

APPENDIX 9.1  
ECOLOGICAL SURVEY REPORT



# **CRIANLARICH PROPOSED BYPASS**

**Ecology Surveys March – July 2007**



North-west sector, Ewich Forest

**April 2008**

**ECOS REPORT  
TO NATURAL CAPITAL**

**Prepared by:**

**David Bell**  
**ECOS Countryside Services**  
**Broadwell Cottage**  
**Glenfoot**  
**Abernethy**  
**PH2 9LR**

**Tel 01738 850227**  
**Email: [david.ecos@btinternet.com](mailto:david.ecos@btinternet.com)**

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## SUMMARY

1. *During the period March – July 2007 David Bell of ECOS Countryside Services undertook breeding bird and protected species surveys on, and adjacent to, the route of the proposed Crianlarich road by-pass.*
2. *The area surveyed is dominated by non-native conifer plantations and a wet heath/acid grassland mosaic between the village and the forest. The proposed new road will be placed in the open ground, adjacent to the village.*
3. *Methods for all surveys were agreed with Scottish Natural Heritage in advance of surveys.*
4. *A total of 37 species were recorded, of which 22 were identified as potential breeders. The latter included two Red List species of conservation concern, namely Song Thrush and Wood Warbler, with seven pairs and two pairs respectively.*
5. *In addition there were eight Amber List species of conservation concern.*
6. *The majority of Red and Amber List species were associated with the forest edge and pioneering scrub on open ground. The effect is likely to be a small reduction in populations of these birds in the short term.*
7. *Long term effects on Red and Amber List species can be partly mitigated by good road design and new habitat creation. Overall the residual effects should be in the range negligible-minor.*
8. *Protected species surveys identified no signs of Badger, Pine Marten or Water Vole.*
9. *Signs of Otter, a European Protected Species, were recorded at one location. The road has the potential to impact on water quality in local watercourses and movements of this species to and from the River Fillan. Four amphibian breeding ponds used by small numbers of Common Frog will be lost to the road footprint and frogs are known as Otter prey.*
10. *Otter mitigation suggested includes, otter-friendly culverts on all watercourses, guide fencing for culverts, pollution plans to protect water courses and the excavation of replacement ponds.*
11. *Red Squirrel were recorded in the Ewich Forest on the west of the route. The population is very low and any effects should be negligible.*
12. *Small Pearl-bordered Fritillary, a Species of Conservation Concern, was recorded within the road corridor and mitigation is suggested to reduce the severity of habitat loss.*

## **INTRODUCTION**

This report is divided into six sections, each reporting the surveys undertaken with the last section covering other wildlife, mainly noted during other surveys.

### **SECTION 1. BACKGROUND**

#### **1.1 Background.**

David Bell, Principal, ECOS Countryside Services was invited by Natural Capital, Edinburgh to undertake a series of ecology surveys at Crianlarich, Stirlingshire. The surveys cover an area on the west side of Crianlarich that has been identified for a new bypass, see Figure 1. The route and options for the bypass have been under review since 1994 and continue with the recent 2006 Environmental Impact Assessment (EIA) consultation that included Scottish Natural Heritage (SNH) and Loch Lomond and the Trossachs National Park Authority. Both identified a range of potential nature conservation interest that would require to be addressed in an EIA.

#### **1.2. Terms of Reference and Scope of Report.**

This report provides the results of breeding bird and protected species surveys undertaken in 2007 by David Bell over the area identified in Figure 1. The scope of works was agreed with Natural Capital and SNH prior to commencement of surveys and aims to provide the first tranche of baseline data for an EIA. The data arising from the survey is presented with a summary evaluation of nature conservation importance and the implications for flora and fauna. Recommendations are made on the basis of the summary evaluation.

All surveys were undertaken at the appropriate time of year for the target species and there are no known constraints on the adequacy of the data.

#### **1.3 Location and General Description.**

The survey site covers a relatively large area of land to the south west of the A85(T) divided into two parts by A82(T) and a main railway line to Glasgow. The north west is bounded by the West Highland Way marked long distance footpath and in the south east by a small burn, the Allt Coire Ardrain. The land adjacent to the route is dominated by non-native conifer plantations that form Inverardran and Ewich forests. Open ground east of the railway is managed by the local community for recreation and wildlife and features include an informal footpath network linking viewpoints, features of interest and the village.

A Phase 1 habitat survey was undertaken and reported in 1994, see Figure 2 and this is still valid as an accurate representation of the habitats present today. The survey showed that the wider land was dominated by coniferous woodland with an open land buffer between the plantations and the village of Crianlarich. The buffer was dominated by a mosaic of wet heath and acid grassland with pockets of semi-natural woodland and bracken.

