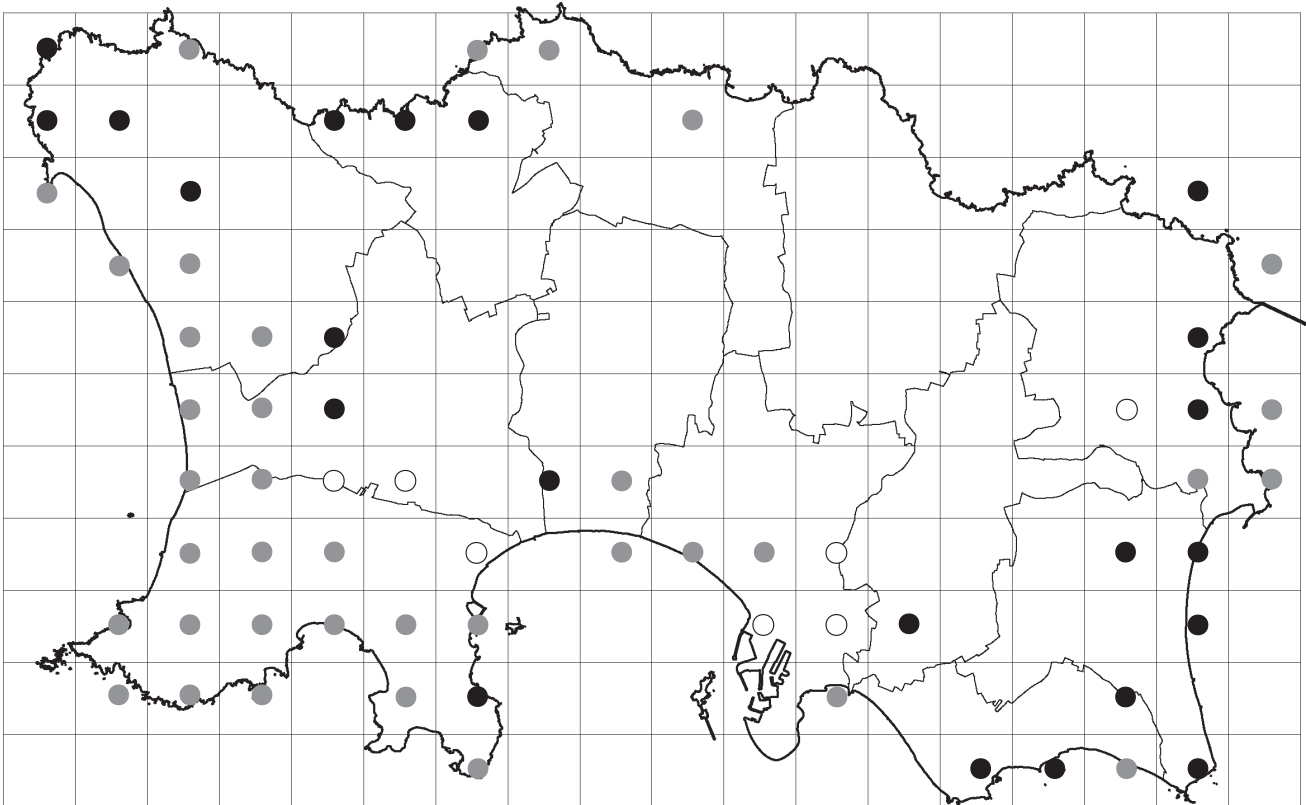
- 5.7.1 The conservation requirements of Green Lizards are consistent with the conservation plans for most dune and heathland species. The general aim in these areas is to retain species diversity and maintain a three-dimensional vegetation mosaic.

Green Lizard *Lacerta bilineata*

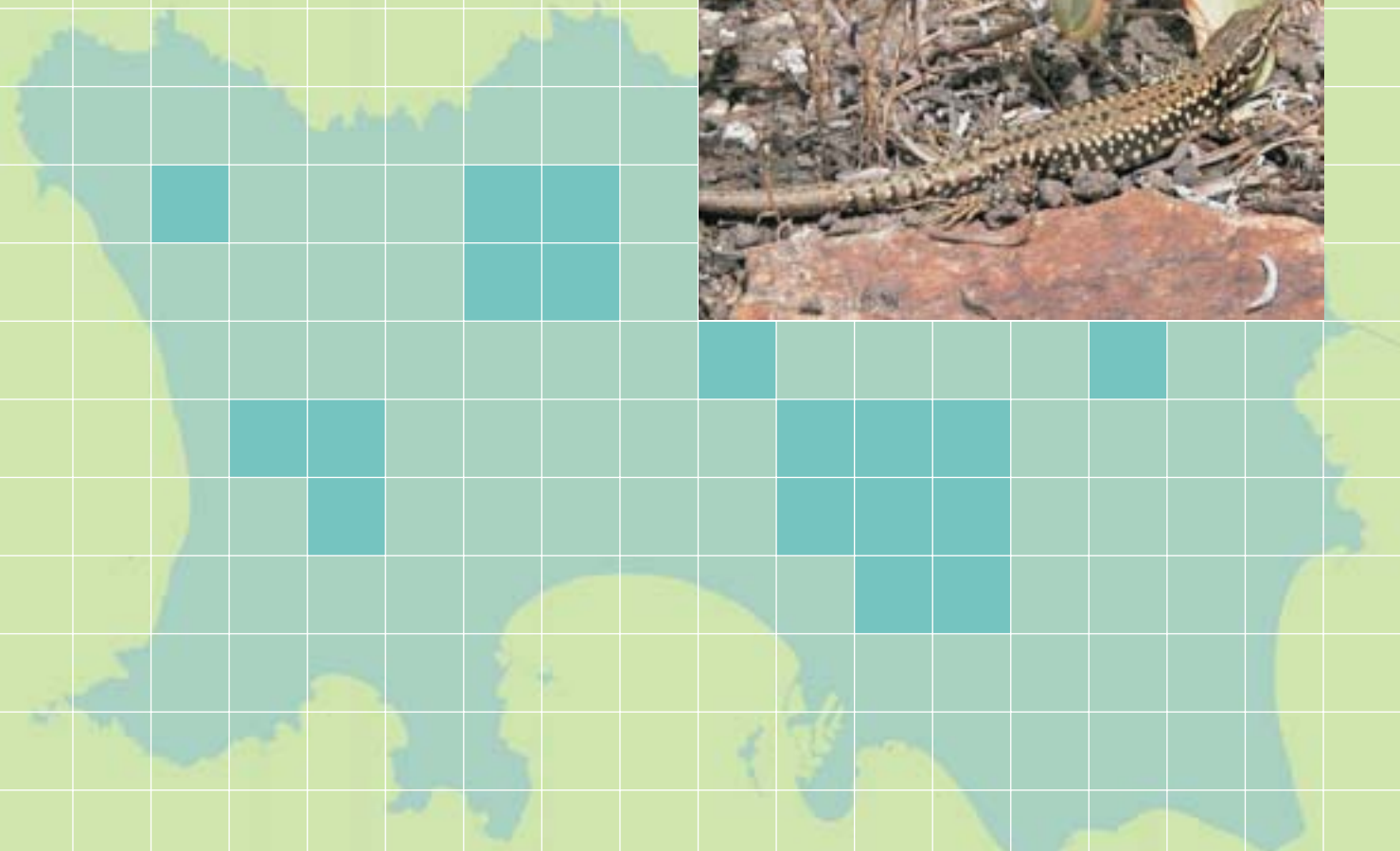
○ records pre 1965 - 1976 ● records before and after 1976 ● records 1988 - 2001

Distribution of Green Lizard in Jersey, by 1 Km square.

Source: 'A Natural History of Jersey', Le Sueur, 1976, 'The Green Lizard and Wall Lizard in Jersey', Perkins, 1988 and 'The Green Lizard (*Lacerta bilineata*) in Jersey', Godfrey 2001.



Bio Diversity
Wall Lizard
(Podarcis muralis)
Action Plan



1. Current status

- 1.1** The population of the Wall Lizards in Jersey is typical of other northern European localities in that the species is generally restricted to old fortifications and castle walls.
- 1.2** The largest populations exist in the east corner of the Island, in Gorey and at Mont Orgueil Castle. Small populations are scattered around fortifications on the Island including Fort Leicester – Bouley Bay, L'Étacquerel Fort, Rozel Fort, St Aubin's Fort, Victoria Tower and in a small area in Coronation Park, Millbrook.
- 1.3** The colony at St Aubin's Fort stands on a small tidal island south of St Aubin's harbour. Although the fort was built in the 16th Century it is thought that the lizards were introduced to the site more recently.
- 1.4** Small numbers also exist in privately-owned garden sites surrounding the Gorey area.
- 1.5** It is not known if Jersey's population is native or introduced. Jersey is the only part of the British Isles in which *P. muralis* is thought to occur naturally. Within Jersey *P. muralis* is classed as local.
- 1.6** Outside the UK, *P. muralis* is widespread throughout Western Europe. Jersey is one of its most northern locations.
- 1.7** *P. muralis* is fully protected under the Conservation of Wildlife (Jersey) Law 2000. This law also forbids the release of non-native species in the Island.

2. Current factors causing loss or decline

- 2.1** Threats to *P. muralis* include repointing old walls, shading of walls and rockeries and tidying up areas without thinking about the lizard's requirements.
- 2.2** Loss and fragmentation of sites through re-development, renovating buildings, gardens and walls.
- 2.3** Deterioration of sites through pollution and run off.
- 2.4** Wall Lizards have a number of natural predators. Kestrels and Magpies are often observed taking them and it is assumed the predation of eggs occurs as well.
- 2.5** *P. muralis* is susceptible to cat and rat predation, especially populations which occur in low densities.

3. Current action

- 3.1** Throughout the Mont Orgueil Castle development strategy a study has been initiated to investigate the distribution and minimum number alive (MNA) of *P. muralis*. The study also identifies the characteristics of the habitats important to lizards e.g. cover from predation, insect activity, basking and potential nest areas.
- 3.2** Planning applications are constantly monitored in areas where *P. muralis* is present. Recommendations and conditions are provided by the ED for planning applications where development affects *P. muralis*. In certain cases appropriate advice for the mitigation of the effects of building works is provided.
- 3.3** Little direct habitat management for *P. muralis* is carried out, although, following advice on mitigation, favourable habitat conditions are created.

4. Action plan objectives and targets

- 4.1** Maintain all breeding populations at current levels, and enhance where possible.
- 4.2** Inform garden owners who have lizards on their property, and raise awareness of the species' protected status in the Island.
- 4.3** Ideally a study into the lizard's population demographics should be undertaken to give an indication of their Island-wide migratory habits and distribution.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 Seek to ensure that the needs of *P. muralis* under the Conservation of Wildlife Law (Jersey) 2000 are taken into account as part of the development control process. (Action: ED)
- 5.1.2 Continue to incorporate appropriate maintenance and restoration plans for habitat enhancement important for lizards in planning consultation responses. (Action: ED)

5.2 Site Safeguard and Management

- 5.2.2 Implement sensitive wall maintenance and appropriate habitat management on all sites where *P. muralis* are found in the Island. (Action: ED)
- 5.2.3 Provide site protection on SSI and PSSSI buildings where *P. muralis* are found to occur by 2007. (Action: ED & Planning Department - Historic Buildings)

5.3 Species Management and Protection

- 5.3.1 Continue to protect *P. muralis* through the development control process under the Conservation of Wildlife (Jersey) Law, 2000.
- 5.3.2 Ensure Wall Lizards are catered for in programmes of repointing and wall maintenance on sites supporting populations. (Action: ED)

5.4 Advisory

- 5.4.1 Promote appropriate management of *P. muralis* sites. For example within garden habitats, there needs to be an invertebrate food source, cover against predation, options for hibernation and a suitable substrate for egg laying. (Action: ED)
- 5.4.2 Produce advisory notes for landowners and site managers of areas which hold important populations of lizards, make them aware of their conservation needs and offer management advice. (Action: ED)

5.5 Future Research and Monitoring

- 5.5.1 Monitor existing populations annually. (Action: ED)
- 5.5.2 Continue to collate information on habitat requirements and ecology. (Action: ED)

5.6 Communications and Publicity

- 5.6.1 None proposed.

5.7 Links with other Action Plans

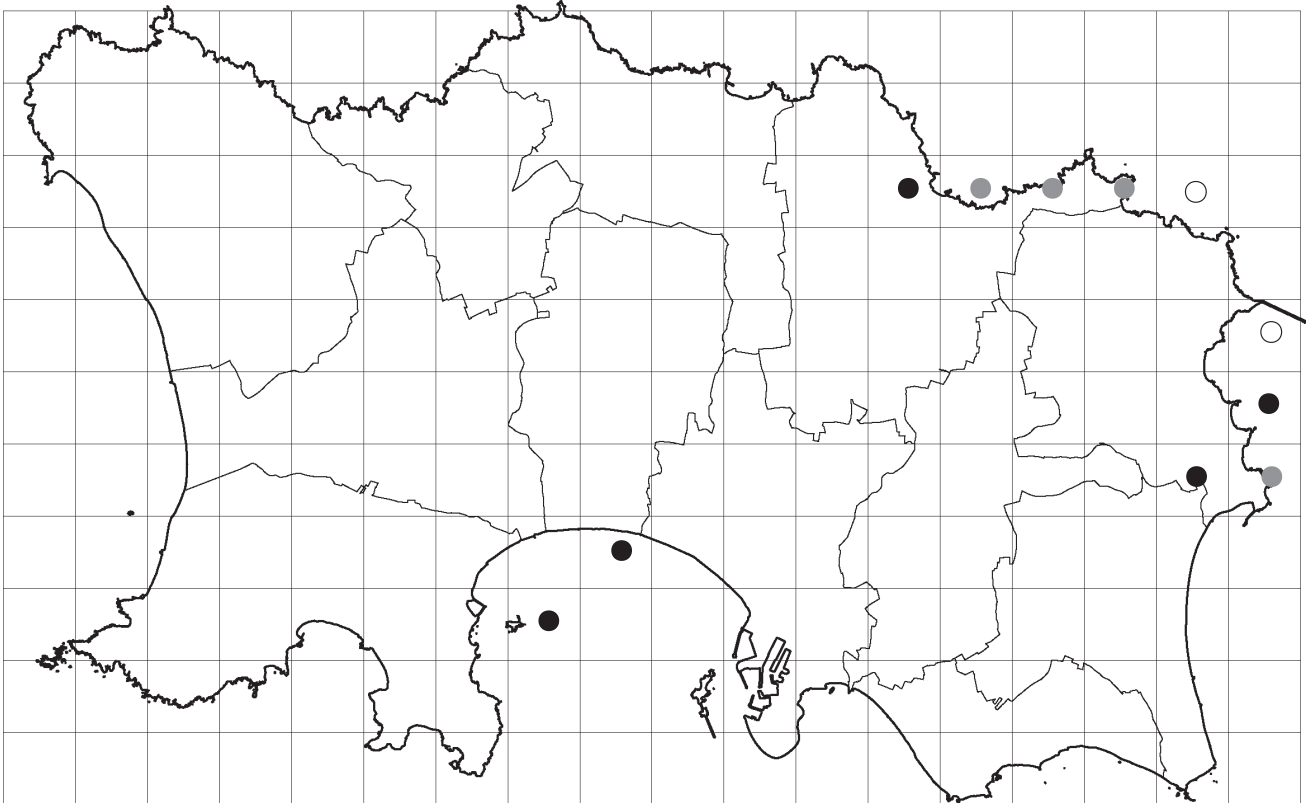
- 5.7.1 The conservation requirements of *P. muralis* are strongly associated with the management of buildings, walls and gardens so there may be benefit in considering this plan along with the urban biodiversity habitat statement.

Wall Lizard *Podarcis muralis*

○ records pre 1965 – 1976 ● records before and after 1976 ● records 1988 - 2005

Distribution of Wall Lizard in Jersey, by 1 Km square.

Source: 'A Natural History of Jersey', Le Sueur, 1976, 'The Green Lizard and Wall Lizard in Jersey', Perkins, 1988 and Unpublished Data, Environment Department 2005.



Bio Diversity
Grass Snake
(Natrix natrix)
Action Plan



1. Current status

- 1.1 Although relatively common on mainland Britain, the Grass Snake *Natrix natrix* is undoubtedly the rarest of Jersey's reptiles (McMillan, 2003). Very little is known about its ecology in Jersey or the impact it has on other Island species - in particular the Agile Frog *Rana dalmatina*, a potential prey species which is itself considered in danger of local extinction (Agile Frog Group, 2001).
- 1.2 Historic information regarding the distribution of this species is found in Frances Le Sueur (1976). The data suggests that Grass Snakes were most numerous in the north-west and south-west of the Island, but also stated that they occurred throughout the Island in low numbers.
- 1.3 The results of the study carried out on *N. natrix* by Hall (2002), suggest that key habitat areas are L'Ouaisné Common and Les Blanches Banques, although smaller populations are present in other areas of the Island. The Grass Snake population is apparently very small and may now be dangerously fragmented.
- 1.4 *N. natrix* is fully protected under the Conservation of Wildlife (Jersey) Law 2000. This law also forbids the release of non-native species in the Island

2. Current factors causing loss or decline

- 2.1 Possible reasons for decline are habitat loss, fragmentation of wetland and preferred habitat types, poor water quality and quantity, small population effects (genetic risk factors).
- 2.2 The loss of breeding and egg-laying sites is seen to be a more important reason for decline than loss of habitat (Gent & Gibson, 1998). The habitats in which Grass Snakes most commonly lay eggs are in manure heaps, compost heaps, grass piles and other piles of warm rotting vegetation (Gent & Gibson 1998). There is a limitation on these breeding sites in the countryside as a whole which is partially due to intensive farming. Intensive farming means that manure is usually stored in tanks and not left in piles. Fields are also mown using machinery and all cuttings are removed from site, leaving no vegetation piles for the Grass Snakes. In allotments or garden environments compost heaps are often built in a way that is unsuitable for the use of breeding Grass Snakes. The source of the rotting vegetation also needs to be continually replenished to become a good breeding site, and even where piles exist this replenishment of material is not often carried out.
- 2.3 The Grass Snake is prone to the same predation pressures faced by some of Jersey's other native herpetofauna from Brown Rats, *Rattus norvegicus*, feral Ferret *Mustela furo* and cats *Felis domesticus*.

- 2.4 Loss of prey species - as one of the top predators in the food chain, Grass Snakes will also be susceptible to decreasing availability of potential prey. (Agile Frog Group, 2001).

3. Current action

- 3.1 An initial data search undertaken in 2002 produced a distribution map and baseline data for this species at the following sites:
L'Ouaisné, Noirmont, Les Blanches Banques, La Mielle de Morville and St Ouen's Pond.
- 3.2 A media campaign aimed at farmers and other landowners was also carried out across the Island in an attempt to record and map an Island-wide distribution of Grass Snakes. From this map it is evident that some areas have far more Grass Snake sightings than others. These areas include Ville ès Quennevais, L'Ouaisné, La Lande du Ouest and the Churchill Park area of St Brelade's Bay.
- 3.3 All the Island's golf courses were contacted; Les Ormes was the only one to respond confirming the presence of grass snakes. No correspondence was received from St Clement's, Les Mielles, La Moye or Grouville Bay Golf Courses. The Grass Snake sightings at Les Ormes Golf Course were predominantly in close proximity to compost and grass cuttings piles.
- 3.4 A study into the population status and ecology of the Grass Snake *Natrix natrix* at L'Ouaisné in Jersey (McMillan May-October 2003) was carried out.
- 3.5 McMillan (2003) highlighted that the diet of Grass Snakes consist mainly of amphibians, fish and invertebrates although small rodents and bird's eggs are also sometimes taken. No information exists on the dietary habits of Grass Snakes in Jersey although one individual caught during the study regurgitated 7 Palmate Newts *Triturus helveticus* upon capture. This snake was found under a refuge adjacent to the largest semi-permanent pond on the Common, suggesting that the Palmate Newt makes up an important part of the Grass Snake's diet whilst this pond contains water.

4. Action plan objectives and targets

- 4.1 Improve our understanding of the distribution and status of the species through further survey work.
- 4.2 Further our understanding of the ecology and habitat needs of Grass Snakes.
- 4.3 Manage habitats for the species.
- 4.4 Monitor present sites to identify possible local threats to the population in the Island.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 None proposed

5.2 Site Safeguard and Management

- 5.2.1 Submit important sites for Grass Snakes in the west of the Island (L'Ouaisné, Noirmont) for SSI designation. (Action: ED)
- 5.2.2 Recognise the value of non-designated land for the conservation of Grass Snakes and identify important areas for consideration in planning applications. (Action: ED)

5.3 Species Management and Protection

- 5.3.1 Having carried out the studies in 2002 and 2003 it is clear that much work still remains before a true picture of the Grass Snake's ecology and population size can be determined.

5.4 Advisory

- 5.4.1 Advise landowners on appropriate ways to manage suitable sites for Grass Snakes. (Action: ED)
- 5.4.2 Increase species awareness by the public and landowners through education, promotion and events.

5.5 Future Research and Monitoring

- 5.5.1 L'Ouaisné Common seems to be a good starting point for several more studies to develop recommendations. The proposed work could be to:
 1. Investigate the Grass Snake's preference for various types of refugia using an array of materials and sizes in order to improve the efficiency of collection of animals, i.e. felt, wood, and corrugated iron.
 2. Continued mark/recapture studies using PIT Tagging, and radio tracking techniques. (Action: ED)
- 5.5.2 Grass Snakes are often found near water courses, and indeed there is no reason why they should not be distributed near all water sources in the Island. This should be investigated further, and may prove the basis for further study. (Action: ED)
- 5.5.3 A further survey of the Grass Snake, including sightings from farmers and landowners in conjunction with the Countryside Renewal Scheme. (Action: ED)

5.6 Communications and Publicity

- 5.6.1 Produce a leaflet for landowners highlighting the rarity of *N. natrix* in the Island and the importance of biodiversity as a whole, by 2007. (Action: ED)

5.7 Links with other Action Plans

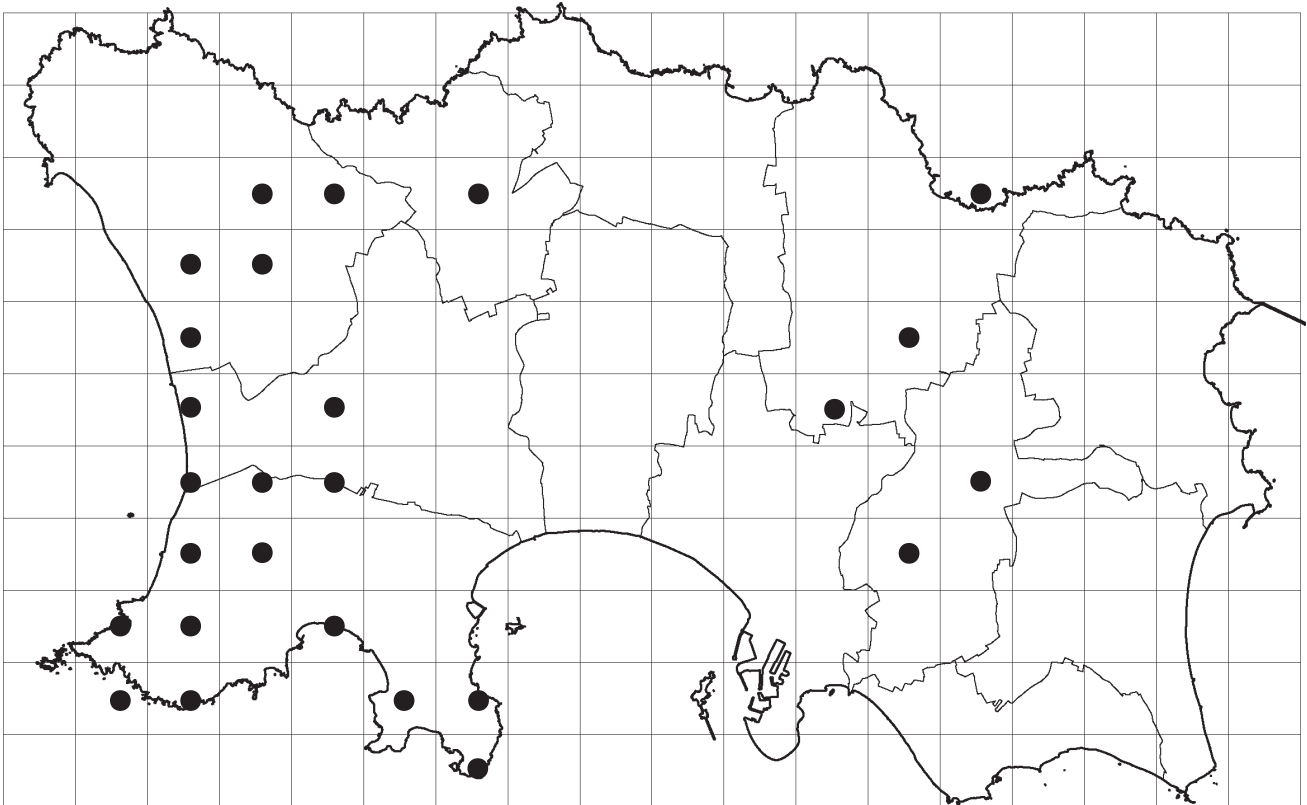
- 5.7.1 Any Habitat Statement/Action Plan concerning water or wetlands should be read in conjunction with this species action plan.

Grass Snake *Natrix natrix*

● records from 2002

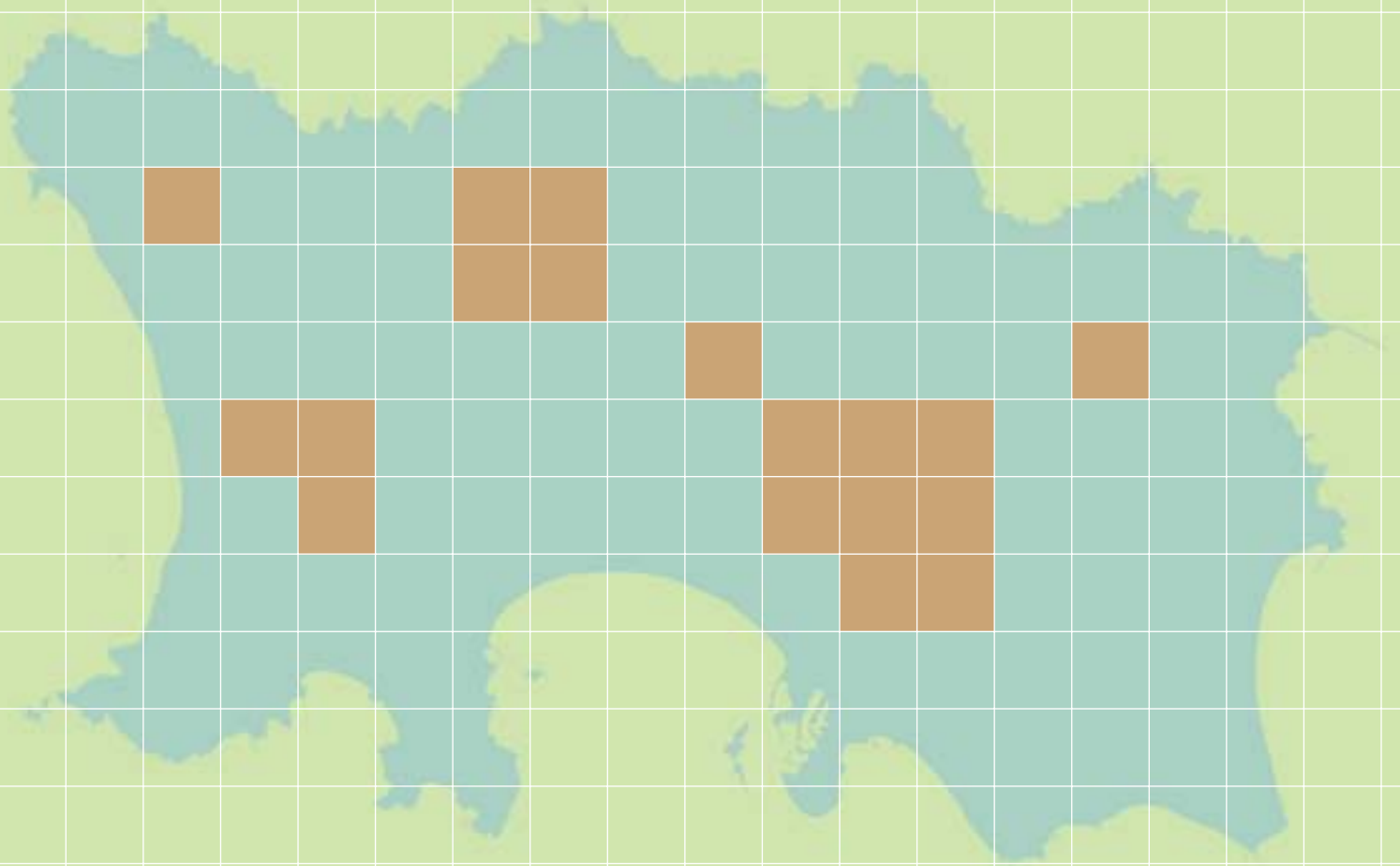
Distribution of Grass Snake in Jersey, by 1 Km square.

Source: 'Numbers and Distribution of Grass Snakes (*Natrix natrix*) in Jersey, Channel Islands', Hall, 2002.

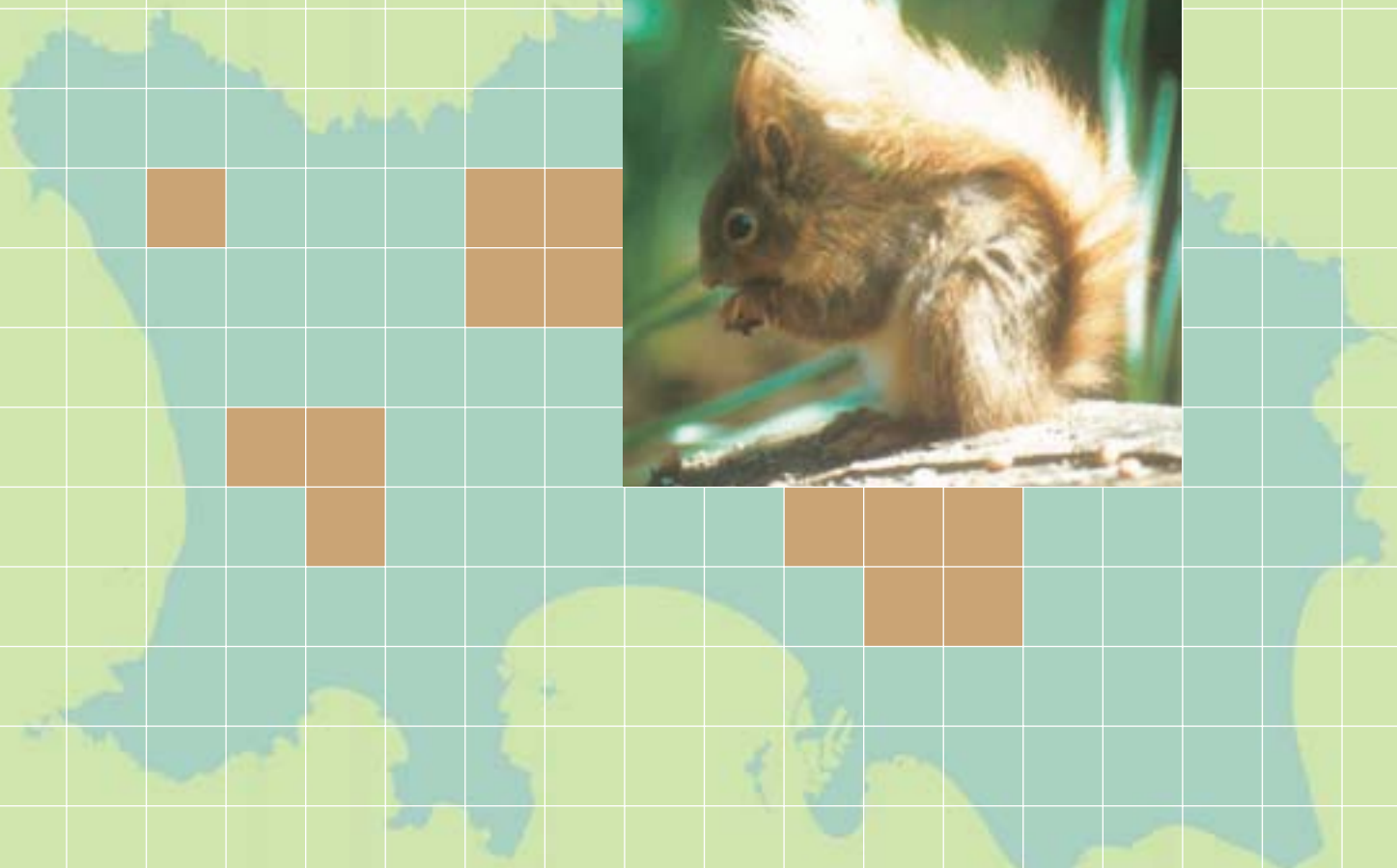


Bio Diversity

Mammal Action Plans



Bio Diversity
Red Squirrel
(Sciurus vulgaris)
Action Plan



1. Current status

- 1.1** The UK Red Squirrel *Sciurus vulgaris* population has suffered markedly over the last 50 years due to competition with the introduced Grey Squirrel *Sciurus carolinensis* which has replaced it throughout most of England and Wales. Introductions of Grey Squirrels have also occurred in Continental Europe. Jersey has a small population of Red Squirrels arising from a series of introductions that began in about 1885 (Le Sueur, 1976).
- 1.2** Currently the Island's population is estimated at between 400 and 600 individuals (Magris, 1998). Grey Squirrels are not present in Jersey. The conservation of Jersey's population of *S. vulgaris* is vital in both a local and European context. Importantly the Red Squirrel is a popular and recognised feature of Jersey's biodiversity and is well placed to be used as a flagship species for woodland and hedgerow management. The suggested habitat management for Red Squirrels will create a diverse and characteristic local woodland/hedgerow ecosystem.
- 1.3** The total area of woodland in Jersey is 635 ha which is less than 10% of the Island's area. The woodland is distributed in 71 fragments larger than 1 ha with only 30 fragments larger than 5 ha. Squirrels occur in the major woodland blocks that run from the south-west to the north-east across the Island. However, outlying woodland fragments can also hold resident or transient populations of Red Squirrels. The Island's woodland contains few tree species and woodland fragments are often of a uniform age as a result of natural regeneration after the extensive felling of woods during the Second World War.
- 1.4** The Island has approximately 1,400 km of hedgerows and field boundaries, and many of these are important because they act, or have the potential to act, as corridors for squirrels connecting woodland fragments. However, the Jersey Red Squirrel population is still vulnerable to woodland fragmentation as, for example, occurred as a result of Dutch Elm Disease and the 1987 storm. Squirrels feed principally on tree seeds and in poor seed years the numbers of squirrels in the Island will be greatly reduced with many local populations disappearing. Hedgerow and field boundary corridors containing trees of seed-bearing age are essential to aid the recolonisation of these local populations.
- 1.5** There are two genotypes present in Jersey's squirrel population and their phylogenetic associations and further supporting evidence suggest that the squirrels originated in southern England and Continental Europe (Magris, 1998).
- 1.6** The Red Squirrel is fully protected under the Conservation of Wildlife (Jersey) Law 2000. This law also forbids the release of non-native species in the Island.

2. Current factors causing loss or decline

- 2.1** Jersey's woods are situated in a landscape that is dominated by agricultural or suburban land. The effect of a fragmented habitat on the survival of small populations has become a major issue in conservation biology. This is because the sub-populations are at risk from extinction from stochastic, genetic, and demographic threats. Jersey's Red Squirrels exist as a metapopulation, i.e. as a series of local populations distributed among the fragmented woodland habitat (Magris & Gurnell, 2002). The extent of movement between local populations and the demographic process that occur within them are clearly important when considering the long term viability of the Island metapopulation. A population viability analysis modelled the persistence of Jersey's squirrel populations for the next 20 years and identified that availability of suitable corridors for dispersal was a key factor in local population persistence and woodland occupation (Gurnell *et al.*, 2002).
- 2.2** The loss of genetic diversity as a result of inbreeding or a founder effect is a threat to small and isolated populations of any species, especially one originating from a few individuals. Mitochondrial DNA investigations have shown that the amount of sequence divergence between the two genotypes found on the Island is small (1.9%), which shows there is low genetic diversity.
- 2.3** An infection of Red Squirrels found on the British mainland, parapox virus infection, has the potential to wipe out local populations of squirrels (Rushton *et al.*, 2000, Sainsbury *et al.*, 2000, Tompkins *et al.*, 2002). Although there is no evidence that it is present in Jersey's squirrels, continued vigilance and public awareness is necessary. Adenovirus infection has also been a problem in translocated Red Squirrels on the British mainland (Sainsbury *et al.*, 2001). The release or introduction of Red Squirrels into the wild is an offence under Article 15 of The Conservation of Wildlife (Jersey) Law 2000.
- 2.4** Predation - Two-thirds of reported mortality results from road casualties and cat predation (Magris, 1998) and road casualties number at least two a month. Whilst it is difficult to record 'natural' deaths, it is clear that causes originating from humans significantly affect the Red Squirrel population. These anthropogenic sources of mortality have been shown to affect viability of the number of overall populations and thus the overall population size over the next 20 years (Gurnell *et al.*, 2002).

3. Current action

- 3.1** Hedgerow planting - A corridor hedgerow planting scheme began in the autumn of 1999. Through a panel of stakeholders, criteria for hedgerow composition and planting were developed and

agreed. The plant species chosen were a mix of indigenous trees and hedging plants that are suitable for the local landscape and agricultural requirements as well as providing a suitable habitat for squirrels and other local wildlife. The planning of routes, identifying landowners and general project management was assisted by the use of a Geographical Information System and aerial photographs. A theoretical study modelling population persistence in 2002 (Gurnell *et al.*, 2002) helped focus planting plans further. Continued maintenance of the hedgerow was negotiated as an obligation on the landowner. Funding for the project was secured from States of Jersey. By the completion of the project in February 2002, 35,000 trees and hedging plants had been planted forming >36 km of hedgerows at a cost of £26,000. The estimated officer time involved was 135 days which included planning, negotiation with landowners and securing/supervising labour at planting. The bulk of the planting was carried out by supervised teams from Community Service and the Jersey Conservation Volunteers amounting to approximately 120 days of unpaid labour.

- 3.2** Post autumn 2002 - Four key population centres have been predicted to hold viable populations of Red Squirrels in the long term (listed below after Gurnell *et al.*, 2002). Hedgerow planting should be focused on strengthening the hedgerow links between the woods comprising each group. Additional woods adjacent to population centres often hold squirrels but are vulnerable. Connecting these woods would improve the viability and emigration opportunities for squirrels in the key population centres. Consolidating links between woods may be achieved through new planting or filling gaps in existing hedges. Once these four key population centres have been consolidated, strengthening links among them should be considered:

Central population - Waterworks Valley and St Peter's Valley. The woods to the east of this population centre (Valleé des Vaux, Grands Vaux and Bellozanne Valley) hold squirrels at present but are vulnerable and would benefit from stronger corridors to Waterworks Valley. This would also eventually increase their capacity to act as an immigration route to the population centre in the north-east of the Island;

South-west population - The Railway Walk, Beaumont to La Haule, L'Ouaisné, Noirmont and Les Quennevais blocks. The woods in St Brelade's Bay to the west of this population centre would benefit from further consolidation. However, this may be problematic due to the suburban and highly disturbed nature of this part of the Island;

North-east population - St Catherine's Wood, Bouley Bay and Rozel woods. Archirondel Woods do not hold squirrels at present but could do so. Attention should be given to the quality of the woodland and to the links to St Catherine's. Depending on management

plans for Archirondel, Queen's Valley should be considered as a further extension of the easterly population if contiguity could be increased through the Anne Port and Grouville area woods;

North-west population - Grevé de Lecq and the Dolmen des Geonnais blocks. Woodland quality should be increased to strengthen the capacity of this wood to hold a newly resident population. Links east through the Mourier Valley should be improved to reduce the isolated nature of this wood.

- 3.3** Inbreeding - To prevent isolation of local populations and inbreeding, it is important that hedgerow links are maintained or improved to enable dispersal among the woodland fragments. However, at present it is not thought desirable to artificially move squirrels among the woodland fragments.

- 3.4** Disease - Continued vigilance for any signs of a disease outbreak should be maintained. Dead animals should be collected and processed centrally to look for signs of disease. Immigration restrictions must be maintained.

- 3.5** Road deaths - Mortality from road deaths is common (Magris 1998; Magris & Gurnell 2002) and could threaten the persistence of some local populations in the long term (Gurnell *et al.*, 2002). The long-term aim is for roadside tree plantings to mature and form natural bridges across roads especially at black-spots. In the short-term, the following mitigation actions continue to be carried out on a case by case basis:

Road signs - These can help warn drivers at particular accident black spots but governmentally produced signs are costly and may become less effective as road users become habituated to them. Co-ordination of the local community to produce 'DIY' signs can be a more effective solution;

Rope bridges - These are most effective when the distances to be crossed are not large. Unfortunately the Environment Division can no longer provide financial support for the erection of rope bridges.

- 3.6** Supplementary Feeding - It has been shown that resident squirrels in some woods enter the adjacent suburban habitat to obtain supplementary food. The presence of an extra summer food resource such as supplemental food or the presence of conifer cones, has a positive effect on breeding and population dynamics (Magris 1998; Gurnell *et al.*, 2002). Garden trees also provide an important extra food resource for Red Squirrels. Many members of the public now provide food for squirrels. Suitable feeding boxes and an advice note suggesting a balanced diet to feed the squirrels is now available. Furthermore a questionnaire is included requesting information from members of the public on the success of their feeder, its location etc.

4. Action plan objectives and targets

- 4.1 To maintain the current local populations of Red Squirrel through appropriate management of woodlands and hedgerows, and the provision of supplementary food as deemed necessary.
- 4.2 To increase and stabilise the number of local populations, and to enhance hedgerow linking corridors among the woodland fragments.
- 4.3 To establish a long-term monitoring programme of key local populations throughout the Island.

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 Seek to ensure that the needs of Red Squirrels under the Conservation of Wildlife Law (Jersey) 2000 are taken into account as part of the development control process. (Action: ED)
- 5.1.2 Have input on the Countryside Renewal Scheme in order to develop an Island-wide planting strategy for hedgerow creation and woodland management. (Action: ED, The Men of the Trees)

5.2 Site management and protection

- 5.2.1 Seek to upgrade existing woodland and hedgerows according to agreed management initiatives for Red Squirrels. Where viable populations occur and suitable habitat remains obtain site protection under the Jersey Island Planning Law (1964) Article 9a – Sites of Special Interest. (Action: ED)

5.3 Species management and protection

- 5.3.1 A programme to survey for the presence of squirrels at key sites across the Island, and to monitor trends in numbers of squirrels at these key sites should be established and implemented annually (see Gurnell *et al.*, 2001). Annual collation of data obtained from road traffic mortality and supplementary feeding data should also be held on GIS. (Action: ED)
- 5.3.2 There should be continued vigilance of corpses for signs of disease. Furthermore, road death data should be collected and post-mortem data taken when possible (morphometrics, presence of supplemental food in gut, sex, breeding status, age, weight, body fat content, tissue samples, location etc.). Corpses should then be forwarded to the National Museum of Scotland for use in a continuing study of Red Squirrel morphometry and pelage characteristics. (Action: ED)

5.4 Advisory

- 5.4.1 Advise land managers on hedgerow creation and management, appropriate for Red Squirrels. (Action: ED; & NGOs)
- 5.4.2 Advise the general public and commercial outlets on feeding ecology and supplementary feeders. (Action: ED)
- 5.4.3 Advise/co-ordinate community initiatives for reducing Red Squirrel road mortality. (Action: ED & NGOs)

5.5 Future research and monitoring

- 5.5.1 Implement and develop as above.
- 5.5.2 Integration with UK and International research where appropriate. (Action: ED)

5.6 Communication and publicity

- 5.6.1 Advice and education - Circulate and update current leaflets and appropriate literature, deliver presentations and engage in education and publicity campaigns. This is particularly important given that many of the threats to squirrels on the Island are anthropomorphic (Magris, Morris & Gurnell 1997, Magris 1998, Magris and Gurnell 2002). (Action: ED & Mr M. Smith)
- 5.6.2 Flagship species - The value of using the Red Squirrel as a 'flagship' species in habitat creation and management for local wildlife is recognised and encouraged. (Action: ED)

5.7 Links with other Plans

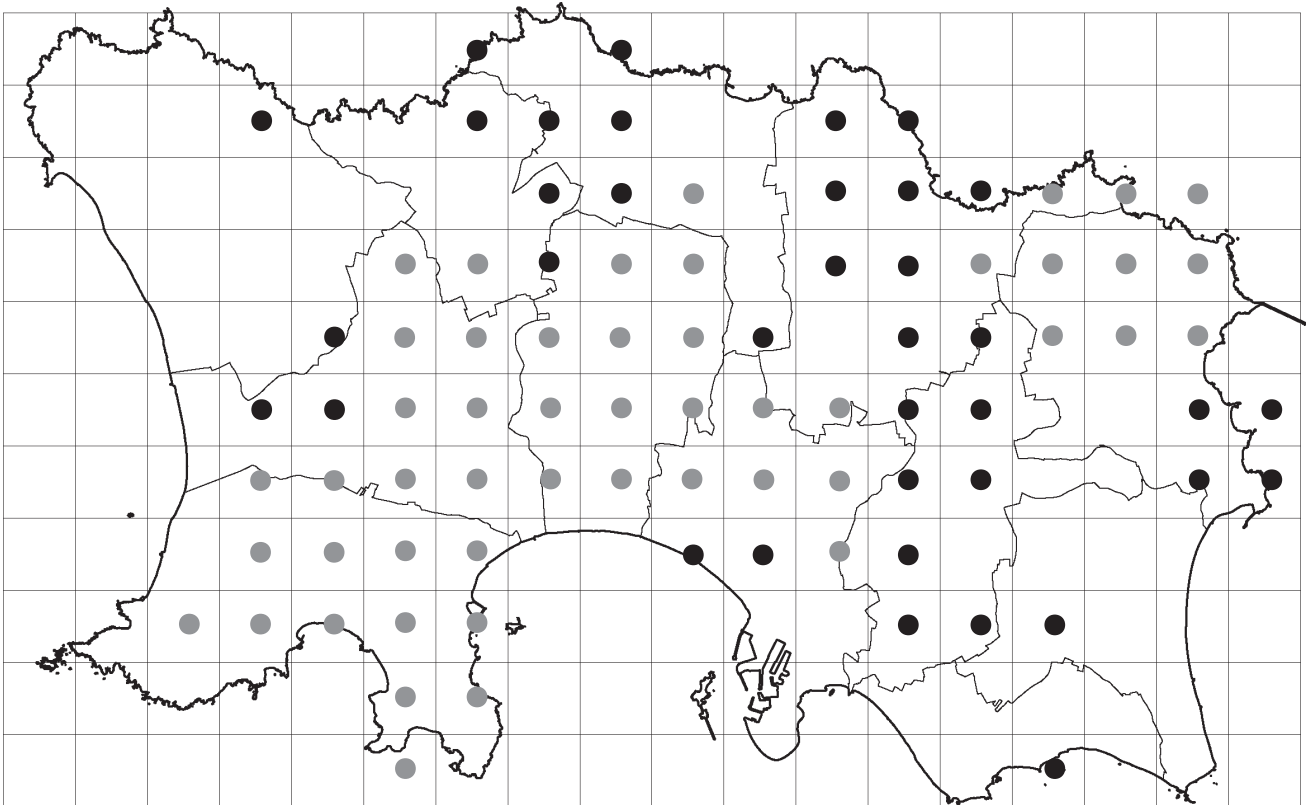
- 5.7.1 Measures taken to improve squirrel habitat connectivity benefit other species notably bats.

Red Squirrel *Sciurus vulgaris*

● records before and after 1976 ● records 1976 onwards

Distribution of Red Squirrels in Jersey 1976-2005, by 1 Km square.

Source: 'A Natural History of Jersey', Le Sueur, 1976 & 'The State of Jersey', The Environment Department, 2005.



Bio Diversity
Bat species
(Chiroptera)
Action Plan



1. Current status

1.1 Bat species are considered collectively in this plan for the following reasons:

1. the key personnel involved in bat conservation are involved with the conservation of all species occurring;
2. all species are protected so the legal framework and procedures are the same for all species;
3. many of the conservation problems faced by bats are applicable to all species - where they differ this has been highlighted.

1.2 The bats listed in table 1 below have been recorded locally since 2001. Bats are difficult to survey and the information is therefore the summary of different techniques each with limitations. Overall there is a lack of information on their population dynamics and the relative impact of the factors believed to be causing their population decline at the national scale.

1.3 Most records relate to Pipistrelle bats and practically all the known summer roosts are used by this species or Grey Long-eared Bats. Hibernation sites generally come to light during building works when single or small numbers of bats may be discovered although searches continue.

2. Current factors to loss or decline

2.1 Numerous sources of evidence suggest a decline in bat populations, in at least some species, throughout Britain. Due to the incompatibility of the historical data we cannot quantify this trend for Jersey but anecdotal evidence suggests that bat populations are lower than in the past. However, the factors contributing to a decline in bat populations elsewhere certainly apply to Jersey; the main threats to bats can be divided into three groups:

1. factors affecting foraging areas.
2. factors affecting roosts.
3. direct losses to populations.

2.2 Factors affecting ability to forage - Since bats may forage a considerable distance (up to 4km) from their roost sites they may use large areas of the Island for foraging. Each of the species of bats has its own habitat preferences. Foraging habitats should be linked to a sheltered network of 'commuting' routes which enable them to fly across the landscape sheltered from strong winds and protected from predators. The structural nature of the vegetation within foraging areas is therefore as important to bats as plant species diversity and any loss and disruption to flightline features (linear landscape elements) such as hedgerows is a critical factor.

2.3 The small parcel size of land in Jersey and retention of linear features provides a favourable habitat for bats. However, undeveloped land, which does not meet the standards for designation as SSIs, forms the bulk of bats' foraging areas. These sites are vulnerable to development pressures and unfavourable changes in land management. For example, the loss of large rear gardens to small-scale housing development often results in the loss of long-established trees or hedgerows and so reduces the structural diversity of foraging habitats for bats. Fragmentation of habitats to which bats are among the most susceptible mammals, is a further threat.

2.4 Reduction in insect prey due to modern farming practices and inappropriate riparian management can also reduce foraging success.

2.5 Factors affecting roosts - Bats tend to roost communally and require a range of roosting sites throughout the year with summer roosts generally (although importantly not always) being found in different places to hibernation sites. All local species are thought to be reliant on buildings or other structures. The mild local climate suggests that some species are likely to use trees for roosting although the lack of veteran trees locally may have an effect.