## **SECTION 2. BREEDING BIRD SURVEY.**

### **2.1 Bird survey methodology.**

The site was surveyed targeting all raptors, Schedule 1<sup>(1)</sup> species, Red List<sup>(2)</sup> Species of High Nature Conservation Concern and those priority species that are listed in either the UK Biodiversity Action Plan<sup>(3)</sup> or Stirling Area Local Biodiversity Action Plan<sup>(4)</sup>. The remaining common species e.g. Blue Tit, Chaffinch, Meadow Pipit, Willow Warbler, Wood Pigeon were recorded as present or absent and included in the summary of status. During surveys a special effort was made to record Black Grouse and Merlin, species previously highlighted during statutory consultations.

SNH was consulted over this bird methodology and agreed that a four visit Common Bird Census (CBC)<sup>(5)</sup> was appropriate for the site and potential level of bird interest.

In summary the methodology involved:

- Four visits (May-July) to record all priority species;
- On each visit the species, its location and activity were recorded and mapped using standard BTO codes (as adopted for CBC).

Breeding status was determined using the criteria identified in Appendix 1.

### **2.2 Baseline conditions for breeding birds.**

- Figure 2 illustrates the location and relative extent of the 17 habitats along the potential bypass construction corridor.
- In general the resources for resident, breeding and wintering birds are restricted by the extensive non-native conifer plantation and by the narrowness of the non-planted area between the plantations and the village, likely to accommodate the new bypass.
- The conifers tend to favour larger numbers of very common birds.
- The lack of extensive native broad-leaved woodland, mature trees, running water and natural waterbodies adds to the lower quality of bird habitat.

### **2.3 Results of survey**

Appendix 2 summarises the breeding bird data whilst Figures 3 illustrates the distribution of the key species of conservation importance.

- A total of 38 species were recorded using or flying over the survey site.
- Of these 38 species, 26 were not associated with breeding.
- Three recorded species were Red List and biodiversity priority species. Namely Common Bullfinch, Song Thrush, and Wood Warbler, only the latter two species were likely to be breeding.

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(1) Wildlife & Countryside Act 1981 (& later amendments). HMSO.

(2) RSPB et al (2002). The population Status of Birds in the UK: Birds of Conservation Concern (2002-2007)

(3) Anon. (1994). The UK Biodiversity Action Plan. HMSO.

(4) Stirling Area Local Biodiversity Action Plan.

(5) Williamson, K. (1964). Bird Census work in woodland. *Bird Study* **11**, 1-22.



- A further eight species were Amber List birds of medium conservation concern, but only four were likely to be breeding.
- No records were made of Black Grouse.
- All potential plucking posts for Merlin were visited during each breeding bird survey. No Merlin were seen nor were there any signs of any regular use of any rock, post or knoll by birds of prey.
- No upland wading birds e.g. Curlew, were recorded during surveys.

## 2.4 Evaluation of ornithological resource.

### 2.4.1 Summary of interest.

- There are no Schedule 1 Wildlife and Countryside Act 1981 (& later amendments.) or Annex 1 EC Birds Directive species.
- Table 1 evaluates known species of key conservation importance.

**Table 2.1. Nature conservation status of recorded key breeding species.**

<i>Species</i>	<i>Breeding status</i>	<i>UKBAP</i>	<i>SBL</i>	<i>SLBAP</i>	<i>Conservation Status</i>
Song Thrush	Probable breeder seven pairs	Priority	Priority	Priority	Red List
Wood Warbler	Possible breeder, Two pairs	-	-	-	Red List
Goldcrest	Breeder,	-	-	-	Amber List
Lesser Redpoll	Possible breeder, one pair	-	-	-	Amber List
Tree Pipits	Possible breeder, one pair	-	-	-	Amber List
Willow Warbler	Breeder, 20+ pairs	-	-	-	Amber List
Common Buzzard	Possible breeder, One pair	-	-	-	-
Eurasian Sparrowhawk	Possible breeder, One pair	-	-	-	-

Typical evaluations, for example using Hodgetts <sup>(6)</sup>, would score very poorly in relation the importance of the bird assemblage. The habitats are very poor for birds and the low numbers of Red and Ambers List breeding birds and almost complete absence of any typical moorland, heath or acid grassland bird species confirm this view. Scrub is clearly important for Willow Warbler and Tree Pipit.

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(6) Hodgetts, N.G. (1992). Guidelines for the Selection of SSSIs. JNCC

## **2.5 Impacts on breeding birds.**

The development is centred on the narrow buffer between the plantations and the village with minor losses of plantation habitat and significant local losses of wet heath/acid grassland mosaic. There will be minor losses of pioneering broadleaved scrub along the length of the route and this could decrease numbers of the species of conservation concern.