2.6 Bats have very specific roost requirements and the assumption that any loss to a roost site can be permitted because there are other apparently suitable roost sites in the vicinity is likely to be misplaced. Because bats roost communally, whole populations are vulnerable to the destruction of occupied roosts through conflicts with householders,

Table 1

Species		Status 2003
Greater Horseshoe Bat	<i>Rhinolophus ferrumequinum</i>	Last record 1959
Natterer's Bat	<i>Myotis nattereri</i>	Uncommon resident
Grey long-eared Bat	<i>Plecotus austriacus</i>	Relatively common resident
Brown long-eared Bat	<i>Plecotus auritus</i>	Two individuals recorded 2002 and 2003
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	Very common resident
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Relatively common resident
Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>	Relatively common resident
Kuhl's Pipistrelle	<i>Pipistrellus kuhli</i>	Uncommon resident
Serotine Bat	<i>Eptesicus serotinus</i>	Unknown, believed uncommon resident
Leisler's Bat	<i>Nyctalus leisleri</i>	One male individual recorded 20.5.02.

building alterations, demolition or remedial timber works where roosts occur in buildings, and pruning or felling works where roosts occur in trees. The low reproductive capacity of bats means that rebuilding populations after catastrophic declines may be very slow if not impossible.

- 2.7** Cat predation - A significant number of bats received by the JSPCA and the Jersey Bat Group have been injured or killed by cats. There are instances where individual cats become accomplished at catching bats.
- 2.8** Deliberate persecution - It is possible that deliberate persecution is a significant threat. The main threat would be from householders unwilling to retain a bat roost in their house and directly removing it without reference to the statutory authorities.

3. Current action

- 3.1** European Legal status - Agreement on the Conservation of Populations of European Bats (1992) (Under the Bonn Convention on the Conservation of Migratory Species of Wild Animals).
- 3.2** Jersey is a signatory to the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1982).
- 3.3** Local Legal status - The following legislation protects all species of bats and their roosts: Conservation of Wildlife (Jersey) Law 2000. In addition bats are important contributors to local biodiversity and as such receive consideration through the Island Plan and Planning and Building Law 1964 and 2000, The Biodiversity Strategy and various Habitat Statements. As such the presence of bats (or any other protected species) is a material planning consideration when determining planning applications.
- 3.4** The provision of statutory advice required by the legislation protecting bats is carried out by the Environment Department and competent individuals. Visits to people with bat roosts requested under bat protection legislation generate biological records and provide highly targeted educational opportunities.
- 3.5** A baseline survey was completed in 2003 and the current initiative is a Bat Monitoring Programme. The Environment Department leads this work in partnership with the Société Jersiaise and the Jersey Bat Group.
- 3.6** The Environment Department undertakes educational work, in the form of talks and guided walks as well as distributing targeted information to appropriate groups e.g. architects, roost owners and gardeners.

4. Action plan objectives and targets

- 4.1** Ensure that knowledge of best practice for the conservation of bats is used locally.
- 4.2** Increase knowledge of the status, distribution, ecology and population trends of bats locally.
- 4.3** Encourage conditions which would lead to an increase in bat populations.
- 4.4** Protect roost sites, foraging habitat and connecting features.

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 Effective enforcement of the Conservation of Wildlife Law through the development control process. (Action: ED)
- 5.1.2 Seek the inclusion of effective measures which protect bats and their habitats through the site designation process. (Action: ED)

5.2 Site safeguard and management

- 5.2.1 Identify roosts (both summer especially hibernaculum) and ensure that the information is available for use in the development control process to safeguard sites. Consider use of 'citizen science' in encouraging roost owners and a revitalised bat group in the collecting of data. (Action: ED)
- 5.2.2 Identify important bat foraging and areas. (Action: ED)
- 5.2.3 Protect, maintain and enhance insect-rich riparian habitats and linear landscape features suitable for foraging and commuting e.g. woodland edge, trees, pasture, open water and wetland areas and their associated habitats. Carry out habitat management initiatives in accordance with the Jersey Bat Survey Report and the Red Squirrel Species Action Plan. (Action: ED, AFW, MOTT)
- 5.2.4 Encourage CRS applications leading to enhancement of bat populations and habitat. (Action:ED)

5.3 Species management and protection

- 5.3.1 Promote the parallels between bats and Red Squirrels and emphasize the benefits to bats arising from conservation initiatives for Red Squirrels. (Action: ED)

- 5.3.2 Emphasize the contribution made by bats to (sub) urban biodiversity. Promote the benefits of correctly designed garden ponds in adding to urban biodiversity. (Action: ED)

5.4 Advisory

- 5.4.1 Revitalise the Jersey Bat Group to enable it to respond/assist in requests for advice and information arising locally. (Action: Jersey Bat Group)
- 5.4.2 Maintain and continue to develop a public awareness campaign and target appropriate stakeholder groups with relevant support literature. (Action: ED & NGOs)
- 5.4.3 Maintain and reinforce communication between groups involved in local bat conservation and rehabilitation. (Action: ED & NGOs)

5.5 Future research and monitoring

- 5.5.1 Encourage householders or other roost owners to collect and submit records on their roosts. (Action: ED & NGOs)

5.6 Communications and publicity

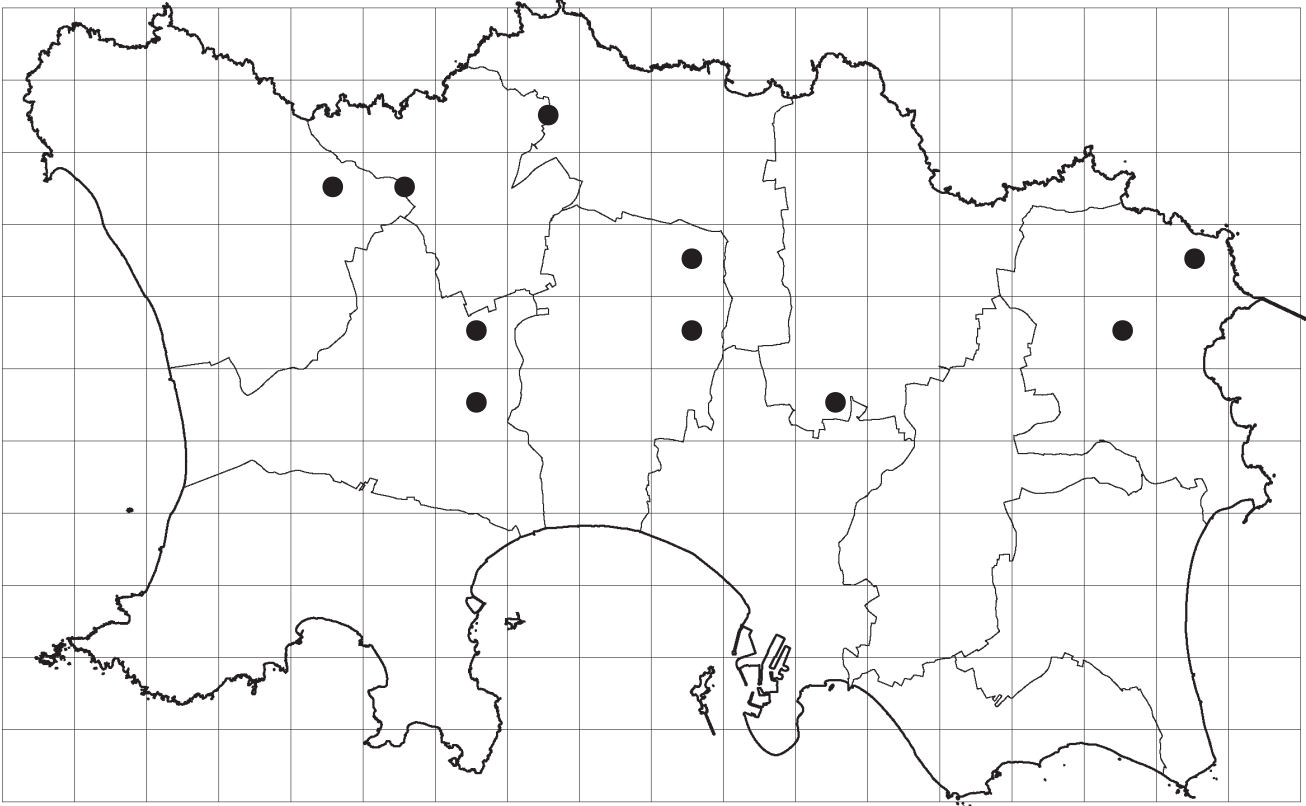
- 5.6.1 Provide education for the general public. (Action: ED & NGOs)

5.7 Links with other Plans

- 5.7.1 This Biodiversity Action Plan will be implemented over 10 years with a first review after 5 years. Its actions are co-ordinated within the Environmental Monitoring Strategy overseen by the Monitoring Task Group (within the Jersey Environment Forum) and the Monitoring Working Group (within the States of Jersey). These groups will meet at least once a year.
- 5.7.2 Review will be carried out in conjunction with related Habitat Action Plans as appropriate. The Action Plan will be revised and updated in the light of review results and any relevant changes in circumstances and/or additional information which become available during the review period.

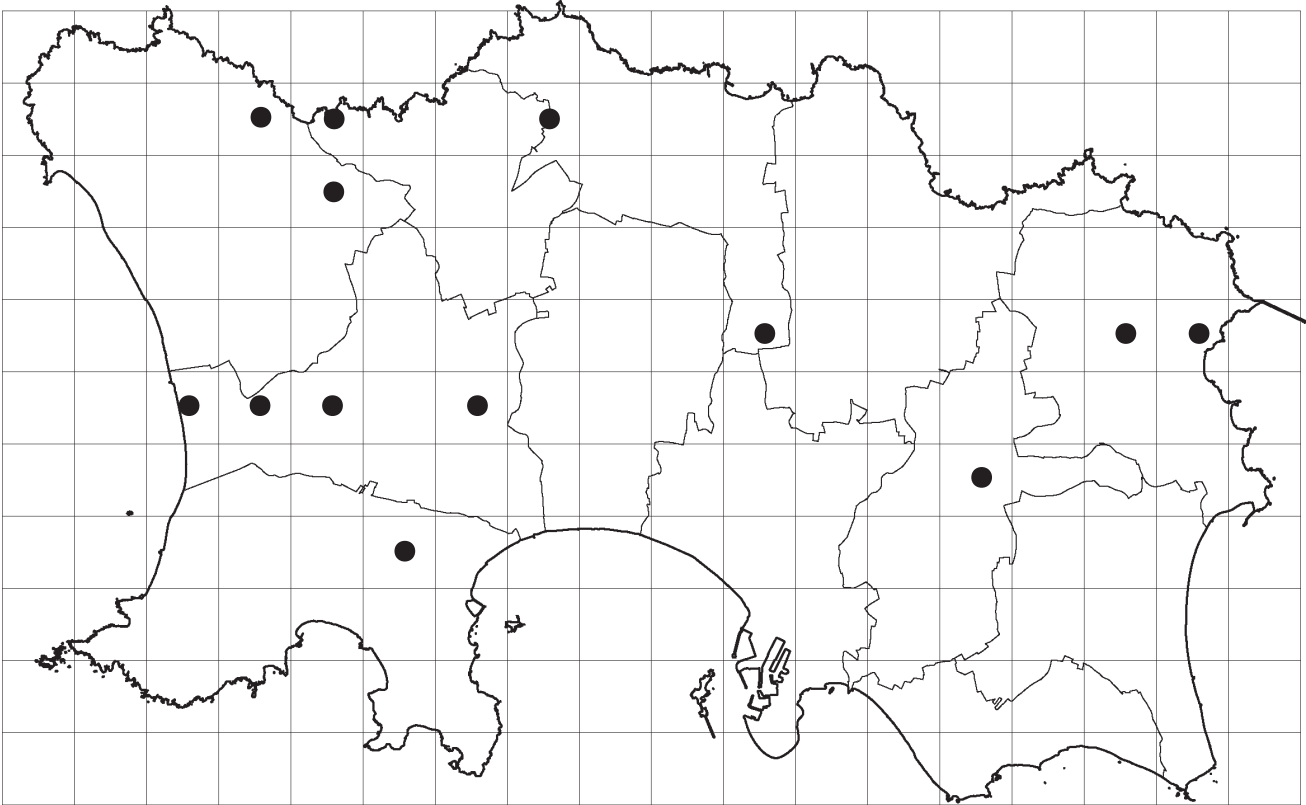
Natterer's Bat *Myotis nattereri*

● records from 2003
Distribution of Natterer's Bat in Jersey, by 1Km square.
Source: 'The Jersey Bat Survey', Magris 2003.



Grey Long-eared Bat *Plecotus austriacus*

● records from 2003
Distribution of Grey Long-eared Bat in Jersey, by 1Km square.
Source: 'The Jersey Bat Survey', Magris 2003.

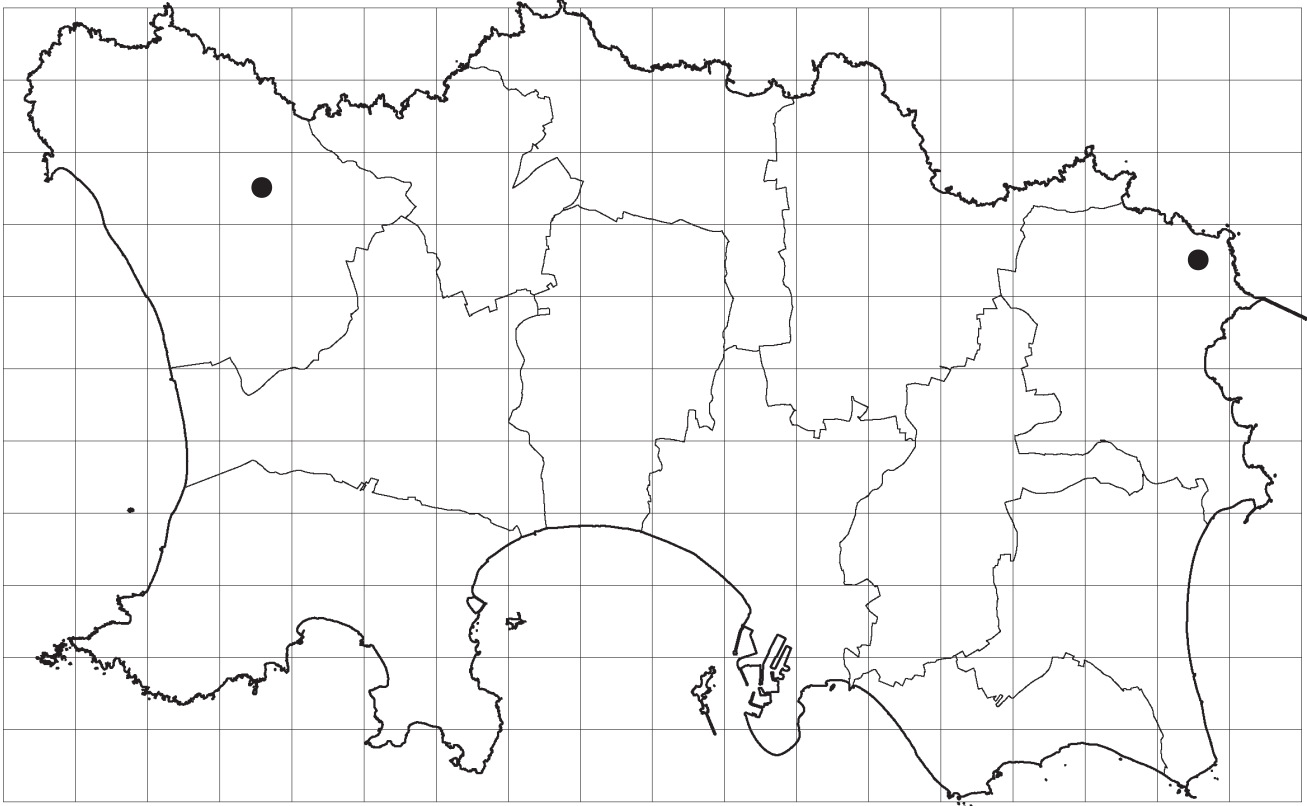


Brown Long-eared Bat *Plecotus auritus*

● records from 2003

Distribution of Brown Long-eared Bat in Jersey, by 1Km square.

Source: 'The Jersey Bat Survey', Magris 2003.

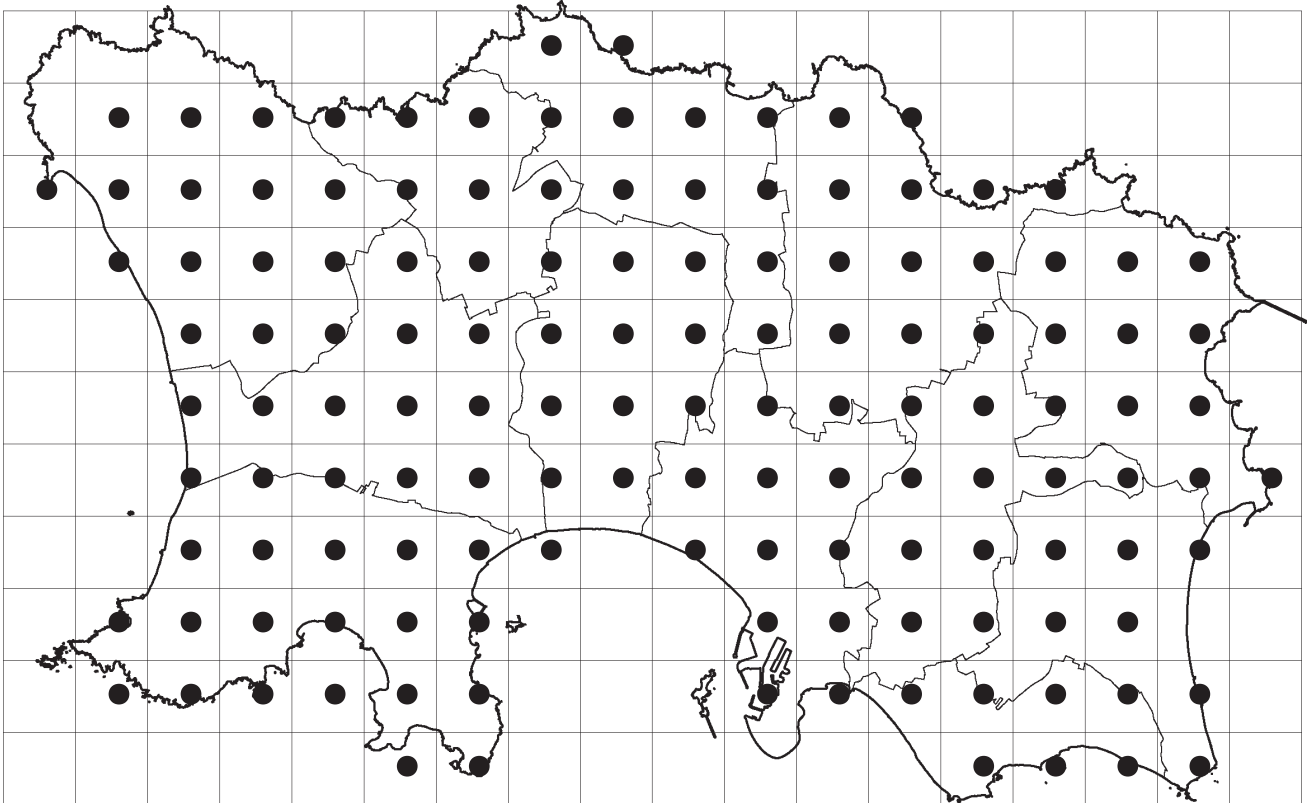


Common Pipistrelle *Pipistrellus pipistrellus*

● records from 2003

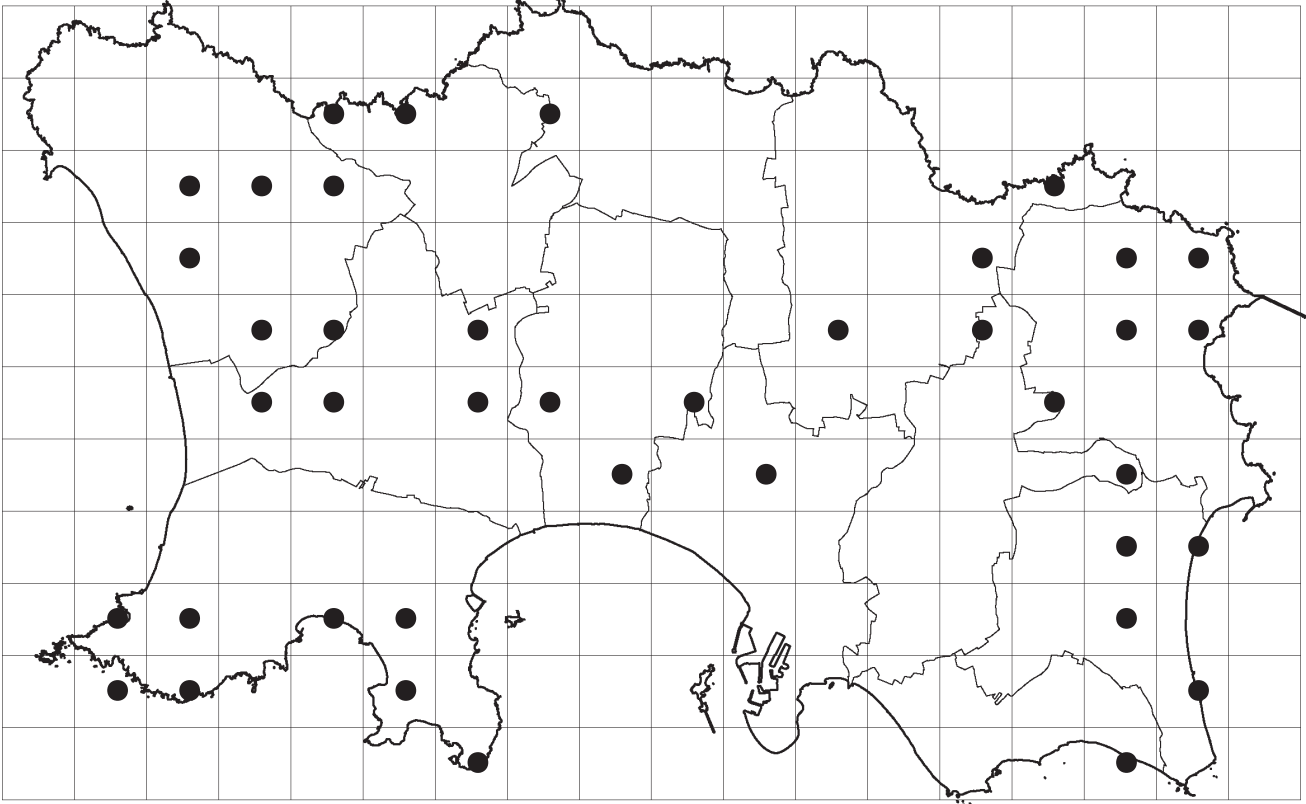
Distribution of Common Pipistrelle in Jersey, by 1Km square.

Source: 'The Jersey Bat Survey', Magris 2003.



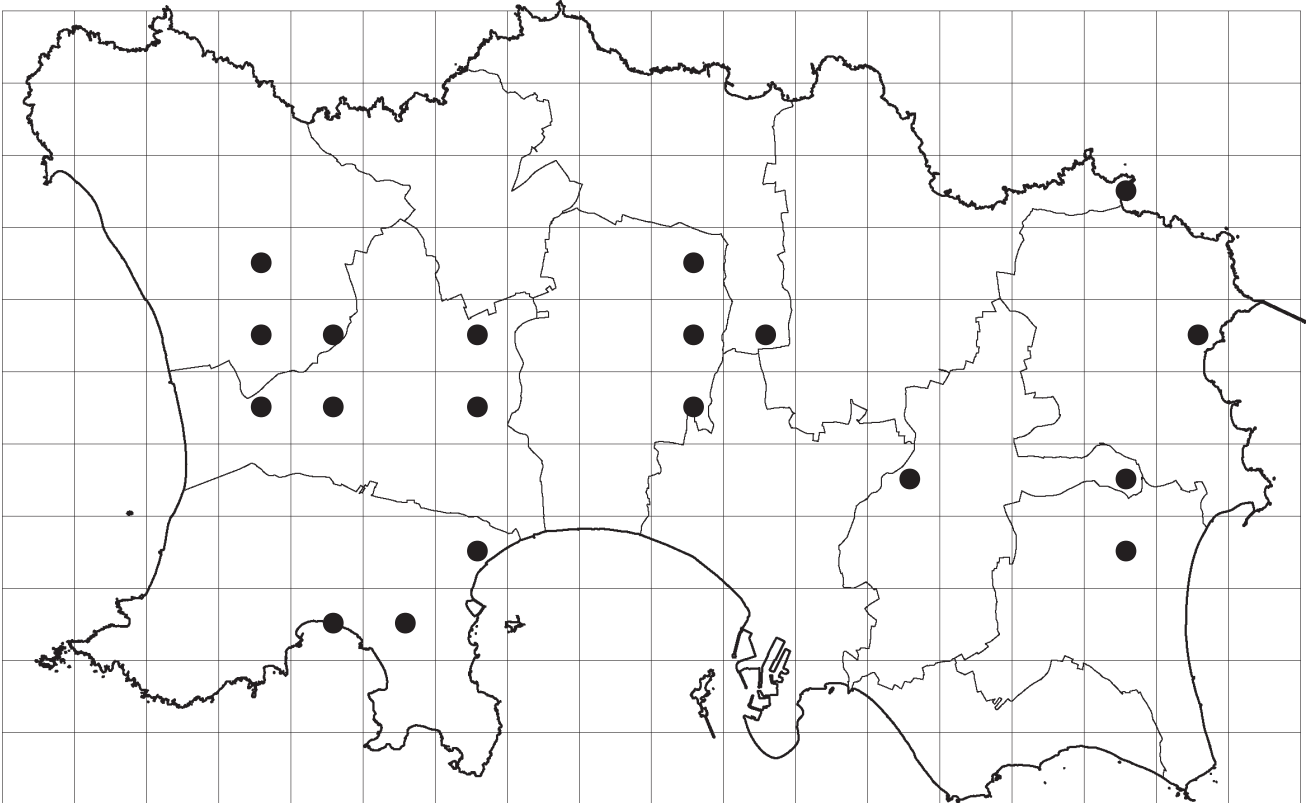
Soprano Pipistrelle *Pipistrellus pygmaeus*

● records from 2003
Distribution of Soprano Pipistrelle (*pygmaeus*) in Jersey, by 1Km square.
Source: 'The Jersey Bat Survey', Magris 2003.



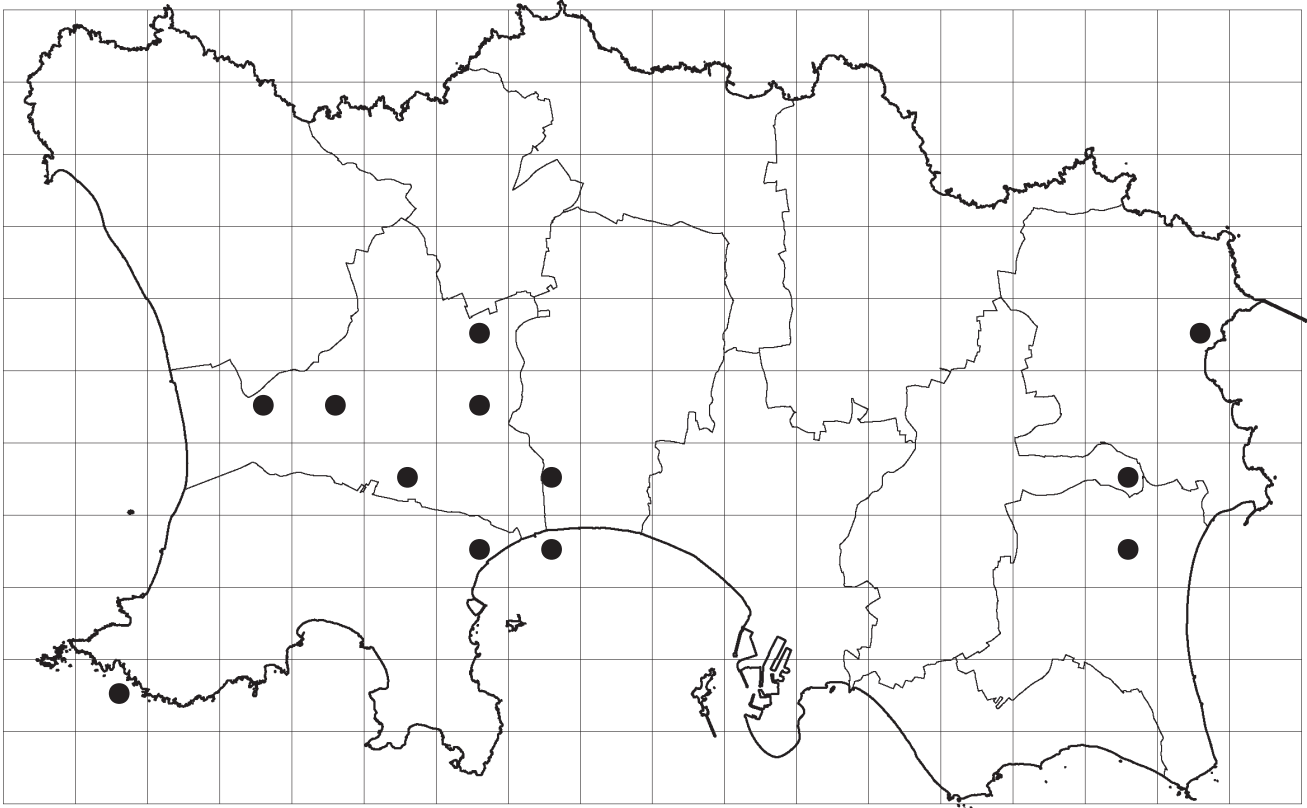
Nathusius' Pipistrelle *Pipistrellus nathusii*

● records from 2003
Distribution of Nathusius' Pipistrelle in Jersey, by 1Km square.
Source: 'The Jersey Bat Survey', Magris 2003.



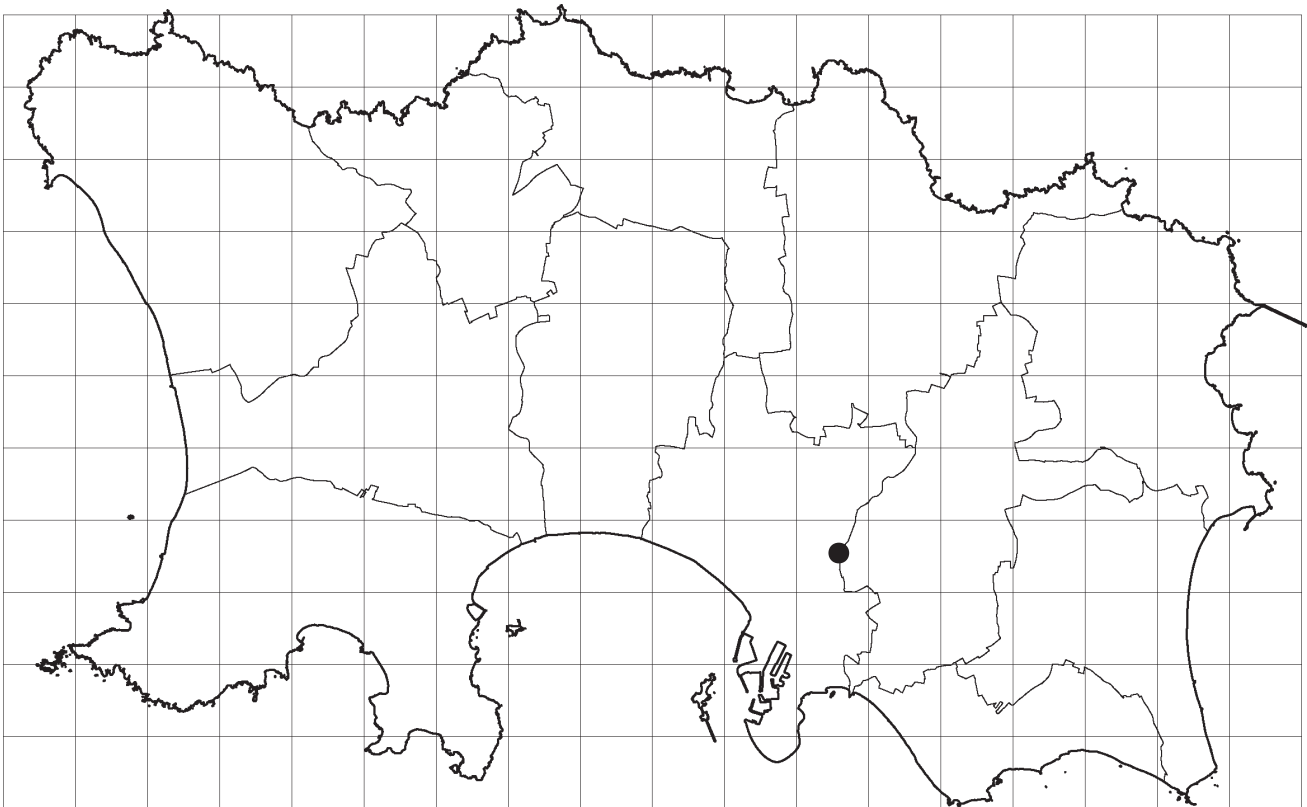
Kuhl's Pipistrelle *Pipistrellus kuhli*

● records from 2003
Distribution of Kuhl's Pipistrelle in Jersey, by 1Km square.
Source: 'The Jersey Bat Survey', Magris 2003.

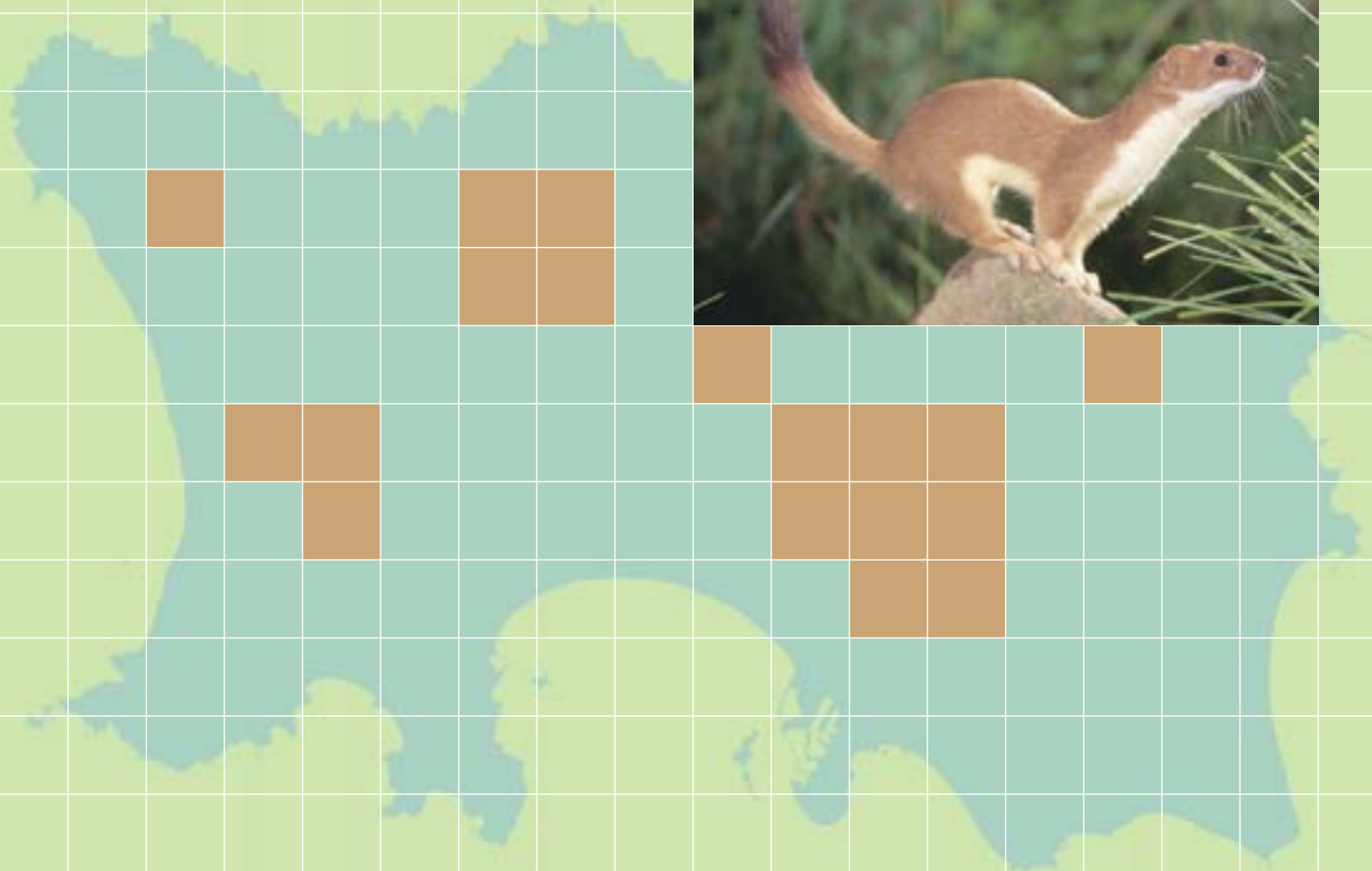


Leisler's Bat *Nyctalus leisleri*

● records from 2003
Distribution of Leisler's Bat in Jersey, by 1Km square.
Source: 'The Jersey Bat Survey', Magris 2003.



Bio Diversity
Stoat
(Mustela ermina)
Action Plan



1. Current status

- 1.1 Stoats *Mustela ermina* are adaptable predators with a broad diet that includes small mammals and importantly rabbits; they often hunt in burrows relying heavily on eyesight and smell. Stoats also predate on birds, chicks and eggs and can kill adult game birds. They cache prey in times of surplus but are prone to local extinctions when prey availability declines. Later, Stoats may recolonise these habitats when favourable conditions return. Such prey fluctuations can be pronounced in island habitats. This pattern of 'boom and bust' is typical of many small carnivores.
- 1.2 Stoats mature quickly and can breed early with large litter sizes; only a small number of juvenile Stoats are recruited into the breeding population and most individuals die early. These patterns of behaviour allow Stoats to compensate for high natural mortality brought about by unpredictable food supplies, with starvation being the most important cause of mortality.
- 1.3 A survey (Le Sueur, 1976) showed that Stoats were present Island wide although it is presumed that they were never very numerous. By 2000 Stoats appeared extinct with no validated Stoat sightings during the survey period of 1998 to 2000 (Magris and Gurnell, 2000) or since.
- 1.4 The Stoat is fully protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1 The exact mechanism leading to the extinction of Stoats is unknown but a combination of factors is thought to have been responsible.
- 2.2 Historically rabbits and their Stoat predators were very abundant. The dependence of Stoats on their major prey, rabbits (Macdonald, Webbon and Harris, 2000) would have made them vulnerable to fluctuations in the abundance of their prey and fluctuations in the rabbit population would have caused peaks and troughs of a greater magnitude in the Stoat population. As a result of myxomatosis, by the 1960s the rabbit population crashed dramatically and inevitably caused a reduction in the size of the Stoat population - this is a well established phenomenon observed in the UK rabbit population (Macdonald, Webbon and Harris, 2000). Between 1960 and 1976 rabbit populations recovered and Stoats were still present but in much reduced numbers (note the 1976 records) than in historic data which suggests they were very abundant.

- 2.3 At the time of the 1976 survey, feral ferrets were occasionally observed but not thought to be breeding in the wild. It is unlikely that an incredibly adept hunter like the Stoat could be outcompeted for prey by a handful of recently released feral ferrets which are naive and not acclimatized to life in the wild.
- 2.4 Between 1960 and 2000 other environmental changes are likely to have further threatened the recovery of the Stoat post-myxomatosis. Habitat use changed through differences in farming practices. Initially this could have impacted on small mammal populations, the alternative prey source along with passerine birds.
- 2.5 Increased secondary exposure to rodenticides and a declining bird population would have further reduced Stoat populations eventually to a level below the 'Minimum Viable Population'. The 'boom and bust' population ecology would have worked against the Stoats to the point where the final population trough led into an irrevocable slide to extinction despite subsequent rises in rabbit abundance.
- 2.6 Since the late 1990s, Viral Haemorrhagic Disease (VHD) has entered the wild rabbit population with some local impacts and population fluctuations but a feared overall population crash has not occurred.

3. Current action

- 3.1 Currently the Environment Department keeps a watching brief on the status of Stoat population. Potential road kills and visual sightings are investigated and are usually confirmed as feral ferrets. There has been no confirmed evidence of Stoats since 2000 and populations are considered extinct.
- 3.2 Local feral pheasant populations have increased dramatically since the early 1990s and could provide an alternative prey base for Stoats. The naturalization of feral pheasants locally is not considered to be of benefit to local biodiversity and definitely has deleterious effects on agriculture. Stoats have the potential to act as significant predators of pheasants.

4. Action plan objectives and targets

- 4.1 To investigate the feasibility of a Stoat reintroduction by 2006.
- 4.2 To take action based on the outcome of the above study by 2007/8.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

5.1.1 Reintroductions are conservation tools that 'attempt to establish a species in an area which was once part of its historical range, but from which it has been extirpated or become extinct' (IUCN 1996). The IUCN outlines strict protocol for reintroductions with well defined aims and objectives:

1. 'To establish a viable, free-ranging population in the wild, of a species, subspecies or race, which has become globally or locally extinct, or extirpated, in the wild';
2. 'The reintroduction should be within the species' former natural habitat and range and should require minimal long-term management';
3. 'To enhance the long-term survival of a species; to re-establish a keystone species (in the ecological or cultural sense) in an ecosystem; to maintain and/or restore natural biodiversity; to provide long-term economic benefits to the local and/or national economy; to promote conservation awareness; or a combination of these'.

5.1.2 It is likely that a reintroduction of Stoats to Jersey would satisfy these criteria. Critically, with changes in rabbit ecology and the provision of alternative prey coupled with a reduction in the use and type of rodenticides, it is likely that a reintroduction could be successful. (Action: ED)

5.2 Site safeguard and management

5.2.1 To be identified in the reintroduction feasibility study. (Action: ED)

5.3 Species management and protection

5.3.1 To be identified in the reintroduction feasibility study. (Action: ED)

5.4 Advisory

5.4.1 Needs to be identified in the reintroduction feasibility study but if a reintroduction programme is recommended then considerable consultation with key stakeholders and the public will be necessary for it to be successful. (Action: ED).

5.5 Future research and monitoring

5.5.1 Feasibility study to address *inter alia*:

5.5.2 Further investigation on the reasons for the initial decline in the Stoat population. (Action: ED)

5.5.3 Information on current prey (especially rabbits) productivity and biomass in likely recolonisation areas. (Action: ED)

5.5.4 Likely current rôle of persistent rodenticides in controlling rodent populations. (Action: ED)

5.5.5 The potential rôle of Stoat as an agent of biocontrol to regulate feral pheasant populations. (Action: ED)

5.6 Communications and publicity

5.6.1 Consultation process regarding reintroduction as part of the feasibility study (2006). (Action: ED)

5.6.2 Use of attractive species to publicise the fragile nature of biodiversity and promote the return of an 'old friend' to the Island. (Action: ED)

5.7 Links with other Plans

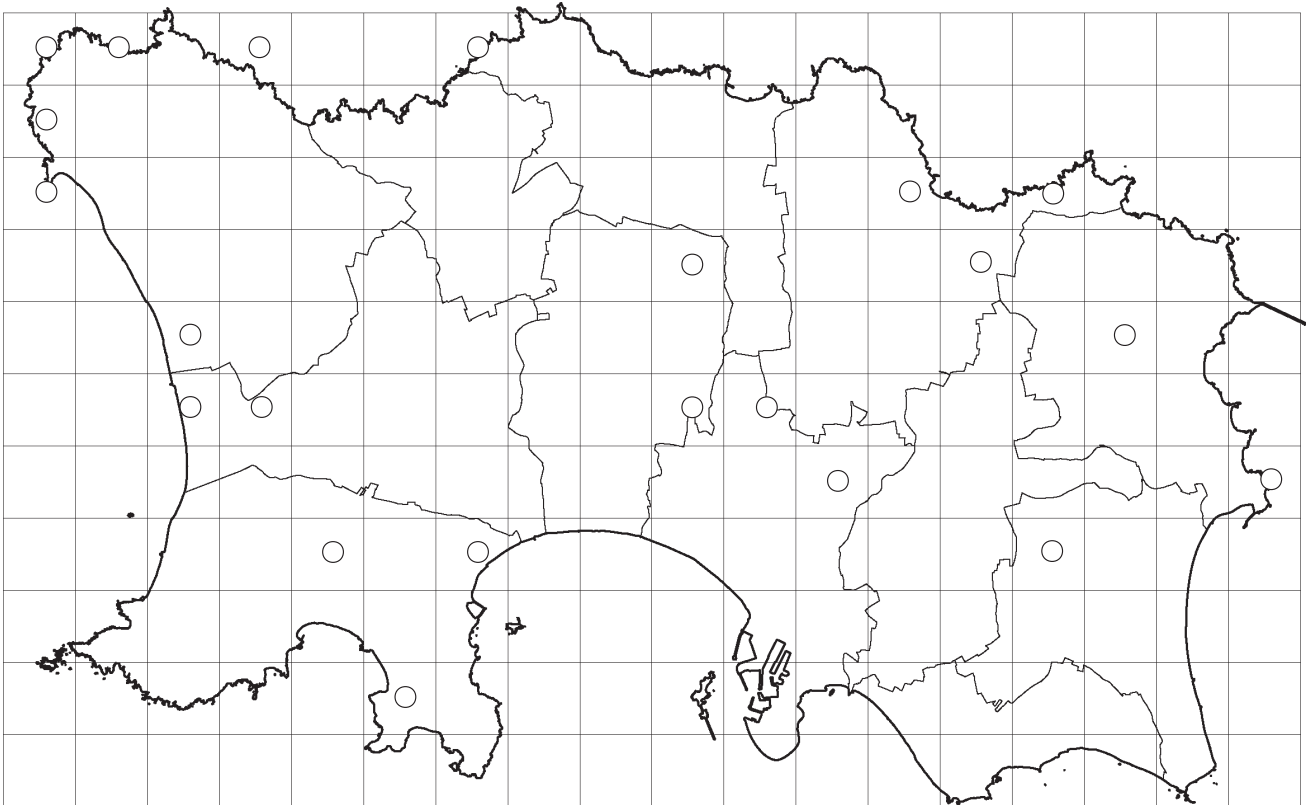
5.7.1 Impact of these proposals on other action plan species will be carefully considered.

Stoat *Mustela ermina*

○ records pre 1976

Distribution of Stoat in Jersey, by 1 Km square.

Source: 'A Natural History of Jersey', Le Sueur, 1976.

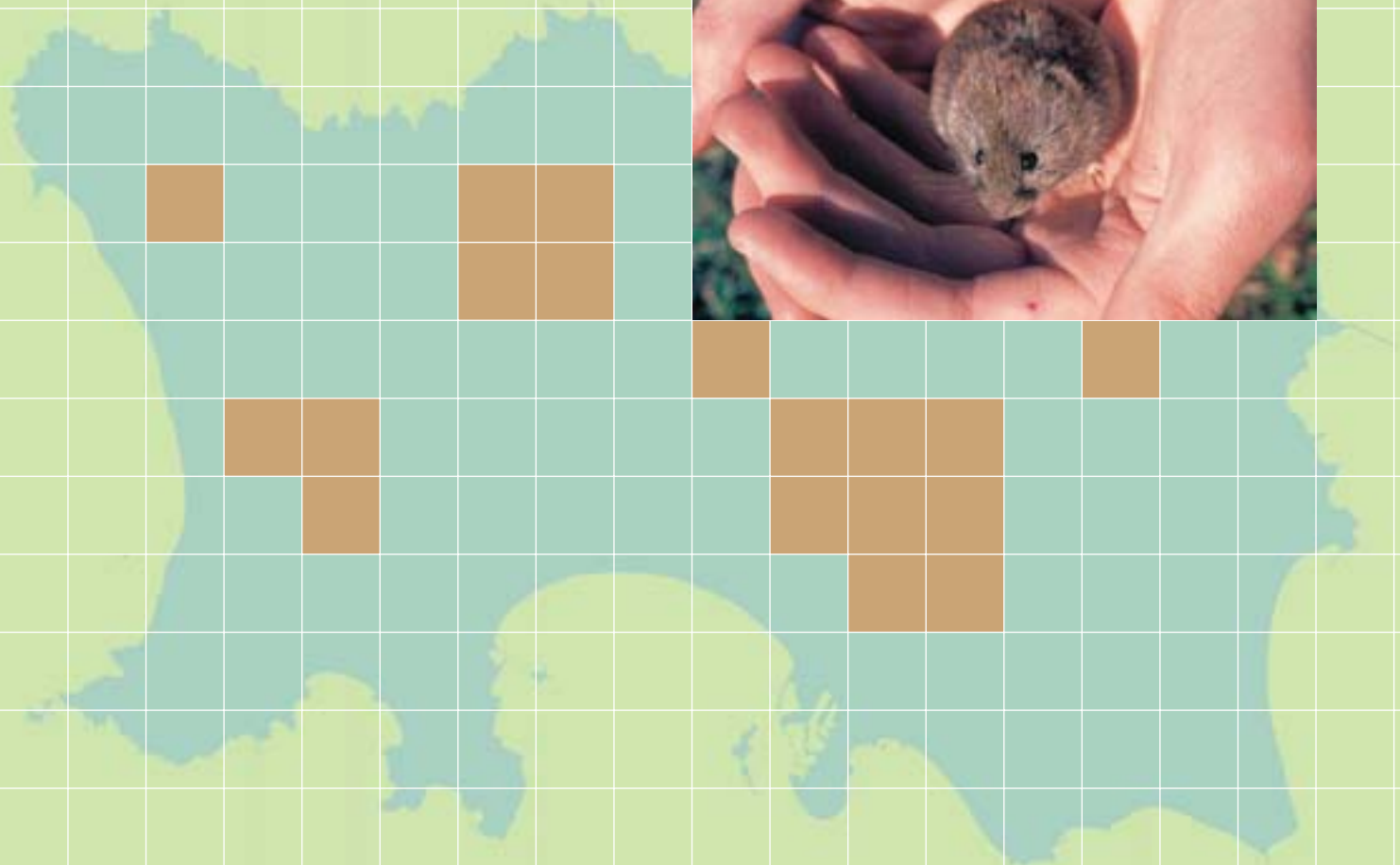


Bio Diversity

Jersey Bank Vole

(Clethrionomys glareolus caesarius)

Action Plan



1. Current status

- 1.1 Whilst the Bank Vole *Clethrionomys glareolus* is common throughout Western and Central Europe, mainland Britain and Ireland, the subspecies *caesarius* is entirely specific to Jersey. Three other Island subspecies of Red-backed Vole exist: the Skomer Vole *C. g. skomerensis*; *C. g. alstoni* in Mull; and *C. g. erica* from Raassay in Scotland. All the subspecies are larger than the UK form.
- 1.2 Bank Voles are almost entirely herbivorous. Fleshy fruits and seeds are preferred; the leaves of woody plants are preferred to herbs and dead leaves are eaten in winter. Other food items include fungi, moss, flowers, grass, insects and worms. Habitats include mature mixed deciduous woodland with thick shrub or field layer and areas with high herb growth and good cover (cited in Macdonald and Barrette, 1993). Bank Voles are found in a wide variety of habitats e.g. the Skomer vole is associated with a dense cover of bracken and bluebells.
- 1.3 Voles have short lifespans (approx 18 months). They are common prey of owls and population turnover is high.
- 1.4 A trapping survey carried out between 1998 and 2000 (Magris and Gurnell, 2000) showed them to be widely distributed across the Island in all habitats and in densities higher than in many reference habitats. This is likely to be because of the lack of competition with other small rodent species (other than the wood mouse *Apodemus sylvaticus*).
- 1.5 They are protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1 Bank Voles are not thought to be in decline although we do not have historic data for comparative purposes. Nevertheless this endemic subspecies is important iconically to the Island and is a fundamental prey source for many birds, reptiles and mammals and as such its status should be kept under review.
- 2.2 Populations are potentially at risk from habitat loss, degradation and fragmentation.
- 2.3 Barn Owls hunt extensively on voles which comprise 33% of prey items retrieved from pellets and account for 57% of prey composition when biomass is corrected for (Magris and Gurnell, 2000). They are also predated upon by feral ferrets, domestic cats and diurnal raptors, especially kestrels.