Short term impacts will include general disturbance to foraging and feeding birds during construction and short term loss of breeding habitat. The net result may be a slight reduction in numbers of Song Thrush breeding for the construction period. Medium and long term impacts may be a local decrease in Willow Warbler and common breeding birds such as Meadow Pipit, Chaffinch and Robin that use the open habitat and scrub. Forest and forest edge breeders are unlikely to be significantly affected.

## **2.6 Mitigation of impacts.**

### **2.6.1 Short-term.**

#### *1. Loss of habitat.*

- To minimise loss of foraging habitat, shelter and potential nest sites it is recommended that landscape reinstatement and scrub tree planting is implemented as early as possible in the development programme.
- Best construction practice should seek to minimise the areas disturbed and to ensure that there is no unnecessary damage to adjacent habitat.
- All tree felling and scrub clearance must be undertaken outwith the bird breeding season, which extends from March to July inclusive. All birds and their nests are protected under the Wildlife and Countryside Act 1981 (as amended) and it is an offence to disturb, damage or destroy the nests and eggs of any wild bird.

#### *2. Noise disturbance.*

- Song Thrush breed in urban areas suggesting that they are tolerant of noise, whilst Wood Warbler are probably more sensitive.

### **2.6.2 Medium and Long Term impacts.**

- Loss of habitat can be compensated for by creating a wide corridor for the road, a buffer of at least 25 metres is recommended <sup>(7)</sup> for each side of the carriageway. The wildlife benefits of a road corridor can be maximised through sympathetic design and compliance with current best practice <sup>(8)</sup>.
- Several species are associated with the willow and birch scrub that will be cleared and this should be replanted in the roadside corridor. Areas of disturbed ground e.g. roadside embankments will quickly become invaded by both tree species, particularly if they are not seeded and are left unmanaged in the longer term.

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(7) Ecoscope (2001). Highways and Birds; a Best Practice guide. Highways Agency.

(8) Scottish Executive. (1999) Trunk Road Biodiversity Action Plan., Review for discussion.

- Bird friendly planting and sowing using native species is desirable and the preparation of a Site Biodiversity Action Plan could assist in maximising opportunities.

## 2.7 Impact summary matrix.

The following matrix summarises likely residual impacts on Red List and priority UKBAP/SALBAP birds. On the basis of information available at the time of reporting they are perceived to be negligible and well within sustainable limits for the two key species likely to be impacted.

**Table 2. Key species Summary Impact Matrices**

**Table 2a. Song Thrush.**

	<i>Song Thrush</i>
Description	Resident/migratory songbird, omnivorous.
Sensitivity of Resource	Red List, UKBAP, SALBAP species. Population trend 1970-2004 (-50%) <sup>(9)</sup> .
Potential effect	Minor loss of feeding and nesting habitat. Disturbance during construction period.
Mitigation	Clear scrub and trees outside the breeding season. Create a bird friendly road corridor.
Significance of Residual effect	Negligible.

**Table 2b. Wood Warbler**

	<i>Wood Warbler</i>
Description	Migratory songbird, summer visitor, insectivorous.
Sensitivity of Resource	Red List species with a negative population trend 1994-2005 (-65%) <sup>(9)</sup> .
Potential effect	Loss of habitat at the east end of the route. Construction noise disturbance to breeding birds.
Mitigation	None.
Significance of Residual effect	Negligible.

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(9) BTO et al. The State of the UK'S birds 2005.

## **SECTION 3. OTTER SURVEY**

### **3.1 Species summary.**

#### **3.1.1 Otter ecology.**

Otters are native to the UK, are mainly nocturnal and feed mostly on amphibians, fish and crustaceans which they obtain from ponds, rivers, lochs and the sea. They breed at any time of the year and produce two or three cubs, which are dependant on the female for up to a year.

Males tend to forage more widely than females and may cover more than 20 kilometres in a night in search of food and as a result can have a very large feeding area. The young are born in a holt which may be an excavated hole, an existing Rabbit or Fox hole, a pile of rocks, a drainage pipe and less often, in a crude type of nest known as a couch. In general Otters will have a number of shelters within their living area and these are used according to need, and may be as frequent as every 150m. Shelters may only be a refuge under a rock or tree roots. Otter are rarely seen and are most frequently recorded by detecting signs of presence. Spraints (faeces) are the most common sign of Otter presence along with footprints.

Population trends for this species are positive, after a European decline in the latter part of the twentieth century. Scotland fared better with a slower decline, mainly due to lower levels of industrialisation than other parts of the UK. The most recent national survey<sup>(10)</sup> suggests that Otter are now once again widespread in Scotland and only absent from around 2% of the country. A population estimate of 3,600 animals was made in 1995.

#### **3.2 Otters and the law.**

Otters in the UK are protected by a raft of legislation, both European and UK that underlines international and national obligations.

##### **3.2.1 Statutory legislation.**

- Annex II and IV of European Communities Directive on the Conservation of Natural Habitats and Wild Flora and Fauna. (ECH2, 4)
- Appendix II of Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats). (BC2)
- Appendix 1 of Convention on International Trade in Endangered Species of Wild Fauna and Flora. (CITES 1)
- Schedule 5 and 6, Wildlife and Countryside Act 1981 (and later amendments) (WCA5,6)

ECH2.4 is transposed into UK legislation by the Conservation (Natural Habitats, etc) Regulations 1994 and this is generally known as the Habitats Directive. Under this Directive It is an offence to:

1. Damage or destroy an Otter shelter, whether intentionally or not; and
2. To deliberately disturb an Otter.

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(10) Strachan, R. national Survey of otter *Lutra lutra* distribution in Scotland 2003-09. Report to SNH

WCA5,6 states that it is a criminal offence in most circumstances to:

1. Intentionally kill, take or injure an Otter;
2. Intentionally disturb an Otter in its place of shelter; and
3. Intentionally damage, destroy or obstruct access to a place of shelter.

### **3.2.2 Other obligations.**

- NPP14 advises that the presence of a protected species is a material consideration in the assessment of development proposals.
- Otters are a priority species in the UKBAP and SALBAP.
- Statutory protection for biodiversity is entrenched in the Nature Conservation (Scotland) Act 2004. Under this Act every public body has a duty to conserve biodiversity when executing their duties.
- Scottish Ministers have also published a Scottish Biodiversity Strategy to create a framework for the next 25 years and Otter are a highlighted species.
- It is also on the Scottish 100 list for priority biodiversity action.

### **3.3 Methodology.**

The field survey was undertaken to the following standard methodology.

- Otters: Ward D, Holmes N. & Jose P. (1994). The New Rivers & Wildlife Handbook, RSPB et al.

This methodology involved making sightings of Otter and searching for signs of Otter activity by walking at least one bank of all suitable watercourses and the circumference of all water bodies. The locations of any records of Otter activity were recorded as six-figure grid references and, where possible, a 10-figure grid reference using a hand held GPS.

The signs to be recorded were:

- Couches;
- Footprints;
- Holts;
- Rest areas;
- Slides; and
- Spraints.

Otters are rarely sighted but spraint marking is frequent, more so in winter, and these droppings are the commonest sign of Otter activity.

### **3.4 Survey information.**

#### **3.4.1. Field survey results.**

- The Otter surveys were undertaken on 30 March and 18 April 2007, with incidental recording on four further occasions, to early July.

**Table 3.1. Otter Field Records Summary.**

NGR	Description.
NN 37721 25540	Two old and one fresh spraint in a private water supply on a dammed stream immediately to the west of the village.

- Otter are clearly resident in the Crianlarich area and occasionally make use of the watercourse that leads to the water supply where the spraints were found. This watercourse outfalls north under the A82T and links with the River Fillan. Surprisingly there were no spraints recorded on the lower water course during the survey period of March-July.
- It is likely that they will make use of all ponds and watercourses at some time of the year, but activity levels are surprisingly low.
- No holts or rest areas were identified and signs were limited to a single early season record of spraints at a single site outwith the bypass corridor.

### **3.5 Implications for development.**

1. Potential impacts on Otter are most likely to arise from short term construction work resulting in a reduction of water quality in the Allt Coire Ardrain and the watercourse to the west of the A82(T) resulting in pollution of the River Fillan.
2. The area surveyed is likely to be on the edge of the home range of the resident Otter but it is likely that all watercourses could act as a conduit for Otter moving between the River and any seasonal site. It is recommended that all culverts are made Otter friendly<sup>(11)</sup> and follow a specification agreed with SNH.
3. Particular care must be taken to ensure that works do not encourage road crossings that result in road casualties. To assist, some water courses may require guide fences.
4. Emergency measure procedures should apply to all works with a policy of reporting all sightings/signs of Otter and immediate cessation of works within 30m of the sighting/sign until investigation by an experienced Otter surveyor.
5. Some habitat loss will arise from the road construction and mitigation should be provided for the loss of pools used by amphibians for breeding. See section 6. Frogs are an important prey for Otter in spring when Otter take them on breeding ponds.
6. The Construction Method Statement must identify best practice, which will help to minimise damage and ensure sympathetic restoration of damaged habitats. A Pollution Plan will form part of this Method Statement and this will help to prevent and respond to any pollution incidents affecting watercourses, this will include recommendation for storage of potentially toxic materials.
7. On the basis of data available to date there would appear to be no need for any Otter licensing.