3. Current action

- 3.1 A PhD study (University of London) has begun to assess the ecology and conservation of Island Red-backed Voles across the four islands where endemic sub-species are found (2005-2008).
- 3.2 Occasional checks on population status (e.g. Ransom, 2002).

4. Action plan objectives and targets

- 4.1 To maintain a continuous check on the population status through occasional live trapping or predator surveys.
- 4.2 To carry out a full resurvey of population status of the species to establish population trends by 2008.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 Protect further core habitats through designation of Proposed Sites of Special Interest by 2006. (ACTION: ED)

5.2 Site safeguard and management

- 5.2.1 Enhance and defragment habitats through habitat creation and upgrading as a result of initiatives supported by the Countryside Renewal Scheme. (Action: ED)
- 5.2.1 Protection of core habitats through the Planning and Building Law (Jersey) Law and Site of Special Interest designation. (Action: ED)

5.3 Species management and protection

- 5.3.1 Protection of key populations through the Conservation of Wildlife (Jersey) Law 2000. (Action: ED)

5.4 Advisory

- 5.4.1 Status under the Conservation of Wildlife (Jersey) Law 2000 publicised through appropriate channels. (Action: ED)

5.5 Future research and monitoring

- 5.5.1 To be identified by ongoing PhD study by 2008. (Action: University of London & ED)
- 5.5.2 To carry out a full resurvey of populations status to establish population trends by 2008. (Action: ED)

5.6 Communications and publicity

- 5.6.1 Raise profile of endemic island subspecies, particularly in relation to the results from the PhD study through appropriate channels by 2008. (Action: ED).

5.7 Links with other plans

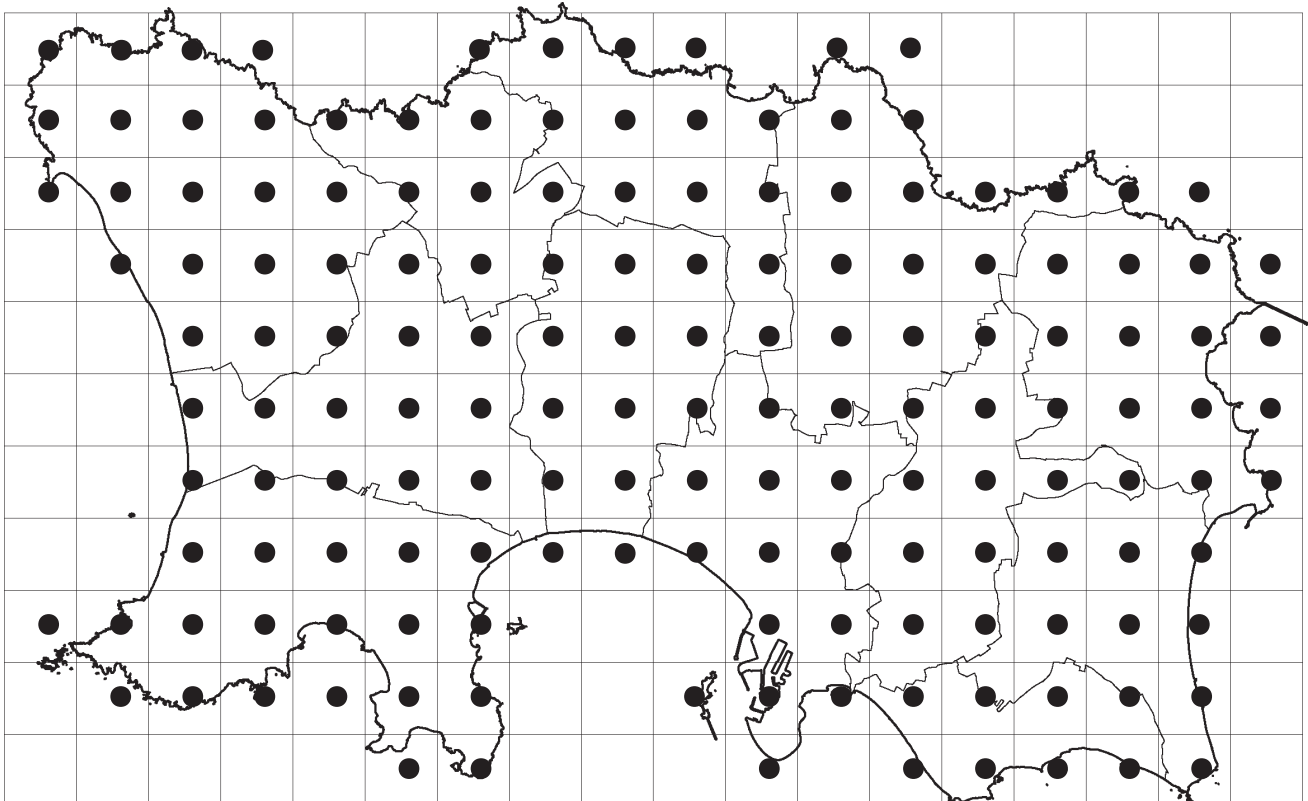
- 5.7.1 This plan should be considered in conjunction with the plans for shrews, Stoat and Grass Snakes.

Jersey Bank Vole *Clethrionomys glareolus caesarius*

● records from 1998

Distribution of Jersey Bank Vole in Jersey, by 1 Km square.

Source: 'The Jersey Mammal Survey', Magris & Gurnell, 1998.



Bio Diversity

Lesser White-toothed Shrew

(Crocidura suaveolens)

and French or Millet's Shrew

(Sorex coronatus)

Action Plan



1. Current status

- 1.1 The shrew family is represented in Jersey by the Lesser White-toothed Shrew *Crocidura suaveolens* and the French or Millet's shrew *Sorex coronatus*. The White-toothed Shrew is a widespread insectivore particularly utilising grassy edge habitats (Macdonald and Barrett, 1993), sand dunes, heath and coastal scrub, deciduous woodland, dry bracken, hedge banks and gardens. Its prey is largely invertebrates especially earthworms and beetles, slugs, snails, insect larvae and adults, spiders, centipedes and woodlice. Because of its association with coastal habitats, prey also includes littoral amphipods (sandhoppers *Talitroides dorrieni*) whose food remains may be found under rocks and amongst seaweed. Millet's Shrew is a similarly voracious predator of a wide variety of invertebrates.
- 1.2 Both species have short lifespans (below 24 months) and no individuals normally survive beyond the second autumn. Population turnover is high.
- 1.3 A trapping survey carried out between 1998 and 2000 (Magris and Gurnell, 2000) showed the Lesser White-toothed Shrew to be mainly distributed on dune and heath habitats which tend to be coastal. However cat predation records for the same period found occurrences of shrews more than 2.5km from the coast. Even accounting for quite large hunting ranges of cats, this suggests that shrews are not solely present in heaths and dunes although it is likely that these are core habitats. The French Shrew was found island-wide and in all habitats even in intensively worked agricultural fields (Magris and Gurnell, 2000).
- 1.4 Both species of shrew are fully protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1 There are no reliable density records for either species prior to 2000. Maximum densities for Lesser White-toothed Shrews were found in heathland habitat at 56 individuals/ ha (autumn 1998). Maximum densities for French Shrews were found in woodland habitat at 25 individuals/ ha (spring 1999) – this being relatively low in comparison to published densities which can be up to 70/ ha in woodland and 43-98/ha in grassland (cited in Churchfield, 1990).
- 2.2 The proportion of French Shrews to Lesser White-toothed Shrews in Barn Owl prey items was approximately 4:1. The proportion of French Shrews to Lesser White-toothed Shrews in cat prey items was 2:1.
- 2.3 It is likely that populations have declined in association with habitat degradation and fragmentation as well as the use of pesticides.

- 2.4 Barn Owls hunt extensively on shrews, Lesser White-toothed Shrews and French Shrews comprising 8% and 33% of prey items retrieved from pellets respectively. (Magris and Gurnell, 2000).

3. Current action

- 3.1 No current action other than occasional surveillance of population status.

4. Action plan objectives and targets

- 4.1 To maintain a watching brief on the population status through occasional live trapping or predator surveys.
- 4.2 To carry out a full resurvey of populations status of both species to establish population trends by 2008.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 Protect core habitats through Site of Special Interest designation by 2006. (Action: ED)

5.2 Site safeguard and management

- 5.2.1 Enhance and consolidate habitats through habitat creation and upgrading as a result of initiatives supported by the Countryside Renewal Scheme. (Action: ED)
- 5.2.2 Protection of core habitats through the Planning and Building Law (Jersey) Law and Site of Special Interest designation. (Ongoing)

5.3 Species management and protection

- 5.3.1 Protection of key populations through the Conservation of Wildlife (Jersey) Law 2000. Ongoing. (Action: ED)

5.4 Advisory

- 5.4.1 Status under the Conservation of Wildlife (Jersey) Law 2000 publicised through appropriate channels. (Action: ED)

5.5 Future research and monitoring

- 5.5.1 To carry out a full resurvey of population status of both species to establish population trends by 2008.

5.6 Communications and publicity

- 5.6.1 None proposed.

5.7 Links with other Plans

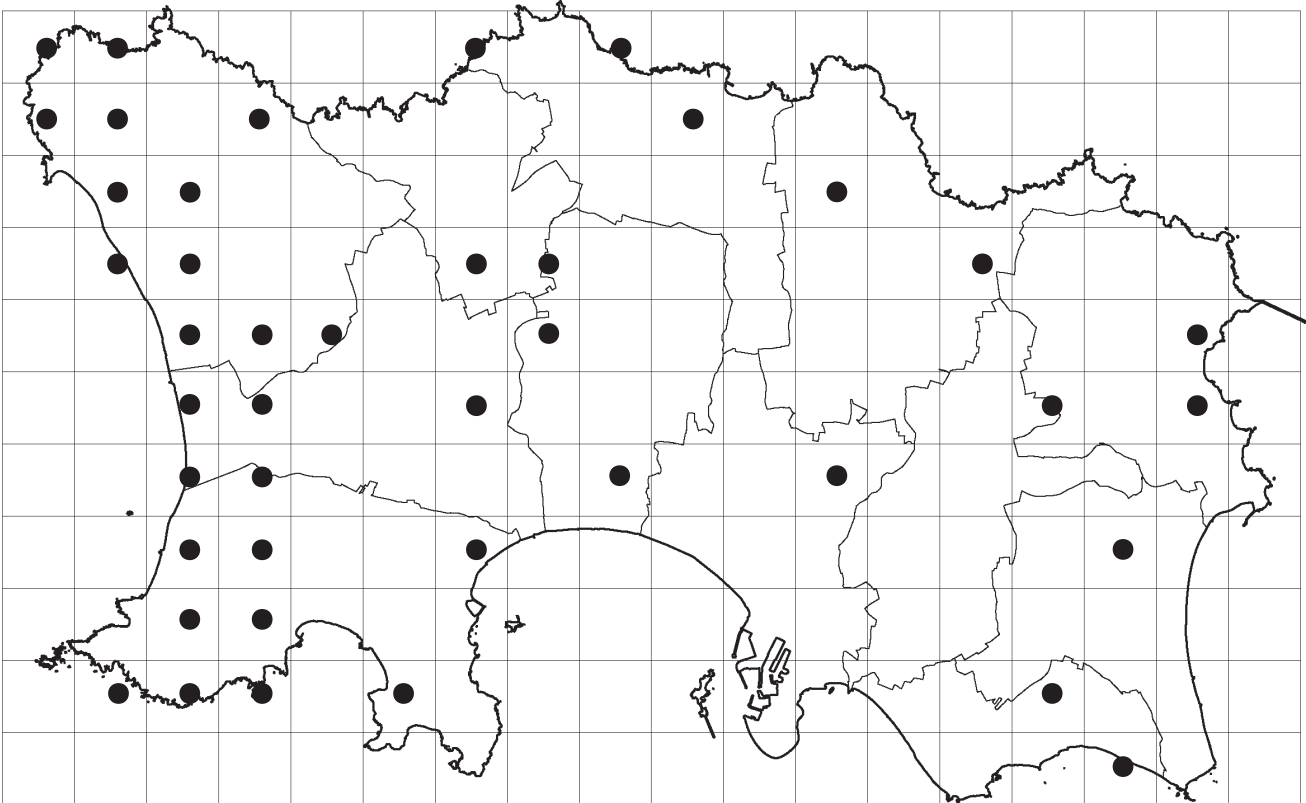
5.7.1 This plan should be considered in conjunction with the plans for Jersey Bank Vole, Stoat and Grass Snake.

Lesser White-toothed Shrew *Crocidura suaveolens*

● records from 1965 - 2000

Distribution of Lesser White-toothed Shrew in Jersey, by 1 Km square.

Source: 'A Natural History of Jersey', Le Sueur, 1976 and 'The Jersey Mammal Survey', Magris & Gurnell, 1998.

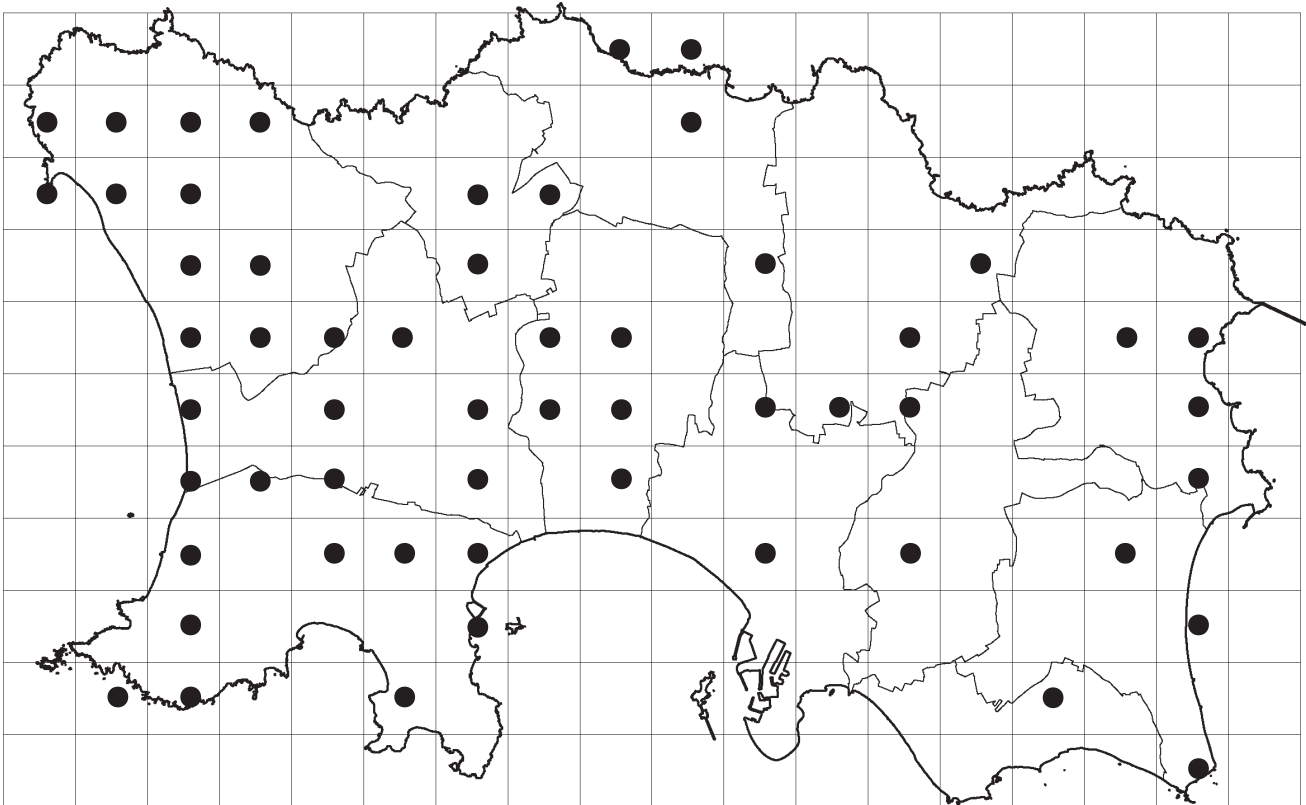


Millet's Shrew *Sorex coronatus*

● records from 1965 - 2000

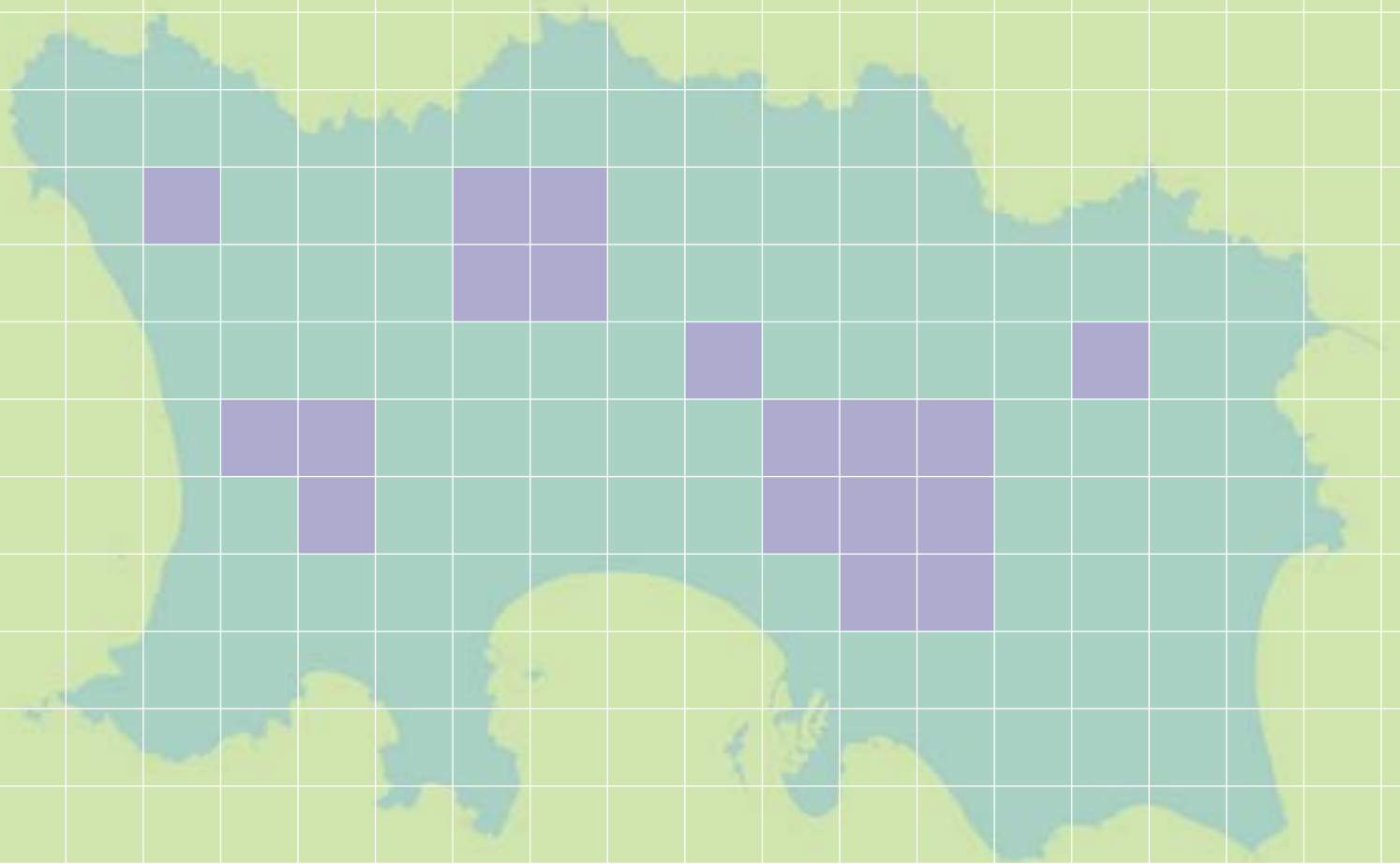
Distribution of Millet's Shrew in Jersey, by 1 Km square.

Source: 'A Natural History of Jersey', Le Sueur, 1976 and 'The Jersey Mammal Survey', Magris & Gurnell, 1998.

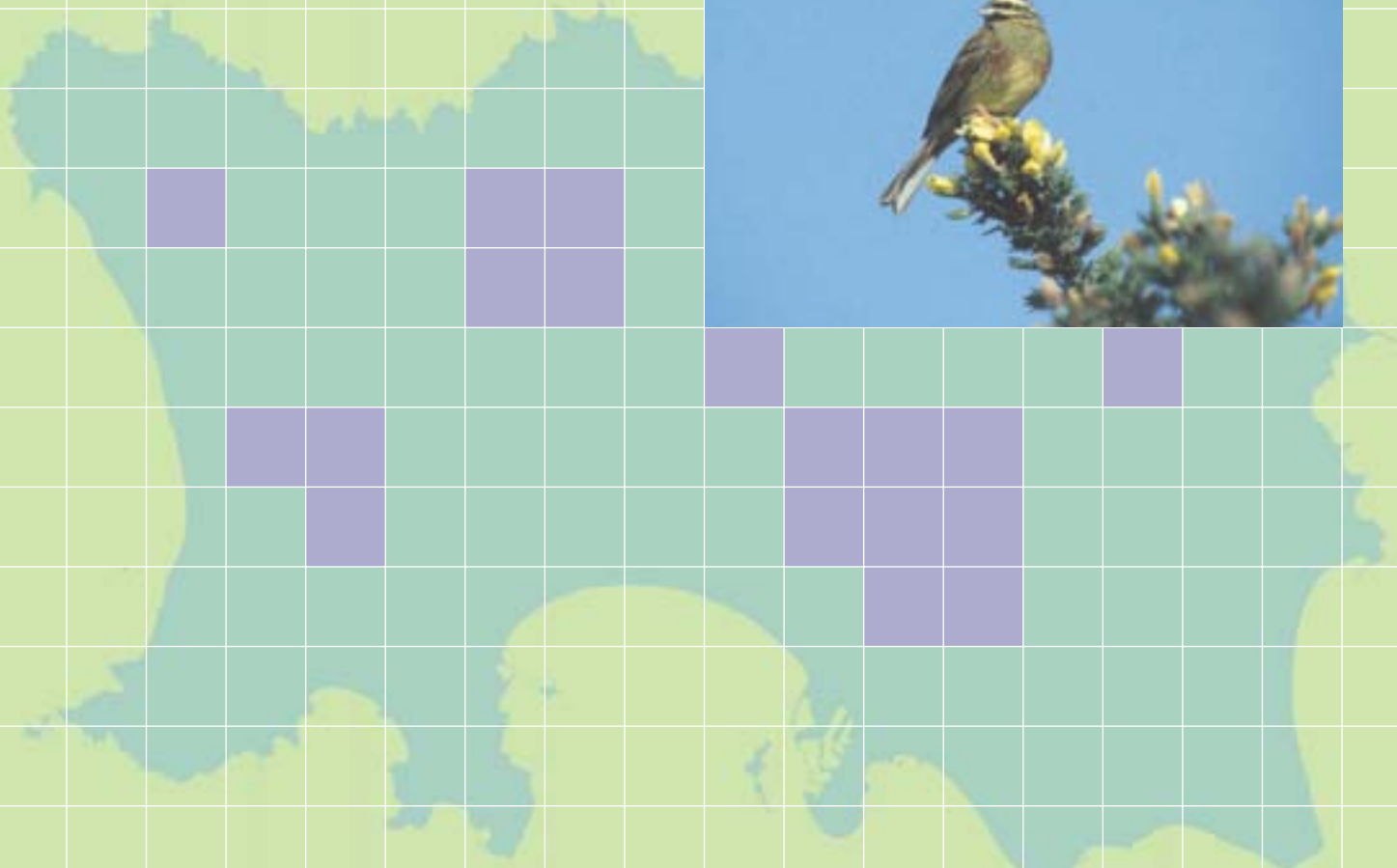


Bio Diversity

Bird Action Plans



Bio Diversity
Cirl Bunting
(Emberiza cirlus)
Action Plan



1. Current status

- 1.1** Resident, occasional migrant and possible winter visitor. The Cirl Bunting *Emberiza cirlus* is associated with traditional mixed farming and in Jersey formerly occupied well-established sites predominantly on the south-west coast but also in Grouville Bay. Birds nested typically in gorse and fed in short, open vegetation: territories containing a mosaic of gorse, short vegetation rich in seeds and taller grass containing grasshoppers (food for young) (Milton & Dryden, 1993). The golf courses at La Moye and in Grouville Bay in recent years (Milton & Dryden, 1993) held the highest numbers of singing males.
- 1.2** The Cirl Bunting was described as fairly well distributed over the Island in 1952 (Dobson, 1952) but was considered to occur in only small numbers in 1976 (Le Sueur, 1976). A survey in 1982 (Sitters, 1982) recorded 14 singing males while a more thorough one in 1992 (Milton & Dryden, 1993) found 20 males and considered that the island population may have been increasing. However, the population has steadily declined since the early 1990s with an estimated total of 20 birds in 1997, five singing males in 1999, one pair in 2000 and only single birds each year 2001-2004 (Jersey Bird Reports, Wotton *et al.*, 2003). There were no confirmed reports of this bird in 2005.
- 1.3** Outside the breeding season in Jersey, Cirl Buntings collected in small flocks often mixing with other songbirds such as finches and other buntings. Flocks were regularly found in St Ouen's Bay and occasionally elsewhere e.g. near La Corbière. This species has been poorly recorded as a passage migrant or winter visitor in Jersey; however, winter flocks were previously considered to have been augmented by birds from elsewhere in Europe. It is probable that the single birds seen in recent years were migrants: Five records in Guernsey since 1980 confirm that Cirl Buntings do move within the region.
- 1.4** The Cirl Bunting is fully protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1** No study has been undertaken to determine the decline and probable disappearance of Cirl Buntings in Jersey; however, it is likely that causes for the decline of this species in the UK (see RSPB, 2005a) are mirrored at least in part in Jersey.
- 2.2** Loss of habitat - The Island's golf courses have not radically changed in recent years, however, management practices such as grass mowing and removal of rough areas may have altered. Probably more influential is the severe modification of peripheral land. Within the last 25 years Jersey has undergone dramatic habitat modification, as most low-lying coastal land has been developed and

farming on the cliff tops has been abandoned, land degrading and converting to inhospitable swathes of bracken. Areas of the south-west and west coast of Jersey may, however, be salvageable with direct action.