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(11) SNH. Scotland's Wildlife. Otters and Development

### 3.6 Overview.

The overall effect after mitigation should be negligible during operation and likely to be slight during construction, see below. The sustainability of the Otter population in the area will not be threatened by this development. There is a legal obligation to update protected species surveys annually to ensure legal compliance

**Table 3. Impact Summary Matrix.**

	<b><i>OTTER</i></b>
<b>Description</b>	Native mammal recovering from a long-term decline, but now with a favourable status in the UK.
<b>Sensitivity of Resource</b>	European Protected Species, UK Biodiversity Action Plan Priority Species, Scottish Biodiversity List Species, Stirling Area Local Biodiversity Action Plan Priority Species.
<b>Potential effect</b>	<ol style="list-style-type: none"> <li>1. Disturbance to foraging Otter.</li> <li>2. Potential degradation of feeding habitat.</li> <li>3. Increased potential for road casualties.</li> </ol>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>➤ Write Pollution Plan.</li> <li>➤ Install Otter friendly culverts to all water courses to prevent road casualties.</li> <li>➤ Where necessary install guide fence at culverts.</li> <li>➤ Re-create amphibian breeding ponds lost to road footprint.</li> <li>➤ Re-survey Otters immediately prior to any works.</li> </ul>
<b>Significance of Residual effect</b>	Negligible for long term, but slight in the short-term during construction.

## **SECTION 4. RED SQUIRREL SURVEY.**

The road development will be centred on the open ground and will therefore result in a minimal loss of trees in the adjacent plantations.

### **4.1. Sources of information and guidance.**

#### *Legal*

- NPPG 14.
- Nature Conservation (Scotland) Act 2004.
- Wildlife & Countryside Act 1981 (as amended).
- Stirling Area Local Biodiversity Action Plan (SALBAP).

#### *Other*

- Scotland's Biodiversity: It's in your hands. Scottish Executive.
- Scottish Biodiversity 100 List. Scottish Executive.
- Gurnel, J., Lurz, P.P.W., & Pepper, H. (2001). Practical techniques for surveying and monitoring squirrels. Forestry Commission Practice Note 11. Forestry Commission.
- Gurnel, J., Lurz, P.P.W., Shirley, M.D.F., Magris, L. & Steele, J. (2004). A critical look at methods for surveying red and grey squirrels.
- FCS Guidance Note 33: Forest Operation and Red Squirrels: November 2006.

### **4.2. Legal status of Red Squirrel**

Red Squirrel is a UK protected species with additional protection afforded in Europe by inclusion in Appendix III of the Berne Convention on the Conservation of Wildlife and Natural Habitats (BC3).

#### *Under BC3*

The UK Government is committed to protecting Red Squirrels from exploitation, trading or any means likely to lead to a local extinction or excessive disturbance leading to a local reduction in numbers.

*Under The Wildlife & Countryside Act 1981, Schedule 5 (as amended by The Nature Conservation (Scotland) Act 2004)*

It is now an offence to “intentionally or recklessly”

- Kill, injure or take (capture) a Red Squirrel;
- Damage, destroy or obstruct access to any structure or place which a Red Squirrel uses for shelter or protection; or to
- Disturb a Red Squirrel while it is occupying a structure or place which it uses for that purpose.

The above is subject to certain exceptions as defined in the Act.



### **4.3. Summary of Methodology.**

The methodology was limited by the growth stage of the two forests surveyed. Both Ewich and Inverardren are in the earlier phase of maturation and very difficult to physically access and forced access would result in extremely low visibility and negative recording due to noise. The transect selected follows unplanted areas, firebreak and watercourses and was the only practical option as fixed, equidistant transects were not feasible.

Three sighting transect surveys were undertaken on the 24<sup>th</sup> May, 3<sup>rd</sup> June and 11<sup>th</sup> June. The middle survey was carried out in reverse and in the evening whilst the other two were early morning surveys. Incidental recording was made on three other survey dates in 2007 and they were 30<sup>th</sup> March, 28<sup>th</sup> April and 9<sup>th</sup> July.

The sighting surveys involved:

1. following a fixed route on three visits, see Figure 1; and
2. the route was walked slowly stopping at regular intervals to scan for feeding Squirrels in the canopy. Ideally these stops should be every 100m and last for 2-5 minutes but, due to terrain and area of visibility were often more frequent than the standard survey.

Signs searched for were:

- Animal sighting;
- Feeding signs;
- Dreys; and
- Calls.

### **4.4. Results of survey.**

The feeding resource for squirrels is poor due to the young age of the stand with less than 30% of all trees fruiting. The species mix includes Norway Spruce, Sitka Spruce, Scots Pine and Larch, the latter is a major component of both forests.

#### **4.4.1 Survey results.**

##### **Sightings**

- No sightings were made of either Red or Grey Squirrels on any of the sighting surveys, or on three other survey days.

##### **Feeding signs**

- Inverardran Forest has some local pockets of older Norway Spruce and one or two Scots pine, both were fruiting profusely but no signs were recorded of any feeding.
- Ewich Forest was more productive with feeding signs at three locations, see Table below.

**Table 4.1. All feeding records for Ewich Forest**

Date	NGR	Description
30/3/07	NN 38265 24875	Six recently eaten Sitka Spruce cones.
	NN 38350 25100	Large pile of Sitka cones mostly old some recently eaten.
28/4/07	NN 37952 25108	Eaten Sitka Spruce cones, mainly but including a few that had been recently eaten.
11/6/07	NN 38347 25122	Several freshly eaten Sitka cones.

#### Dreys

- No dreys were recorded although they may have been overlooked due to the size of the plantations and the density of planting.

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#### Calls

- Neither adults or young were heard calling in either plantation.

On the basis of this survey it seems that there is a small population of Squirrels that are most likely to be Red.

#### 4.5 Implications for development.

1. To minimise short term effects any tree felling should be undertaken outwith the breeding season Feb-Sept.
2. Small losses of habitat should be compensated for by re-planting with Scots Pine, which crops more reliably than the other confers in the plantations.
3. Overall it would seem that the effect of the loss of small sections of such large plantations would have a negligible effect on sustaining the local population.

#### 4.6 Impact summary matrix.

	<b><i>RED SQUIRREL</i></b>
<b>Description</b>	Native mammal in decline, mainly due habitat loss and competition from the non-native Grey Squirrel.
<b>Sensitivity of Resource</b>	European Protected Species, UK Biodiversity Action Plan Priority Species, Scottish Biodiversity List Species, Stirling Area Local Biodiversity Action Plan Priority Species.
<b>Potential effect</b>	<ol style="list-style-type: none"> <li>1. Potential road casualties when moving between Ewich and Inverardren Forests.</li> <li>2. Disturbance to dreys during breeding season.</li> <li>3. Very small loss of feeding habitat.</li> </ol>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>➤ Fell trees outside breeding season.</li> <li>➤ Replant road embankments to include Rowan and Scots Pine.</li> </ul>

<b>Significance of Residual effect</b>	Due to the very low populations and likely severity of effects impacts should be negligible at all periods during and after construction..
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## SECTION 5. WATER VOLE SURVEY.

### 5.1 Background.

As a UK protected species and a priority species in the UK Biodiversity Action Plan there is a legal obligation to survey for Water Vole.

### 5.2 Species Profile.

This small vegetarian rodent was once very common on Scottish and UK rivers and streams. It has undergone a rapid decline over the last 30 years that may or may not be partly attributable to Mink predation. However the main reasons are fragmentation of habitat, loss of habitat and unsympathetic riparian management. Water Vole live in underground burrows excavated in banks and are rarely found more than a few metres from the edge of the water.

### 5.3 Methodology.

The appropriate standard methodology<sup>(12+13)</sup> was followed and is summarised below.

### 5.4 Water Vole.

In outline this methodology survey involved:

- Walking one bank of all watercourses, and the margins of adjacent waterbodies to record signs of use by Water Vole;
- Survey to extend 300m beyond the known footprint of the bypass;
- Signs to be searched for include sightings, faeces, latrines, feeding stations, burrows and footprints; and
- Effort was concentrated in the zone within 3 metres of any water's edge, but also included small areas of adjacent rushy wetland.
- Incidental searches of suitable habitat were carried out during the breeding bird and Red Squirrel surveys.

#### 5.4.1 Water Vole Field Signs.

Burrows	Excavated in riverbanks, with or without a grazed lawn around the entrance. Typically wider than high and with a diameter of 4-8cm.
Latrines	Piles of faeces in favoured spots close to the burrow or on a territorial boundary. Most obvious during the period February – November.
Feeding Stations	Preferred feeding locations often hold remains of cut vegetation.
Footprints	Footprints are easily confused with rats which are often abundant on watercourses and are perhaps the least satisfactory sign on which to determine a presence or absence.