- 2.3** Loss of winter food - Cirl Buntings typically forage in weedy stubble fields, feeding on seeds. Many fields are now uncultivated and unsuitable, used for horse grazing or are prepared for early potatoes. Fields are typically small and little land is left in stubble or with suitable crops for winter finch/bunting/lark flocks.
- 2.4** Loss of food for chicks - Improvements to non-arable land, removal of rough field edges and 'waste' ground has reduced feeding opportunities during the breeding season. Development and tidying of low-lying coastal areas has been detrimental to many songbirds (see Species Action Plan for Stonechat *Saxicola torquata*).
- 2.5** Predation - Feral populations of Domestic Cat *Felis catus* (often encouraged) and Ferret *Mustela furo* may represent a serious threat to small birds in several areas of the Island.
- 2.6** Low levels of immigration from other populations preventing gene-flow and restricting the likelihood of recolonisation of vacant territories.

3. Current action

- 3.1** Recording of estimated populations of all bird species in Jersey is regularly carried out by the ornithological section of the Société Jersiaise.
- 3.2** Conditions are included in any planning applications which may affect existing or potential habitat of this species.
- 3.3** Existing or potential habitat for this species is considered for grant applications under the Countryside Renewal Scheme.
- 3.4** The current monitoring strategy (The State of Jersey, 2005) includes a breeding bird survey on selected sites.
- 3.5** The Countryside Management Team of the Environment Department is recording and mapping areas in Jersey that are important for rare or uncommon bird species. Management of these areas aims to enhance habitats used by rare or threatened species.

4. Action plan objectives and targets

- 4.1** Provision of farmland habitat suitable for Cirl Bunting occupation, possibly with grant aid from CRS in one to three years.

- 4.2** Natural recolonisation by Cirl Bunting into suitable secure and managed habitat in three to five years.
- 4.3** Re-establishment of Cirl Bunting as Jersey resident species in three to ten years.

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 Take account of the need to recover Cirl Bunting and other farmland bird populations when developing agricultural policy. Encourage applications from farmers for CRS grant. (Action: ED)
- 5.1.2 Develop songbird-friendly content to all planning applications in coastal areas. (Action: ED)

5.2 Site safeguard and management

- 5.2.1 Assess suitability of land at and adjacent to traditional Cirl Bunting sites for songbirds, especially farmland species. Monitor all farmland birds to see trends in populations and land usage. (Action: DWCT and ED)
- 5.2.2 Salvage selected uncultivated farmland on north coast, remove bracken and grow crops to provide winter food for songbirds including barley (RSPB, 2005a). Allow and encourage significant areas to vegetate naturally without bracken. (Action: ED)
- 5.2.3 Leave significant fields in stubble over winter. (Action: ED)

5.3 Species management and protection

- 5.3.1 Control mammalian predators (feral cats and ferrets) where appropriate. (Action: ED)
- 5.3.2 Maintain observations at traditional Cirl Bunting sites and elsewhere on Island to assess possibility of natural recolonisation from continental populations (species is considered secure in Europe, BirdLife, 2005). (ACTION: DWCT and ED)

5.4 Advisory

- 5.4.1 Ensure landowners are aware of the presence, legal status and conservation requirements of this species and promote appropriate habitat management (Action: DWCT, SJ, AFW and ED)

5.5 Future research and monitoring

- 5.5.1 Investigate possibility of translocation of wild-caught Cirl Bunting from adjacent areas of continent or UK and/or captive-breeding and release of birds (see Carter & Newbery, 2004 for discussion of reintroduction as a tool in recovery programmes). (Action: DWCT & ED)

5.6 Communications and publicity

- 5.6.1 Promote a change in perception of wild plants on farmland as essential food sources for seed-eating birds rather than as 'weeds'. (Action ED, SJ, DWCT, AFW)

5.7 Links with other plans

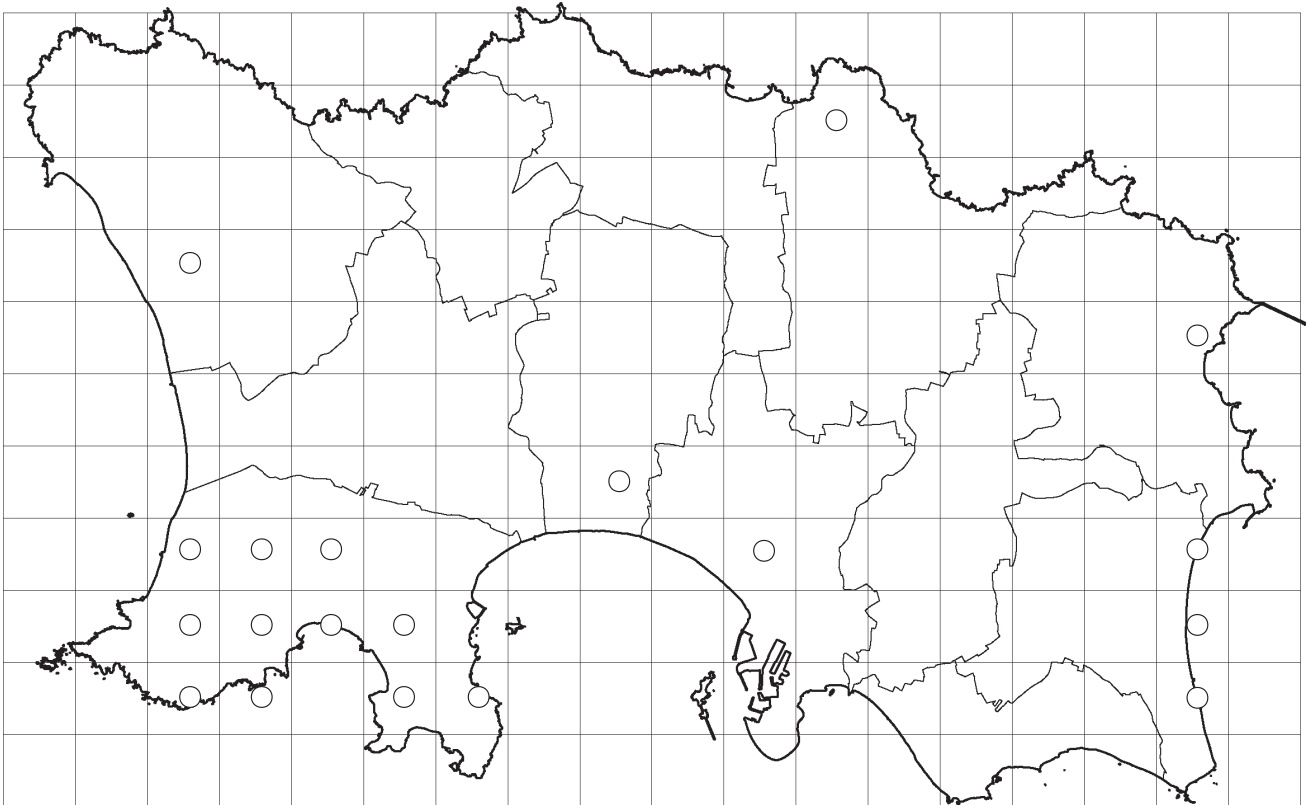
- 5.7.1 Measures to improve Cirl Bunting habitat also benefit other farmland birds.

Cirl Bunting *Emberiza cirlus*

○ records from 1982 - 1992

Distribution of Cirl Bunting nesting pairs within Jersey, by 1 Km square.

Source: 'Numbers, distribution and breeding observations of Cirl Buntings *Emberiza cirlus* in Jersey in 1992', Milton, N. & Dryden, M. (1993), Ann. Bull. Soc. Jersiaise 26:97-103.



Bio Diversity
Skylark
(Alauda arvensis)
Action Plan



1. Current status

- 1.1** Resident, migrant and winter visitor. In recent years in Jersey the Skylark *Alauda arvensis* has been restricted to open areas where short grass predominates such as Les Landes (principally within the racecourse), scattered sites in Les Mielles (principally Les Blanches Banques) and at Jersey Airport. In the past, birds bred on the north coast away from Les Landes and in Grouville Bay and on farms across most of the island. There have been no accurate censuses of Skylark in Jersey; however, it was described as 'very common' in 1952 (Dobson, 1952) and the breeding population was estimated as 100-200 pairs in 1992-3 (Tucker & Heath, 1994), 50 pairs in 1997 and 25 pairs in 2004 (Jersey Bird Reports). In 2005 four singing males were found at Les Blanches Banques with a further two elsewhere in St Ouen's Bay and six at Les Landes (four within the racecourse). Birds were not counted accurately at the Airport in 2005 but an estimated three to four singing males were present.
- 1.2** Large numbers of Skylarks migrate through Jersey in autumn and some birds spend the winter on the island. Exact numbers of migrants passing through the Island each year are unknown and migration is dependent each year on regional weather conditions. It is considered, however, that numbers of migrating Skylarks in recent years are much lower than in the past. It is most likely that local birds overwinter on the Island and mix freely with wintering flocks – numbers have been found close to nesting territories in the area of Les Landes (100+ in November 2005).
- 1.3** The Skylark is fully protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1** No research on Skylark has been undertaken in Jersey but several factors are believed to be responsible for the decline in recent years.
- 2.2** Loss of habitat - Throughout northern and western Europe declines in Skylark have been attributed principally to changes in agricultural practices, notably the change from spring-sown to autumn-sown cereals as the taller, denser crop becomes unsuitable for nesting and feeding earlier in the breeding season (Donald & Morris, 2005). In Jersey it is most likely that loss of arable land to building, horse grazing and in many cases, especially on the coasts, dereliction of fields and conversion to bracken has been largely responsible for the decline here. Many extensive areas of rough grassland (e.g. land adjacent to Mourier Valley) have been taken over by bracken within the last 20 years. Loss of suitable habitat concentrates remaining birds at the few sites currently occupied and these may then become highly vulnerable to disturbance.

- 2.3** Disturbance - At Les Mielles, many sites especially Les Blanches Banques are subjected to high levels of human disturbance throughout the year. Perhaps most importantly, dogs are exercised freely on the short grass areas. At Les Landes dogs too are allowed to range freely at times in all areas except that within the racecourse.
- 2.4** Loss of winter food - Few fields are left in stubble or as rough land over the winter as many are prepared during the winter. Skylarks feed extensively on grain or leaves of young cereal plants in winter (Robinson, 2004) and little suitable habitat currently exists in Jersey at this time of year.

3. Current action

- 3.1** Recording of estimated populations of all bird species in Jersey is regularly carried out by the ornithological section of the Société Jersiaise.
- 3.2** Conditions are included in any planning applications which may affect existing or potential habitat of this species.
- 3.3** Existing or potential habitat for this species is considered for grant applications under the Countryside Renewal Scheme.
- 3.4** The current monitoring strategy (The State of Jersey, 2005) includes a breeding bird survey on selected sites.
- 3.5** The Countryside Management Team ED is recording and mapping areas in Jersey that are important for rare or uncommon bird species. Management of these areas aims to enhance habitats used by rare or threatened species.

4. Action plan objectives and targets

- 4.1** In the short term, the decline in Skylark numbers must be halted and breeding birds at Les Mielles, Les Landes and Jersey Airport given sufficient protection and freedom from disturbance.
- 4.2** Increase number of territories and breeding success within current sites in one to three years.
- 4.3** In the longer term, ensure that birds spread away from the current sites and re-establish at former sites within five years.

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 Take account of the need to recover Skylark and other farmland bird populations when developing agricultural policy. Encourage applications from farmers for CRS grant. (Action ED)
- 5.1.2 Undertake programme of bracken removal to re-establish grassy areas on north coast. (Action ED)
- 5.1.3 Develop songbird-friendly content to all planning applications in coastal areas. (Action ED)

5.2 Site safeguard and management

- 5.2.1 Assess suitability of land at and adjacent to traditional Skylark sites for this species and all farmland songbirds. Monitor farmland birds to determine trends in populations and land usage. (Action: DWCT and ED)
- 5.2.2 Salvage selected abandoned farmland on north coast, remove bracken and grow crops to provide winter food for songbirds including barley (RSPB, 2005a). Allow and encourage significant areas to vegetate naturally without bracken. (Action: ED)
- 5.2.3 Leave significant fields in stubble over winter. Monitor and evaluate programme for effectiveness in supplying needs of wintering birds. (Action: ED and DWCT)
- 5.2.4 Fence areas of suitable habitat to prevent human and dog disturbance. Monitor and evaluate fenced areas for Skylark activity. (Action: ED and DWCT)

5.3 Species management and protection.

- 5.3.1 Safeguard population within racecourse and at Airport through negotiation with owners. Encourage grass management schemes that will protect and encourage Skylarks. Monitor and evaluate programme for effectiveness. (Action: ED and DWCT).
- 5.3.2 Provide short grass plots (Donald & Morris 2005) in long grass areas, bracken and heather to ensure mosaic of vegetation suitable for Skylark. Monitor and evaluate programme. (Action: ED and DWCT).

5.4 Advisory

- 5.4.1 Ensure landowners are aware of the presence, legal status and conservation requirements of this species and promote appropriate habitat management. (Action: DWCT, SJ, AFW and ED).

5.5 Future research and monitoring

- 5.5.1 Investigate feasibility of extending sheep and cattle grazing on north coast. (Action: ED)
- 5.5.2 Investigate possibility of enlarging field size on north coast to encourage more Skylark friendly open spaces and areas that may be left in stubble or as winter feed for songbirds. (Action: ED)

5.6 Communications and publicity

- 5.6.1 Provide information to highlight importance and decline of this species. (Action: ED)

5.7 Links with other plans

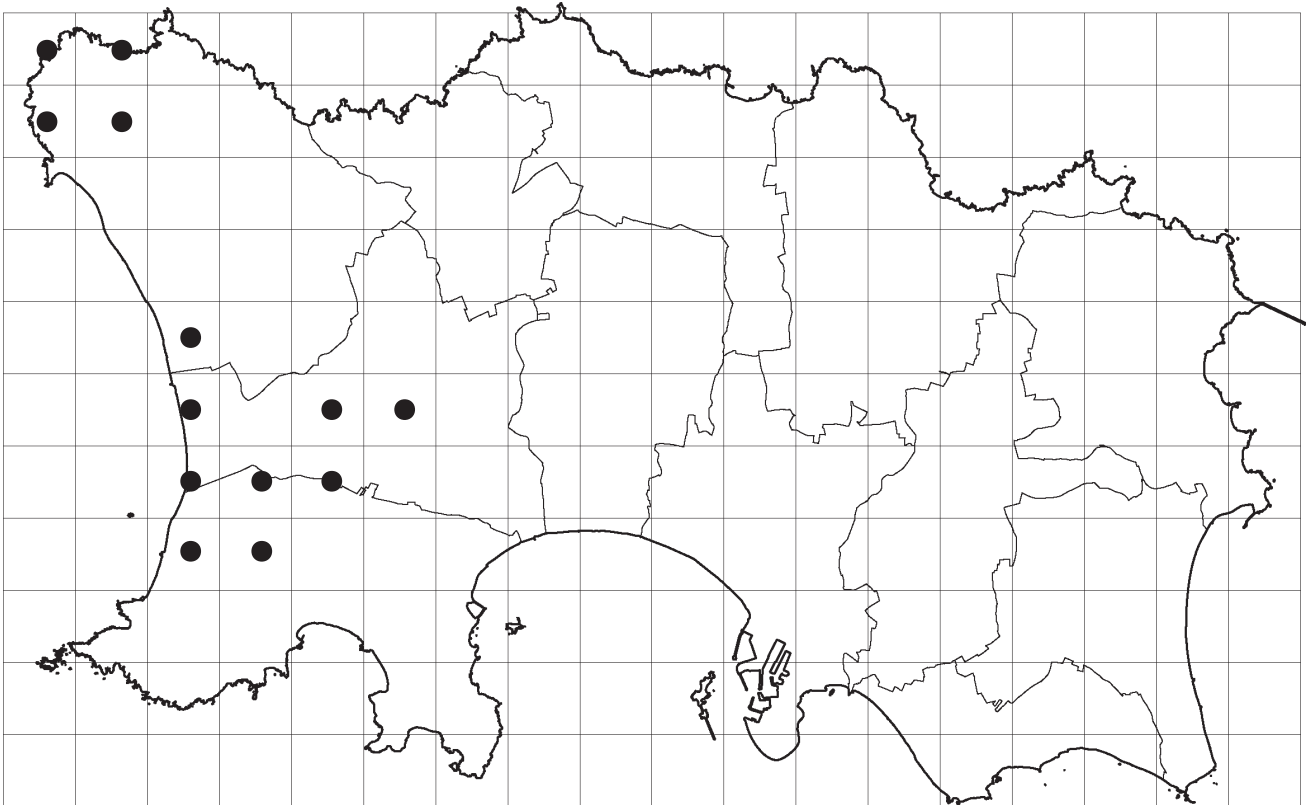
- 5.7.1 None proposed. Measures taken to improve habitat for Skylark also benefit other farmland birds.

Skylark *Alauda arvensis*

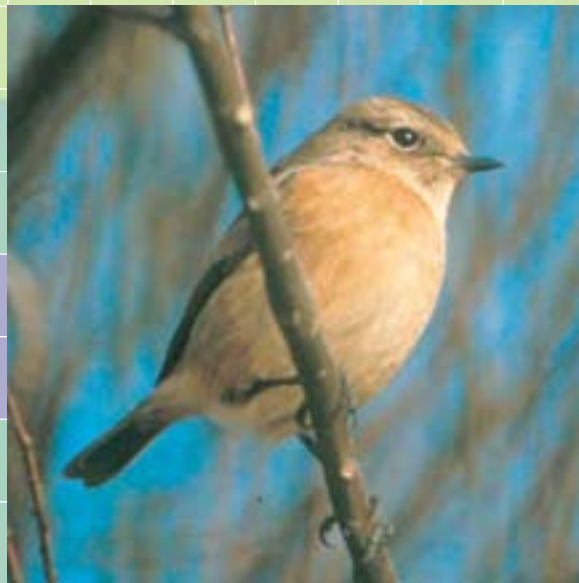
● records from 2005

Distribution of Skylark nesting pairs within Jersey, by 1 Km square.

Source: Data collected by Durrell Wildlife Conservation Trust and Société Jersiaise, 2005.



Bio Diversity
Stonechat
(Saxicola torquata)
Action Plan



1. Current status

- 1.1 Resident, migrant and winter visitor: in Jersey the Stonechat *Saxicola torquata* is typically a bird of coastal headlands and semi-open spaces including uncultivated cliff tops and bays.
- 1.2 Stonechats have historically been considered common and widespread in Jersey; however, Dobson (1952) suggested that, very common some years, numbers crashed following cold winters. In 1976 the bird was still thought of as a familiar sight in many parts of the Island, typically close to the sea (Le Sueur, 1976). Serious declines were first noted during the mid 1980s following some severe winters (unpubl. records of Société Jersiaise) but most likely had already begun before the weather heightened the problem. Following this period the population has failed to recover: in the early 1990s no more than 5-10 pairs were found each year (Jersey Bird Reports., Tucker & Heath, 1994) and only five pairs were found in 2000 and 2001 with only three pairs in 2002 (Jersey Bird Reports). Local Stonechats were studied in the past (Johnson, 1971a, 1971b) and a further detailed study of distribution and biology was initiated in 2003 when 14 pairs were located, pairs that subsequently had a nearly 60% nesting success (Handschuh, 2003). Fourteen pairs were again found in 2004 and these apparently had a further good year (Jersey Bird Reports). The principal sites for Stonechats today are at Les Landes, areas of Les Mielles (especially Les Blanchés Banques) and at La Corbière.
- 1.3 Many migrant Stonechats probably pass through Jersey each autumn and numbers increase dramatically each winter to several hundred birds when they may also be found away from typical habitat, foraging in areas such as in farmland and on the beach. It is believed that those birds nesting in Jersey remain here throughout the year.
- 1.4 The Stonechat is fully protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1 Handschuh (2003 and in prep.) has attempted to understand the reasons for the decline of the Stonechat in Jersey and develop recommendations for the species' conservation. This bird has undergone declines in other areas of Europe and the causes of these declines are mostly mirrored in Jersey.
- 2.2 Loss of habitat - There has been a severe modification of peripheral land and open spaces in Jersey within the last 25 years with dramatic habitat modification as most low-lying coastal land has been developed and farming on the cliff tops has been abandoned. Former cliff-top farmland has degraded and mostly converted to swathes of bracken.

- 2.3 Loss of food during the breeding season - Few birds can feed in bracken-covered land and opportunities for breeding Stonechats to find adequate food supplies have diminished as the bracken spreads.
- 2.4 Loss of winter food - There has undoubtedly been a reduction in feeding opportunities for Stonechats in winter as land has been developed; however, the loss of agricultural fields that badly affects many wintering songbirds in Jersey may have been less influential for Stonechats as they are mostly insectivorous. The numbers and distribution of wintering birds further suggests that Stonechats find it easier to overwinter in Jersey than they do to breed.
- 2.5 Disturbance - The highest numbers of Stonechats today are in popular areas and subjected to high levels of human disturbance throughout the year. Perhaps most importantly, dogs are exercised on Les Blanchés Banques and even at Les Landes dogs are allowed to range freely at all times in Stonechat territories. Direct predation of a nest in 2003 was attributed to a dog (Handschuh, 2004).
- 2.6 Predation - Feral populations of Domestic Cat *Felis catus* (often encouraged) and Ferret *Mustela furo* may represent a serious threat to small birds in several areas of the island. Gulls, magpies and crows may also take eggs especially if nests are disturbed.

3. Current action

- 3.1 Recording of estimated populations of all bird species in Jersey is regularly carried out by the Ornithology Section of the Société Jersiaise.
- 3.2 Recommendations made in Handschuh (2003) are followed in management of relevant areas.
- 3.3 Conditions are included in any planning applications which may affect existing or potential habitat of this species.
- 3.4 Existing or potential habitat for this species is considered for grant applications under the Countryside Renewal Scheme.
- 3.5 The current monitoring strategy (The State of Jersey, 2005) includes a breeding bird survey on selected sites
- 3.6 The Countryside Management Team of the ED is recording and mapping areas in Jersey that are important for rare or uncommon bird species. Management of these areas aims to enhance habitats used by rare or threatened species.

4. Action plan objectives and targets

- 4.1 Constructive management of gorse and heather to provide increased breeding opportunities in core areas of Les Landes, Les Mielles and La Corbière in one to three years.
- 4.2 Renovation of north coast farmland, clearance of bracken and creation of mosaic of vegetation suitable for occupation by Stonechat by 2010 (selected areas).
- 4.3 Return of Stonechat to other traditional nesting sites on coastal headlands and in bays (e.g. at Noirmont, L'Ouaisné etc.) in five to ten years.

5. Proposed actions with lead agencies

5.1. Policy and legislation

- 5.1.1 Take account of the needs of recovering Stonechat and other songbird populations when developing agricultural and development policy. Encourage applications from farmers for CRS grant. (Action: ED)
- 5.1.2 Consider songbird-friendly content in all planning applications in coastal areas. (Action: ED)

5.2 Site safeguard and management

- 5.2.1 Salvage selected abandoned farmland on north coast, remove bracken and develop mosaics of vegetation suitable for nesting Stonechat including stands of gorse and other bushes. Monitor and evaluate programme for effectiveness in supplying needs of Stonechat (and Dartford Warbler). (Action: ED & DWCT)
- 5.2.2 Open up areas of existing gorse at Les Landes to create rectangles of grass and other vegetation suitable for foraging Stonechats and other songbirds. Monitor and evaluate programme for effectiveness in supplying needs of Stonechat (and Dartford Warbler). (Action: ED & DWCT)
- 5.2.3 Sensitively manage trees in areas of optimum Stonechat habitat such as Les Blanches Banques and in southern areas of Les Landes. Some mature trees such as Holm Oak should be left in open areas and single trees or bushes planted to provide perches. Gorse too should be managed in some areas to provide areas of scattered gorse and shrub cover, perching trees and open areas for foraging. Monitor and evaluate programme for effectiveness in supplying needs of Stonechat (and Dartford Warbler). (Action: ED & DWCT)

- 5.2.4 Manage heather and gorse on all sites so as to maintain a balance of age and height/thickness in vegetation and consider burning off some areas to allow complete regrowth (useful strategies also for Dartford Warbler). Monitor and evaluate programme for effectiveness in supplying needs of Stonechat (and Dartford Warbler). (Action: ED & DWCT)

5.3 Species management and protection

- 5.3.1 Control mammalian predators (feral cats and ferrets) where appropriate. (Action: ED)

5.4 Advisory

- 5.4.1 Ensure landowners are aware of the presence, legal status and conservation requirements of this species and promote appropriate habitat management. (Action: DWCT, SJ, AFW and ED)

5.5 Future research and monitoring

- 5.5.1 Assess suitability of land at and adjacent to traditional Stonechat sites for this species and for all songbirds. Monitor songbirds to determine trends in populations and land usage. (Action: DWCT & ED)
- 5.5.2 Fence areas of suitable habitat to prevent human and dog disturbance. Monitor and evaluate fenced areas for Stonechat activity. Areas fenced for Sky Lark should benefit Stonechat nesting cover – fence posts will be useful as perches. (Action: ED & DWCT)

5.6 Communications and publicity

- 5.6.1 Promote a change in perception of wild plants on farmland as essential food sources for seed-eating birds rather than as 'weeds'. (Action ED, SJ, DWCT, AFW)

5.7 Links with other plans

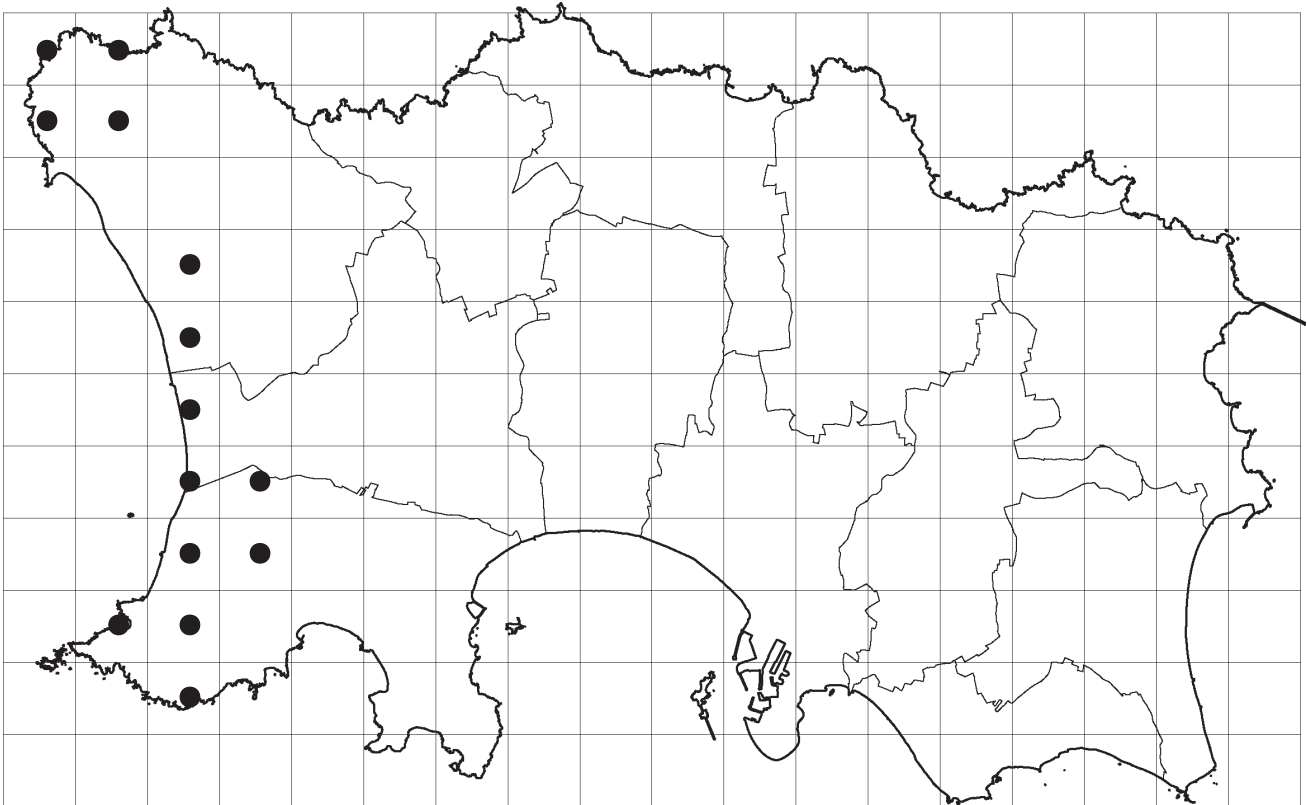
- 5.7.1 None proposed. Measures taken to improve habitat for Stonechat also benefit Skylark and Dartford Warbler.

Stonechat *Saxicola torquata*

● records from 2005

Distribution of Stonechat nesting pairs within Jersey, by 1 Km square.

Source: Data collected by Durrell Wildlife Conservation Trust and Société Jersiaise, 2005



Bio Diversity
Yellowhammer
(Emberiza citrinella)
Action Plan



1. Current status

- 1.1** Resident, occasional migrant and winter visitor: in Jersey the Yellowhammer is typically a bird of farmland. In 1952 the Yellowhammer *Emberiza citrinella* was described as common in some years and rare in others, well distributed throughout the Island but commonest above the north coast cliffs: the species may have been absent entirely for a period in the 1930s (Dobson, 1952). By 1976 Yellowhammer was once again described as being rare (Le Sueur, 1976) and in the early 1990s the population was estimated at 50 birds predominantly along the north coast (most territories were between Crabbé and Bouley Bay) (Jersey Bird Reports). However, by 1998 only 10 singing males could be found on the north coast and the population continued to decline steadily: six birds in total in 2000; six singing males on the north coast and one in Les Ormes Valley in 2001; two singing males in 2002; five singing males in 2003; two singing males in 2004 (Jersey Bird Reports). The majority, and eventually all, of these males were at Crabbé. In 2005 only one male was singing in Jersey, at Crabbé, where two females were also present but no nest was believed successful.
- 1.2** Even when relatively plentiful, the wintering sites of Jersey's Yellowhammers were difficult to determine. Birds were seen irregularly in farmland and at coastal sites throughout the winter months and it was considered that they remained on the Island, probably unnoticed on farms rarely visited by ornithologists. Occasional birds seen in flocks of migrant and wintering finches may have been true migrants and local birds may have been joined by wintering individuals from elsewhere in Europe. Occasional records from other Channel Islands confirm the irregular movements of this species in the region.
- 1.3** The Yellowhammer is fully protected under the Conservation of Wildlife (Jersey) Law 2000.

2. Current factors causing loss or decline

- 2.1** There have been no direct studies of Yellowhammers in Jersey and the reasons for their decline remain largely unknown. However, in common with other farmland birds locally and in the UK, several reasons can be considered likely.
- 2.2** Loss of habitat - Yellowhammers are associated with farmland, heaths and areas of scrubland; land once common in Jersey's north coast. Agricultural land on this coast has undergone a steady decline for several decades and this continues today. Most north sloping fields have been abandoned, as have many of those heading back inland from the cliff tops. As a consequence of this abandonment, a natural mosaic of vegetation has not recovered and the land has simply become overrun with bracken.

- 2.3** Loss of food during the breeding season - Few birds can feed in bracken-covered land and opportunities for breeding Yellowhammer to find adequate food supplies have diminished as the bracken spreads.
- 2.4** Loss of winter food - Yellowhammers typically forages in weedy stubble fields in winter, feeding on seeds (Robinson, 2004). Many fields inland of the cliffs are now abandoned and unsuitable, used for horse grazing, or are prepared for early potatoes. Fields are typically small and little land is left in stubble or with suitable crops for winter finch/bunting/lark flocks. Note that access to winter food supplies may directly influence summer territory selection in Yellowhammer (Whittingham *et al.*, 2005).
- 2.5** Predation - Feral populations of Domestic Cat *Felis catus* (often encouraged) and Ferret *Mustela furo* may represent a serious threat to small birds in several areas of the Island.

3. Current action

- 3.1** Recording of estimated populations of all bird species in Jersey is regularly carried out by the ornithological section of the Société Jersiaise.
- 3.2** Conditions are included in any planning applications which may affect existing or potential habitat of this species.
- 3.3** Existing or potential habitat for this species is considered for grant applications under the Countryside Renewal Scheme.
- 3.4** The current monitoring strategy (The state of Jersey 2005) includes a breeding bird survey on selected sites.
- 3.5** The Countryside Management Team of the Environment Department is recording and mapping areas in Jersey that are important for rare or uncommon bird species. Management of these areas aims to enhance habitats used by rare or threatened species.

4. Action plan objectives and targets

- 4.1** Renovation of north coast farmland to create habitat once again suitable for Yellowhammer occupation in one to three years.
- 4.2** Consolidation of core population at Crabbé through constructive and sensitive land management in one to three years.
- 4.3** Return of Yellowhammer to other traditional sites on north coast in five to ten years.

5. Proposed actions with lead agencies

5.1. Policy and legislation

- 5.1.1 Take account of the need to recover Yellowhammer and other farmland bird populations when developing agricultural policy. Develop the Countryside Renewal Scheme and encourage planting of crops for wintering birds (see Bradbury *et al.*, 2004).
- 5.1.2 Develop songbird-friendly content to all planning applications in coastal areas.

5.2 Site safeguard and management

- 5.2.1 Salvage selected abandoned farmland on north coast, remove bracken and grow crops to provide winter food for songbirds including barley (RSPB, 2005a). Allow and encourage significant areas to vegetate naturally without bracken. (Action: ED)
- 5.2.2 Undertake programme of bracken removal to re-establish grassy areas on north coast. (Action: ED)

5.3 Species management and protection

- 5.3.1 Control mammalian predators (feral cats and ferrets) where appropriate. (Action: ED)
- 5.3.2 Investigate feasibility of extending sheep and cattle grazing on north coast. (Action: ED)

5.4 Advisory

- 5.4.1 Ensure landowners are aware of the presence, legal status and conservation requirements of this species and promote appropriate habitat management. (Action: DWCT, SJ, AFW and ED)

5.5 Future research and monitoring

- 5.5.1. Assess suitability of land at and adjacent to Crabbé and other north coast sites for this species and all farmland songbirds. Monitor farmland birds at selected sites to determine trends in populations and land usage. (Action: DWCT and ED)
- 5.5.2 Leave significant fields in stubble over winter (winter set-aside - see Whittingham *et al.*, 2005). Monitor and evaluate programme for effectiveness in supplying needs of wintering birds. (Action: ED and DWCT)

5.5.3 Encourage development of a mosaic of vegetation types throughout the north coast to ensure that sufficient habitat exists for Yellowhammers and other songbirds throughout the year. Monitor and evaluate programme. (Action: ED and DWCT)

5.5.4 Investigate feasibility of extending sheep and cattle grazing on north coast. (Action: ED)

5.5.5 Investigate possibility of enlarging field size on north coast to encourage more Yellowhammer friendly open spaces and areas that may be left in stubble or as winter feed for songbirds. Provide hedgerows of different sizes with thick bases to provide nesting opportunities (RSPB 2005b). Monitor and evaluate programme. (Action: ED and DWCT)

5.6 Communications and publicity

5.6.1 Promote a change in perception of wild plants on farmland as essential food sources for seed-eating birds rather than as 'weeds'. (Action: ED, SJ, DWCT, AFW)

5.7 Links with other plans

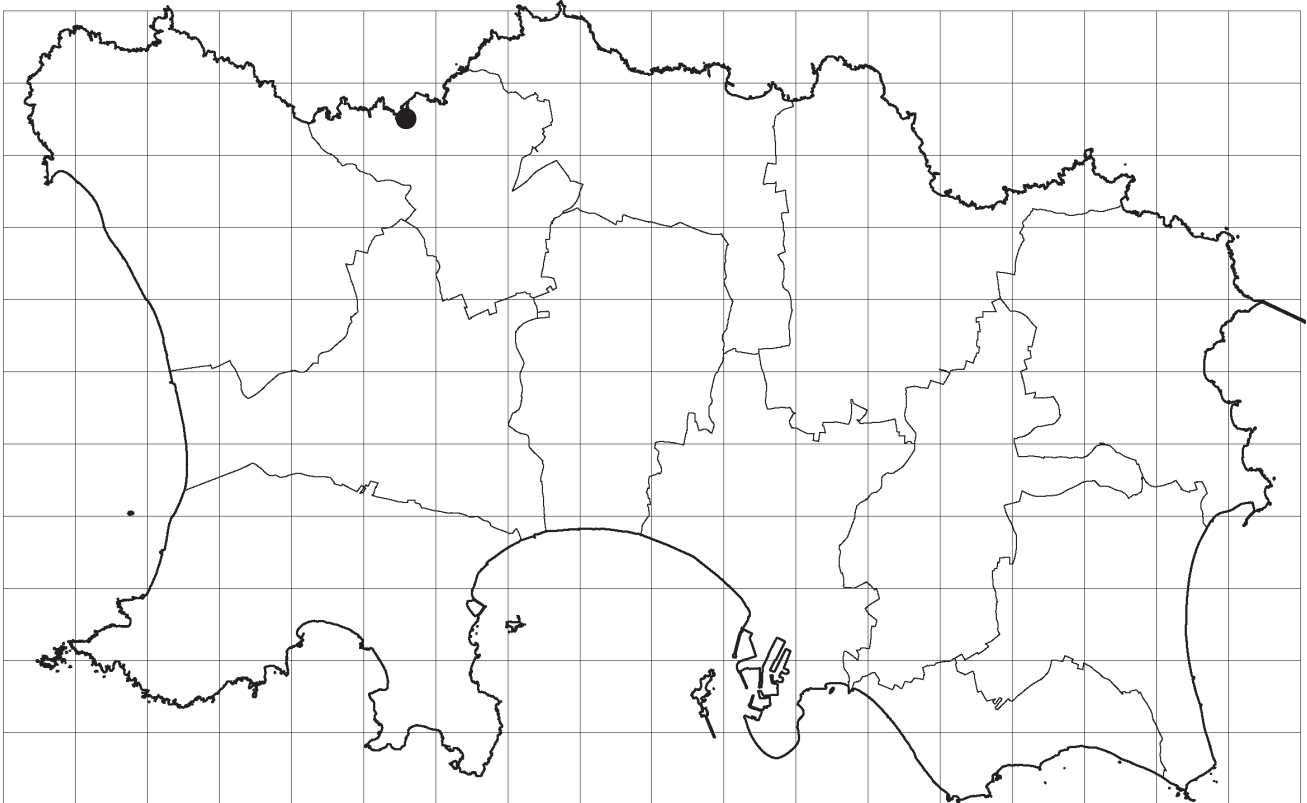
5.7.1 None proposed.

Yellowhammer *Emberiza citrinella*

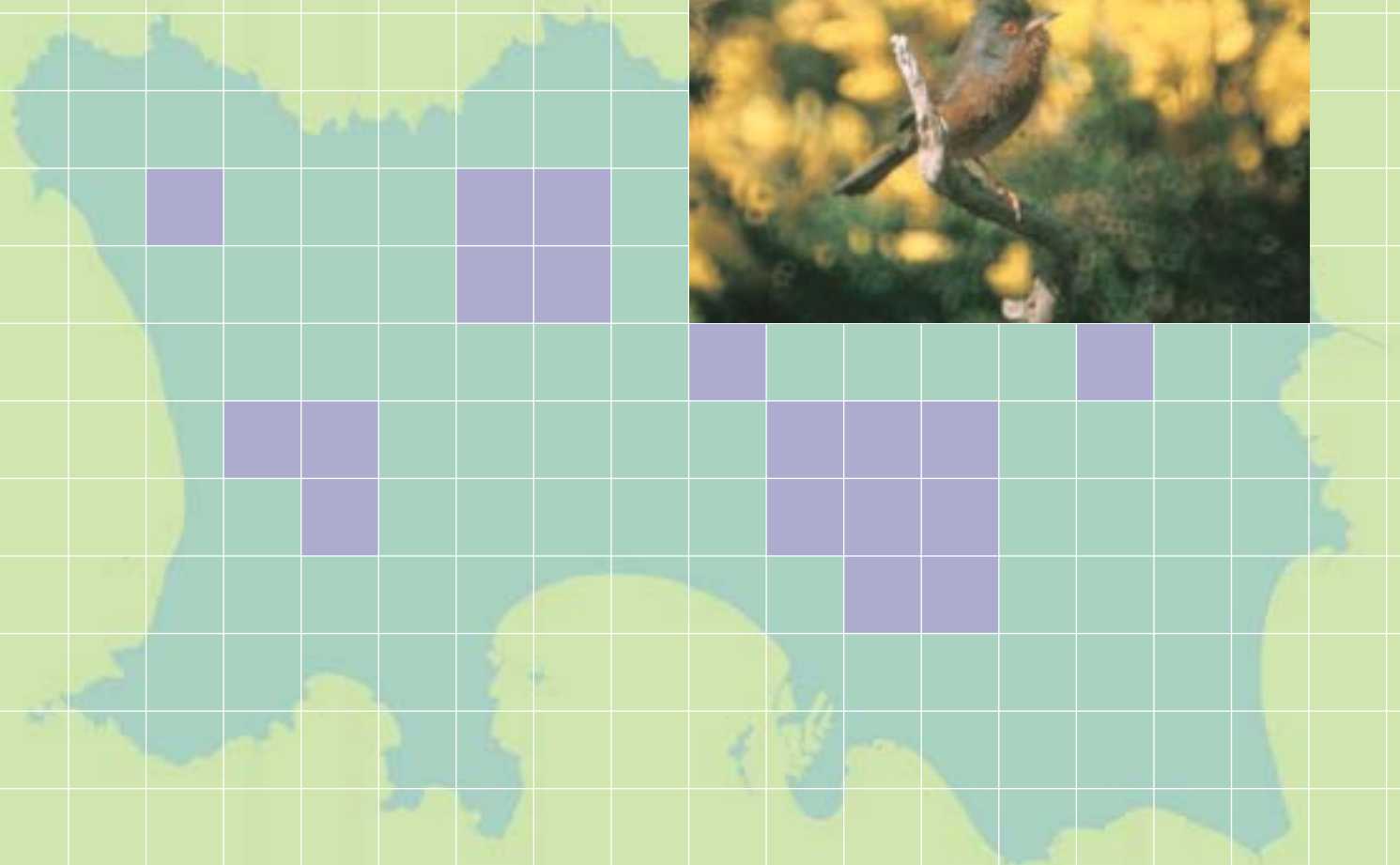
● records from 2005

Distribution of Yellowhammer nesting pairs within Jersey, by 1 Km square.

Source: Data collected by Durrell Wildlife Conservation Trust and Société Jersiaise, 2005.



Bio Diversity
Dartford Warbler
(Sylvia undata)
Action Plan



1. Current status

- 1.1** Resident, occasional migrant and possible winter visitor. The Dartford Warbler *Sylvia undata* is a bird of heathland, particularly that dominated by gorse *Ulex* and heather. In Jersey this diminutive warbler is found mainly on gorse-covered headlands such as Noirmont and La Lande du Ouest, cliff tops along the north coast (as far east as Les Platons and Jardin d'Olivet, Trinity) and bays including parts of St Ouen's Bay, L'Ouaisné and Beauport where adequate stands of gorse remain. The majority of pairs are always in the west of the Island and highest numbers are typically found at Les Landes.
- 1.2** The population of Dartford Warblers in Jersey fluctuates with cold weather and numbers may crash following severe winters. This natural cycle, however, is often worsened through unsuitable conditions within the gorse habitat. In the 20th century the population may have regularly fluctuated wildly (see Dobson, 1952) from almost absent to widespread in suitable habitat. This exaggerated picture may at times be more a result of limited study and, while undoubtedly localised, there were few estimates of overall population size attempted. In 1991, following a severe winter, only three pairs were located (Jersey Bird Reports) but the population could be estimated as many as 10-20 pairs in 1992 (Tucker & Heath, 1994). More detailed surveys in recent years have shown that the population has risen during increasingly mild winters and through improved gorse management: in 1993, 25 singing males were located; in 2000, 29 and in 2001 there were 42. The population reached as high as 49 singing males in 2002 but now seems relatively stable at around 40-45 singing males (100+ birds) (Jersey Bird Reports).

NB. Dartford Warbler has been observed in Jersey (Le Sueur, 1976) and elsewhere (Cramp & Brooks, 1992) in close association with Stonechat: the warbler often following the chat. The reason for this relationship is unclear but warbler may benefit from greater vigilance of Stonechat (Cramp & Brooks, 1992).

- 1.3** Dartford Warblers are highly dispersive outside the breeding season especially as young reared during the year seek out territories of their own. Warblers, particularly juveniles, have been seen in many parts of the Island often in brambles or in overgrown hedgerows that may act as corridors for dispersing birds. The rapid recolonisation of gorse areas throughout the Channel Islands following regeneration after fire or other local extinction events suggests that this warbler may move freely between the islands at times and even, possibly, between the Islands and France (and UK?).

2. Current factors causing loss or decline

- 2.1** Loss of habitat - There has been a severe modification of peripheral land and open spaces in Jersey within the past 25 years with dramatic habitat modification as most low lying coastal land has been developed and farming on the cliff tops has been abandoned. Former clifftop farmland has degraded and mostly converted to swathes of bracken, the gorse and heather being unable to return.
- 2.2** Removal of gorse - The removal or destruction of gorse or heather stands from areas where these plants are common will always impact onto Dartford Warbler numbers or breeding success. Gorse in former years was lost to agriculture but more recently has been lost to development and recreational activities.
- 2.3** Fire - Gorse areas burn relatively easily in dry weather and uncontrolled burning of Dartford Warbler habitat leads inevitably to localised extinctions. Few, if any, gorse fires are started naturally.
- 2.4** Poor condition of gorse - Gorse and heather stands need to be of a certain area but bushes need also to be of a range of ages allowing different activities in the birds' annual cycle. Once of a certain density and height (c. 6-12 years old and up to 1.5 m high) Dartford Warblers can withstand snow cover by retreating beneath the gorse canopy. Short gorse does not allow the birds this refuge and, equally, if allowed to get too tall and rangy, winds may penetrate the insulated layer beneath the canopy and, lowering temperatures here, reduce the birds' ability to survive cold periods.
- 2.5** Disturbance - Highest numbers of Dartford Warblers are often recorded in popular areas and subjected to high levels of human disturbance throughout the year. Perhaps most importantly, dogs are exercised freely in many areas such as at Les Landes. Birds may be safe from most dogs within the prickly vegetation but constant disturbance coupled with reduced feeding and nesting opportunities undoubtedly impacts on the species.
- 2.6** Predation - Feral populations of Domestic Cat *Felis catus* (often encouraged) and Ferret *Mustela furo* may represent a serious threat to small birds in several areas of the island. These predators are well able to hunt within the gorse stands.

3. Current action

- 3.1** All gorse management is carried out with the requirements of Dartford Warbler in mind. Prevention of accidental fires on all heathland sites is also a priority.

- 3.2** Recording of estimated populations of all bird species in Jersey is regularly carried out by the ornithological section of the Société Jersiaise.
- 3.3** Conditions are included in any planning applications which may affect existing or potential habitat of this species.
- 3.4** Existing or potential habitat for this species is considered for grant applications under the Countryside Renewal Scheme.
- 3.5** The current monitoring strategy (The State of Jersey 2005) includes a breeding bird survey on selected sites.
- 3.6** The Countryside Management Team of the Environment Department is recording and mapping areas in Jersey that are important for rare or uncommon bird species. Management of these areas aims to enhance habitats used by rare or threatened species.