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(12) Ward D, Holmes N. & Jose P. (1994). *The New Rivers & Wildlife Handbook*, RSPB et al.

(13) Strachan R. (1998). *Water Vole Conservation Handbook*. English Nature et al.

### **5.5 Survey Information.**

- The survey was undertaken 6<sup>th</sup> June 2007.
- Covered all suitable habitats for Water Voles.
- No signs were recorded of Water Vole in any suitable habitat, mainly because the watercourses present and pools in the wet heath dry up for long periods in summer. This increases the risk of predation.

### **5.6. Implications of the survey data.**

1. On basis of available data there were no signs of Water Vole on the survey site or immediately adjacent to it. As a result there would appear to be no obligations towards this UK protected species arising from development.
2. It is possible that Water Vole may have been overlooked if there is a tiny population. They could have been missed during a June survey as signs and activity peak in late summer and early autumn. As a precaution suitable habitat should be checked again at the same time as updating the Otter survey.

## **SECTION 6. OTHER WILDLIFE.**

### **Badger**

Badger are a UK protected species and a walkover survey was justified on the basis of an old record. A Badger road casualty record was provided by Perth Museum and this was on the A82T one kilometre north of Crianlarich in 1998. The grid reference was NN376258 and approximately two hundred and fifty metres west of the furthest likely extent of the bypass.

A walkover survey was carried out along the bypass corridor, including accessible land 100 metres either side of the route, on 30<sup>th</sup> March 2007. No signs were found of any recent Badger activity, at a time of year when they are most active.

It is clear that there was a local social group and as precaution the walkover survey should be repeated prior to any site investigation or construction works to ensure legal compliance. This survey may include a wider survey corridor to establish the presence or absence of a local population and best carried out in late February/early March.

### **Pine Marten**

A special walkover survey was undertaken on the 30<sup>th</sup> March 2007 with particular attention be paid to recording signs of Pine Marten. No scats were found that could be attributed this species. One site on the West Highland Way, at NGR NN37612 25178, was suitable as a shelter for Pine Marten. It is a small outcrop with lush ledge vegetation, mainly Great Woodrush and a few Silver Birch and Rowan. There were few other suitable shelter sites due to lack of old trees and other rock exposures. Signs of Pine Marten were searched for during all other surveys without any records. There have been anecdotal records of Pine Marten in Crianlarich, however on the basis of this survey the population is likely to be low and any impact negligible.

### **Amphibians and reptiles**

Four breeding site for Common Frog were identified during the walkover surveys of 30<sup>th</sup> March 2007 and these are illustrated on Figure 5. Very small numbers of adults and only a few spawn masses were recorded in each location. The grid references for Frog breeding ponds are: NN38860 25161; NN38757 25140; NN38729 25137; and NN38387 25182 and they lie within the construction footprint and could be lost to the road construction.

No signs were recorded of Common Lizard, Slow Worm or Adder during the survey period.

### **Others.**

Peacock and Small Pearl-bordered Fritillary butterflies were recorded incidentally. Larvae of the latter, UKBAP and SALBAP priority species, feed on Violet species and as Marsh Violet is locally frequent amongst the wet heath the population of plant and butterfly are likely to decline if measures are not implemented to maintain and enhance habitat to sustain both populations.

Both Roe and Red Deer were present and recorded in all plantations. Several Fox scats were recorded along with sightings of Bank Voles.

## Appendix 1. Breeding Bird Activity Codes

As in the assessment of breeding status.

### 1. Possible Breeding.

- H** Species observed in breeding season in possible breeding **habitat**.  
**S** **Singing** male(s) present (or breeding calls heard) in breeding season.

### 2. Probable Breeding.

- P** **Pair** observed in suitable breeding habitat in breeding season.  
**T** Permanent **territory** presumed through registration of territorial behaviour on at least two different days, a week, or more apart, at the same place.  
**D** **Display** and courtship.  
**A** **Agitated** behaviour or anxiety calls from adults.  
**I** Brood patch on adult examined in hand, indicating **incubation**.  
**B** Building nest or excavating nest-hole.

### 3. Confirmed Breeding.

- DD** **Distraction display** or injury feigning.  
**UN** **Used nest** or egg shells found (occupied or laid during period of survey).  
**FL** Recently **fledged young** (nidicolous birds) or downy young (nidifugous birds).  
**ON** Adults entering or leaving nest-site in circumstances indicating **occupied nest** (including high nests or nest-holes, the contents of which cannot be examined), or adults seen sitting on the nest.  
**FY** Adults carrying **food** for **young** or faecal sac.  
**NY** **Nest** containing **young** (seen or heard).