4. Action plan objectives and targets

- 4.1** Constructive management of gorse and heather to provide increased breeding opportunities at all existing sites and increase Island population to 75-100 singing males by 2010. (Action: ED)
- 4.2** Renovation of north coast farmland, clearance of bracken and creation of mosaic of vegetation suitable for occupation by Dartford Warbler by 2010 (selected areas). (Action: ED, NTJ, CRS)

5. Proposed actions with lead agencies

5.1 Policy and legislation

- 5.1.1 Take account of the need to recover Dartford Warbler and other songbird populations when developing agricultural and development policy. Encourage applications from farmers for CRS grant. (Action: ED)
- 5.1.2 Undertaken programme of bracken removal to re-establish grassy areas on north coast. (Action: ED)
- 5.1.3 Develop songbird-friendly content to all planning applications in coastal areas. (Action: P&E)
- 5.1.4 Ensure severe prosecution of vandals damaging sites. (Action: ED)

5.2 Site safeguard and management

- 5.2.1 Salvage abandoned farmland on north coast, remove bracken and develop mosaics of vegetation suitable for nesting Dartford Warbler including stands of gorse and other

bushes (actively plant gorse and heather where necessary). Monitor and evaluate programme for effectiveness in supplying needs of Dartford Warbler (and Stonechat). (Action: ED & DWCT)

- 5.2.2 Manage all existing areas of gorse and heather to create patches of different ages using programme of rotational coppicing (RSPB 2005b): controlled burning can further allow regeneration of areas. Management must be undertaken at correct time of year (January-February) and regenerating areas may need to be fenced to prevent grazing by rabbits. Monitor and evaluate programme for effectiveness in supplying needs of Dartford Warbler (and Stonechat). (Action: ED & DWCT)
- 5.2.3 Sensitive manage vegetation in areas such as Les Blanchés Banques and in southern areas of Les Landes. Monitor and evaluate programme for effectiveness in supplying needs of Dartford Warbler (and Stonechat). (Action: ED & DWCT)
- 5.2.4 Fence areas of suitable habitat to prevent human and dog disturbance. Monitor and evaluate fenced areas for Dartford Warbler and other bird activity. (Action: ED & DWCT)

5.3 Species management and protection

- 5.3.1 Control mammalian predators (feral cats and ferrets). (Action: ED)

5.4 Advisory

- 5.4.1 Ensure vigilance against fire. Create firebreaks if necessary and maintain education programme (including warning signs at Dartford Warbler sites). (Action: ED)

5.5 Future research and monitoring

- 5.5.1 Assess suitability of land at and adjacent to traditional Dartford Warbler sites for this species and for all songbirds. Monitor songbirds to determine trends in populations and land usage. (Action: DWCT and ED)
- 5.5.2 Create rectangles of grass and other vegetation suitable for foraging Dartford Warbler and other songbirds (see also Skylark). Monitor and evaluate programme for effectiveness in supplying needs of Dartford Warbler (and Stonechat). (Action: ED & DWCT)

5.6 Communications and publicity

5.6.1 None proposed.

5.7 Links with other plans

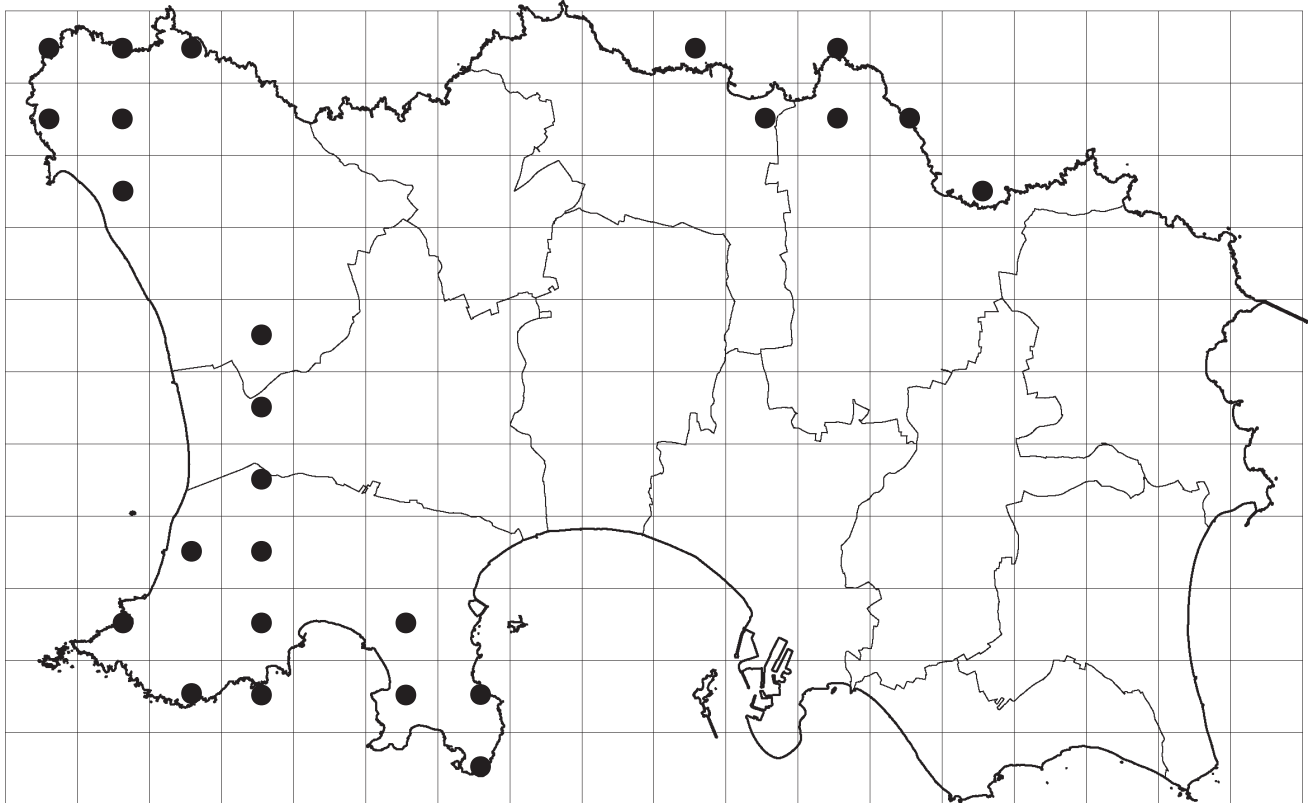
5.7.1 Measures taken to improve habitat for Dartford Warbler also benefit Stonechat.

Dartford Warbler *Sylvia undata*

● records from 2005

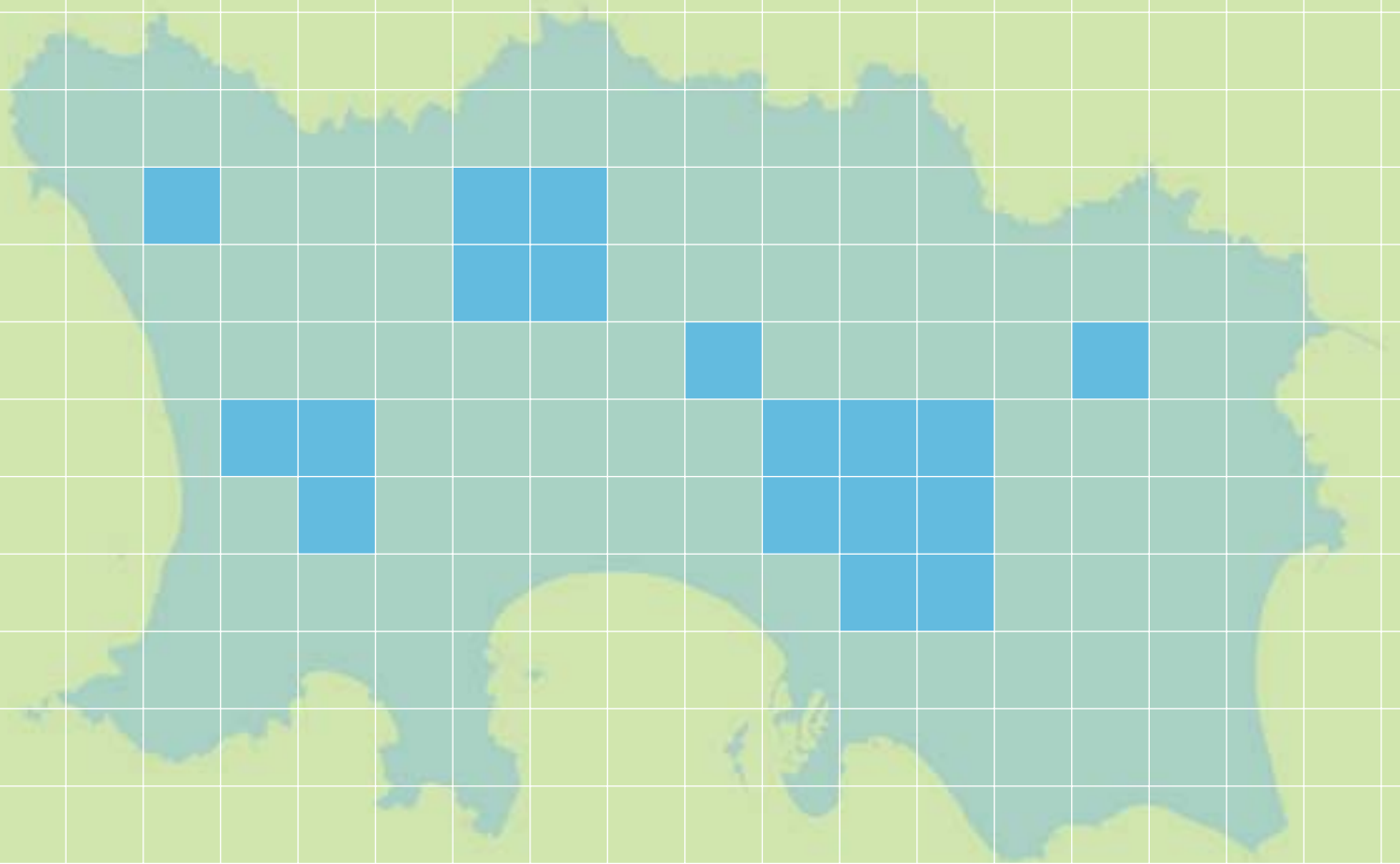
Distribution of Dartford Warbler nesting pairs within Jersey, by 1 Km square.

Source: Data collected by Durrell Wildlife Conservation Trust and Société Jersiaise, 2005.

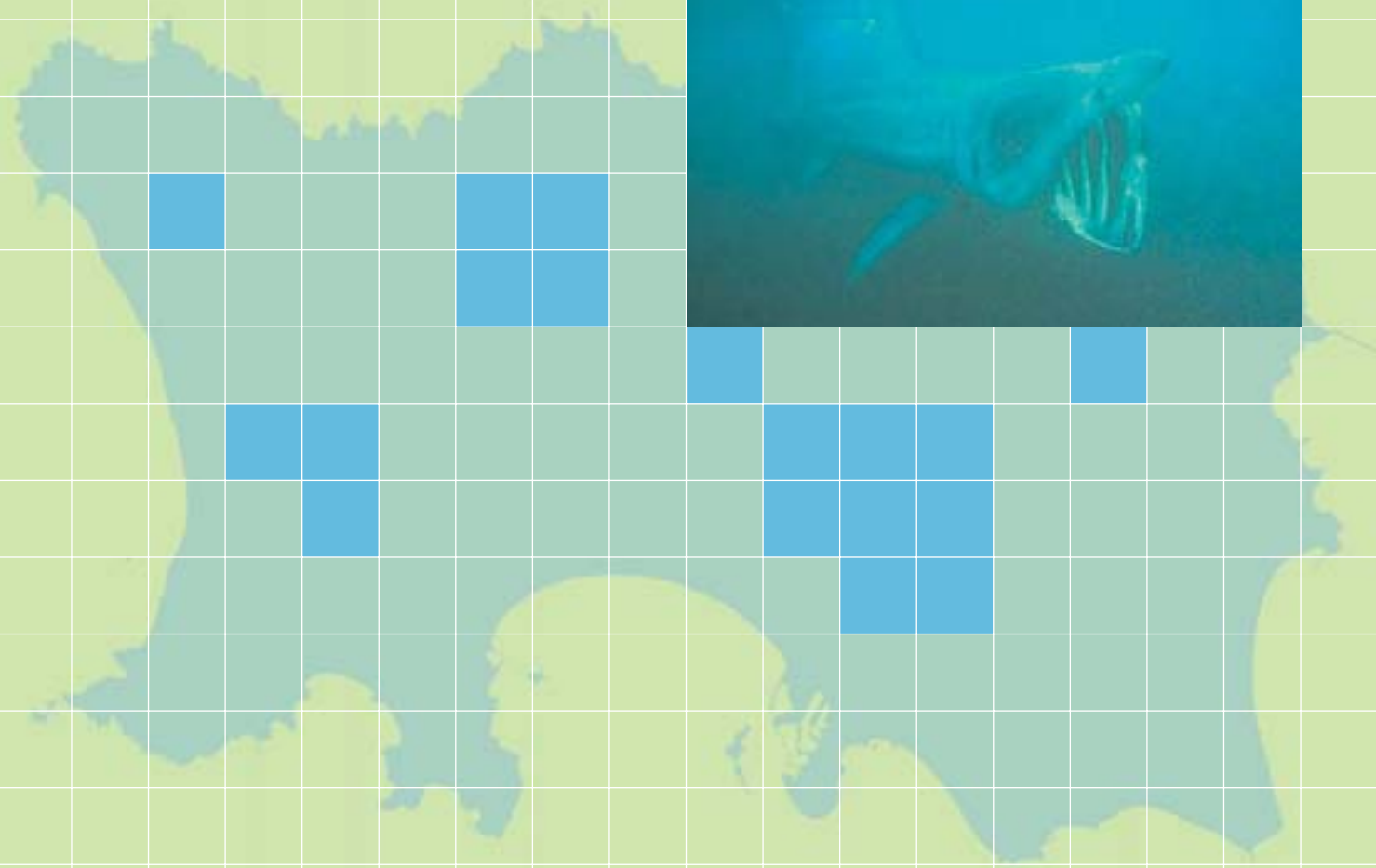


Bio Diversity

Fish Action Plans



Bio Diversity
Basking Shark
(Cetorhinus maximus)
Action Plan



1. Current status

- 1.1** Basking Sharks *Cetorhinus maximus* are the largest fish that enter Channel Island waters. They reach a length of between 5 - 11 metres and a maximum weight of 5 tonnes, with the females generally reaching a larger size than the males (Shark Trust, 2005). The shark's life cycle is poorly understood. However, they are known to be slow growing, late to mature and produce few young (UK Biodiversity, 1999). It is thought that Basking Sharks have a low reproductive capacity compared to other elasmobranch species, such as Mackerel Sharks, to which the Basking Shark is closely related. This makes the species vulnerable to exploitation, especially as population abundance only increases between 2-10% per year in unexploited stocks (UK Biodiversity, 1999). Litter size reaches a maximum of six, with a gestation period from 12 to 36 months. Intervals between litters could be anything from 2 to 4 years (Compagno, 1984).
- 1.2** Basking Sharks are a plankton-feeding pelagic fish, which catches zooplankton and small fish by forming a sieve in its mouth. This is achieved by erecting its gill rakers and extending them across the gaps between the gills (UK Biodiversity, 1999). Basking Sharks occur in temperate waters between 8 and 14°C (UK Biodiversity, 1999). Immature females are mainly sighted at the surface near tidal fronts in coastal waters, where they use 'basking' behaviour to catch prey. This occurs seasonally in spring and summer (April-September) when zooplankton is plentiful. It is thought that these sharks migrate to deeper waters during winter months; however, there is little information on their migratory patterns (UK Biodiversity, 1999).
- 1.3** Sighting around Jersey and the rest of the Channel Islands is very limited. There have been no reported sightings in Jersey in 2005 (Pers. Comm. Jersey Fisheries). Reports from Alderney since 2003 prove that there is Basking Shark activity around the Channel Islands area and provides information including size of shark, date of sighting, location, time, bird activity, weather, water depth and clarity. (Smith, C. 1995). The number of Basking Sharks entering local waters is unknown, but UK records show that appearances of Basking Sharks tend to fluctuate and be directly linked to zooplankton abundance. However, a decline in surface sightings may be due to the sharks feeding lower down in the water column (UK Biodiversity, 1999).

2. Current factors causing loss or decline

- 2.1** Habitat constraints and food availability are factors that will influence species distribution and population sizes. Basking Sharks display selective foraging behaviour focusing on zooplankton patches at thermal fronts (UK Biodiversity, 1999). The sharks follow these patches as they shift with the tidal

movement. It is thought that transient oceanographic features provide areas for high productivity and are ideal feeding areas for them. Basking Shark sightings are consequently intermittent and relate to natural cycles such as North Atlantic oscillation and summer stratification. These are controlling factors on their distribution.

- 2.2** Fishery impact is the deliberate capture of marine species that threatens population numbers. Basking Sharks are traditionally caught for their liver oil and currently their fins are valuable in the Far East (fresh and dried), their meat and cartilage are utilized but are less valuable.
- 2.3** The Achill Island (western Ireland) has a Basking Shark fishery which is in decline after only ten years of peak catches. A reduction in zooplankton in the North-east Atlantic was linked to reduced Basking Shark catches. This re-emphasises the broad-scale importance of food availability for the shark's survival (UK Biodiversity, 1999).
- 2.4** The species may spend at least 50% of its time in deep water beyond the scope of directed or intensive bycatch fisheries. However, as the intensity of deep water trawling increases the chances of Basking Sharks becoming bycatch also increases (UK Biodiversity, 1999).
- 2.5** The only fishery with an annual quota of 100 tonnes is practised by a small Norwegian fleet, but only a marginal amount of this quota is taken (UK Biodiversity, 1999).

3. Current action

- 3.1** Jersey does not have a policy to protect Basking Sharks in this manner (Pers. Comm. Jersey Fisheries). Basking Shark should be added to the protected species schedule as soon as possible.
- 3.2** In Guernsey, Basking Sharks are protected under the local Fishing Ordinance (enforceable within 3 miles of the Bailiwick of Guernsey). The wording in the Ordinance is as follows - 'No person shall land, import, export, take, kill, injure, buy, sell or have in his possession any small cetacean or Basking Shark'. It has never been necessary for Guernsey to use this piece of legislation; partly because Basking Sharks are relatively uncommon and local catch methods do not appear to interfere with the sharks' movements. (Pers. Comm. D. Wilkinson, 2005).
- 3.3** In the UK deliberate killing of Basking Sharks is now an offence, subsequent to the species being added to the listing on Schedule 5 of the UK Wildlife and Countryside Act 1981 (UK Biodiversity, 1999).
- 3.4** The status of the Basking Shark populations visiting UK waters could improve only with the ratification of the Barcelona Convention, the removal of the EU reservation on the Bern Convention and if it is found

that the sharks occurring in the Mediterranean and Atlantic are the same population. (UK Biodiversity, 1999).

- 3.5** The global status of this species is assessed as vulnerable in the 1996 IUCN Red list (UK Biodiversity, 1999).

4. Action plan objectives and targets

- 4.1** To implement protection for Basking Sharks around Jersey, similar to that of Guernsey.
- 4.2** Progress surveillance to discover population numbers, feeding habits, migratory patterns and the importance of Jersey waters to the species.
- 4.3** To maintain the current population of local Basking Sharks.
- 4.4** To show support for other countries who are currently protecting the species.
- 4.5** Adding to the information held on the UK data-base for the Basking Shark.

5. Proposed actions with lead agencies

5.1 Policy and Legislation

- 5.1.1 Jersey fisheries should consider creating regulations that require the identification of Basking Sharks in bycatch and landing statistics if they prove to be found present in Jersey waters.
- 5.1.2 Basking Shark should be added to the protected species schedule of the Conservation of Wildlife (Jersey) Law 2000.

5.2 Site safeguard and management

- 5.2.1 The management of any species is aided by a sound understanding of its biology, ecology and environment. Scientific studies are needed to determine population dynamics and demography (UK Biodiversity, 1999). This enables a clear understanding of how and if this species can be protected in local waters. Formal protection will be important if it is found that Jersey waters are of significance to the migratory and feeding patterns of Basking Sharks (although it is hard to prevent accidental catching of this shark).
- 5.2.2 Jersey should put in place a management framework, which if necessary, could be used to safeguard sites which are utilised by Basking Sharks. The management framework should include research (mainly into its life-cycle) and monitoring of the species.

5.3 Species management and protection

- 5.3.1 Even with local protection there is little Jersey or the UK can do to unilaterally conserve fish stocks because Basking Sharks migrate in and out of territorial waters (UK Biodiversity, 1999). However, pressure must be placed on the EU CFP (Commercial Fisheries Policy) to change management strategies. The UK has aided this process by listing the species under the 1981 Wildlife and Countryside Act (UK Biodiversity, 1999). Guernsey and the Isle of Man have also assisted this process by protecting the species within their territorial waters. Jersey should add to this pressure by protecting the Basking Shark.

5.4 Advisory

- 5.4.1 None proposed.

5.5 Future research and monitoring

- 5.5.1 With an increase in global sea temperature the Basking Shark may well become more common to Jersey waters. Therefore surveillance is needed to discover whether they occur in our waters.
- 5.5.2 Sightings of the sharks should be used to monitor individuals occurring in Jersey waters. Their population dynamics, size, structure, and migratory patterns should be researched.

5.6 Communication and publicity

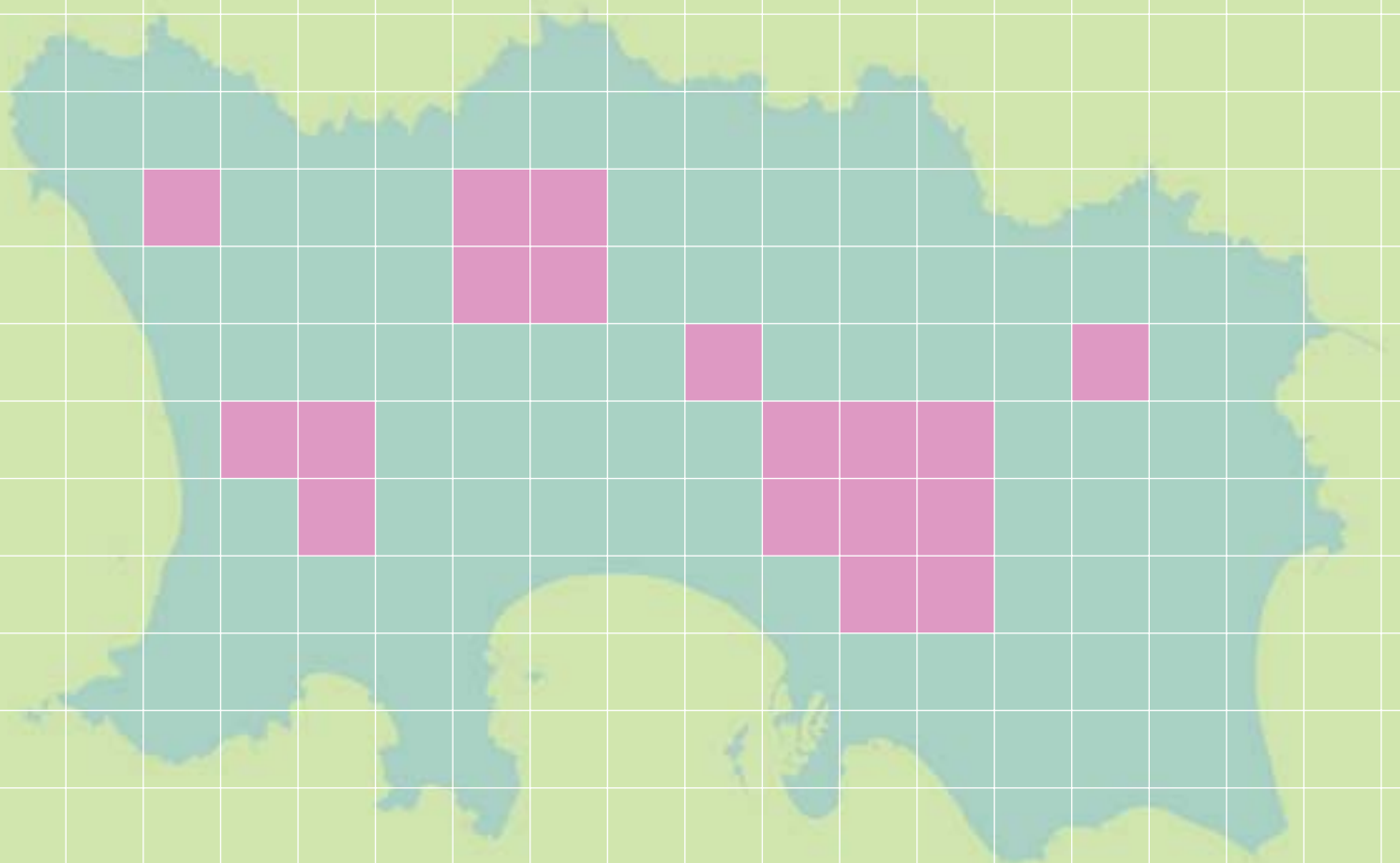
- 5.6.1 Inform maritime users of the importance of Basking Sharks. Include reporting of sightings in the marine mammal sighting recording scheme. A code of conduct should be distributed so when Basking Sharks are sighted people know what to do e.g. taking details such as location, colour and size.

5.7 Links with other Plans

- 5.7.1 None proposed.

Bio Diversity

Annexes



List of abbreviations

AFG	Agile Frog Group	MOTT	Men of The Trees
AFW	Action for Wildlife Jersey	NGOs	Non Governmental Organisations
CMT	Countryside Management Team	NTJ	The National Trust for Jersey
CRS	Countryside Renewal Scheme	SJ	Société Jersiaise
DWCT	Durrell Wildlife Conservation Trust	SSI	Site of Special Interest
ED	Environment Division	TTS	Transport and Technical Services
EP	Environmental Protection	WCMC	World Conservation Monitoring Centre

List of Species, with contact point

Species

Plants

Cyperus fuscus

Brown Galingale

Environment Division

Ranunculus hederaceus

Ivy-leaved Crowfoot

Environment Division

Linum bienne

Pale Flax

Environment Division

Hypericum elodes

Marsh St John's-wort

Environment Division

Scutellaria minor

Lesser Skullcap

Environment Division

Linaria vulgaris

Common Toadflax

Environment Division

Fragaria vesca

Wild Strawberry

Environment Division

Glaucium flavum

Yellow Horned-poppy

Environment Division

Elatine hexandra

Six-stamened Waterwort

Environment Division

Baldellia ranunculoides

Lesser Water-plantain

Environment Division

Anogramma leptophylla

Jersey Fern

Environment Division

Asparagus officinalis prostratus

Wild Asparagus

Environment Division

Dianthus gallicus

Jersey Pink

Environment Division

Drosera rotundifolia

Round-leaved Sundew

Environment Division

Gnaphalium luteoalbum

Jersey Cudweed

Environment Division

Himantoglossum hircinium

Lizard Orchid

Environment Division

Hypericum linariifolium

Toadflax-leaved St John's-wort

Environment Division

Rumex rupestris

Shore Dock

Environment Division

Zostera spp

Eelgrass Beds

Environment Division

Contact Point

Species

Insects

Calopteryx virgo

Beautiful Demoiselle

Chorthippus vegans

Heath Grasshopper

Euchorthippus pulvinatus elegantulus

Jersey Grasshopper

Euroleon nostras

Ant-lion

Gryllus campestris

Field Cricket

Lestes barbarus

Southern Emerald Damselfly

Oedipoda caerulescens

Blue-winged Grasshopper

Amphibians

Rana dalmatina

Agile Frog

Buffo buffo

European Common Toad

Reptiles

Lacerta bilineata

Green Lizard

Podarcis muralis

Wall Lizard

Natrix Natrix

Grass Snake

Mammals

Sciurus vulgaris

Red Squirrel

Chiroptera

Bat Species

Mustela ermina

Stoat

Clethrionomys glareolus caesarius

Jersey Bank Vole

Crocidura suaveolens &

Sorex coronatus

Shrews

Contact Point

Environment Division

Environment Division

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Environment Division

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Species

Birds

Emberiza cirrus

Cirl Bunting

Alauda arvensis

Skylark

Saxicola torquata

Stonechat

Emberiza citronella

Yellowhammer

Sylvia undata

Dartford Warbler

Fish

Cetorhinus maximus

Basking Shark

Contact Point

Environment Division

Environment Division

Environment Division

Environment Division

Environment Division

Environment Division

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