**Appendix 2. Summary status of all recorded bird species.**

**N/C = Non=classified**

**V = Visitor to site**

**Br = Breeder**

**Ps Br = Possible Breeder**

**Pr Br = Probable Breeder**

<b>Species</b>	<b>Biodiversity Status</b>	<b>Conservation Status</b>	<b>Breeding Status</b>	<b>No of pairs</b>	<b>Description</b>
Barn Swallow	-	Amber	V	-	Local breeder. Not breeding on the survey site but feeds over the open grassland , scrub and heath
Blackcap	-	Green	Ps Br	1	Singing male 9/7/07 in shrubs at the railways station.
Black-headed Gull	-	Amber	V	-	Occasional birds seen overflying the site
Blue Tit	-	Green	Pr Br	N/A	Occasional birds seen singing in the scrub and plantations.
Carrion / Hooded Crow	-	Green	Ps Br	N/A	Occasional birds seen in the plantations and overflying the site
Chaffinch	-	Green	Br	N/A	Commonly recorded in all scrub and plantations.
Coal Tit	-	Green	Br	N/A	Commonly recorded in the plantations.
Collared Dove	-	Green	V	N/A	At least two pairs breeding in the village and occasionally seen on the survey site.
Common Bullfinch	-	Red	V	N/A	Small party of four recorded in Ewich Forest
Common Buzzard	-	Green	Ps Br	1	The survey site was within the territory one breeding pair. No nest was found within the survey site.
Common Crossbill	-	Green	Ps Br	1+	Crossbills were regularly seen and heard during the survey. A small party of 1 male and 3 females seen on 3/6/07 was the peak count.
Common Cuckoo	-	Green	V	-	A single bird flew south over the site 11/6/07
Common Whitethroat	-	Green	Ps Br	1	Single bird singing on site
Common Swift	-	Green	V	-	Local breeder, small parties seen feeding over the plantations.
Common Wood	-	Green	Br	N/A	Frequent in the plantations.



Species	Biodiversity Status	Conservation Status	Breeding Status	No of pairs	Description
Pigeon					
Eurasian Siskin	-	Green	Br	2	At least two pairs bred on the northern edge of both plantations.
Eurasian Sparrowhawk	-	Green	Ps Br	1	Single bird seen once and a newly plucked Siskin was found on another survey visit. Kill was at NN38367 252117
European Robin	-	Green	Br	5-10	Territorial birds recorded from most areas.
Goldcrest	-	Amber	Br	3+	Recorded singing in the plantations.
Great Spotted Woodpecker	-	Green	Br	1	Single birds seen and heard in the plantations.
Great Tit	-	Green	Br	N/A	Frequently recorded in scrub and plantations.
Greenfinch	-	Green	V	-	Pair bred at the west end of the village and was recorded over the survey site.
Herring Gull	-	Green	V	-	Small numbers recorded flying over the site.
House Martin		Amber	V	-	Local breeder, up to four birds recorded feeding over the site, usually opposite the railway station.
Jackdaw	-	Green	V	-	Several birds were recorded overflying the site.
Lesser Redpoll	-	Amber	V	1+	Occasionally recorded in the plantations.
Long-tailed Tit	-	Green	V	-	A large flock of 31 birds was seen in the west of Ewich Forest on 9/7/07
Mallard	-	Green	V	-	Three birds flew over the site , having arisen from the river,
Meadow Pipit	-	Green	Br	5+	Two nests found and a small number of singing birds recorded open ground.
Mistle Thrush	-	Green	Br	1	Pair bred successfully at the north end of the village. Adults seen carrying food on 28/4/07.
Northern Wheatear	-	Green	V	-	Female recorded alongside the A82(T) on 9/7/07
Raven	-	Green	V	-	Local breeder, seen and heard overflying the site.
Sand Martin	-	Amber	V	-	Small feeding parties of up to three recorded feeding over open ground. Probably breed on the River Fillan.
Song Thrush	UKBAP; SBL; SALBAP	Red	Pr Br	5-7	Up to seven pairs breeding all singing males on the edge of the plantations.

<b>Species</b>	<b>Biodiversity Status</b>	<b>Conservation Status</b>	<b>Breeding Status</b>	<b>No of pairs</b>	<b>Description</b>
Tree Pipit	-	Amber	Ps Br	1	Sing in male recorded in birch scrub west of the railway station.
Willow Warbler	-	Amber	Br	20+	Recorded in all areas.
Winter Wren	-	Green	Br	-	Frequent in all habitats.
Wood Warbler	-	Red	Ps Br	2	Two singing males, one in each plantation.

**Figure 1. Survey Information.**

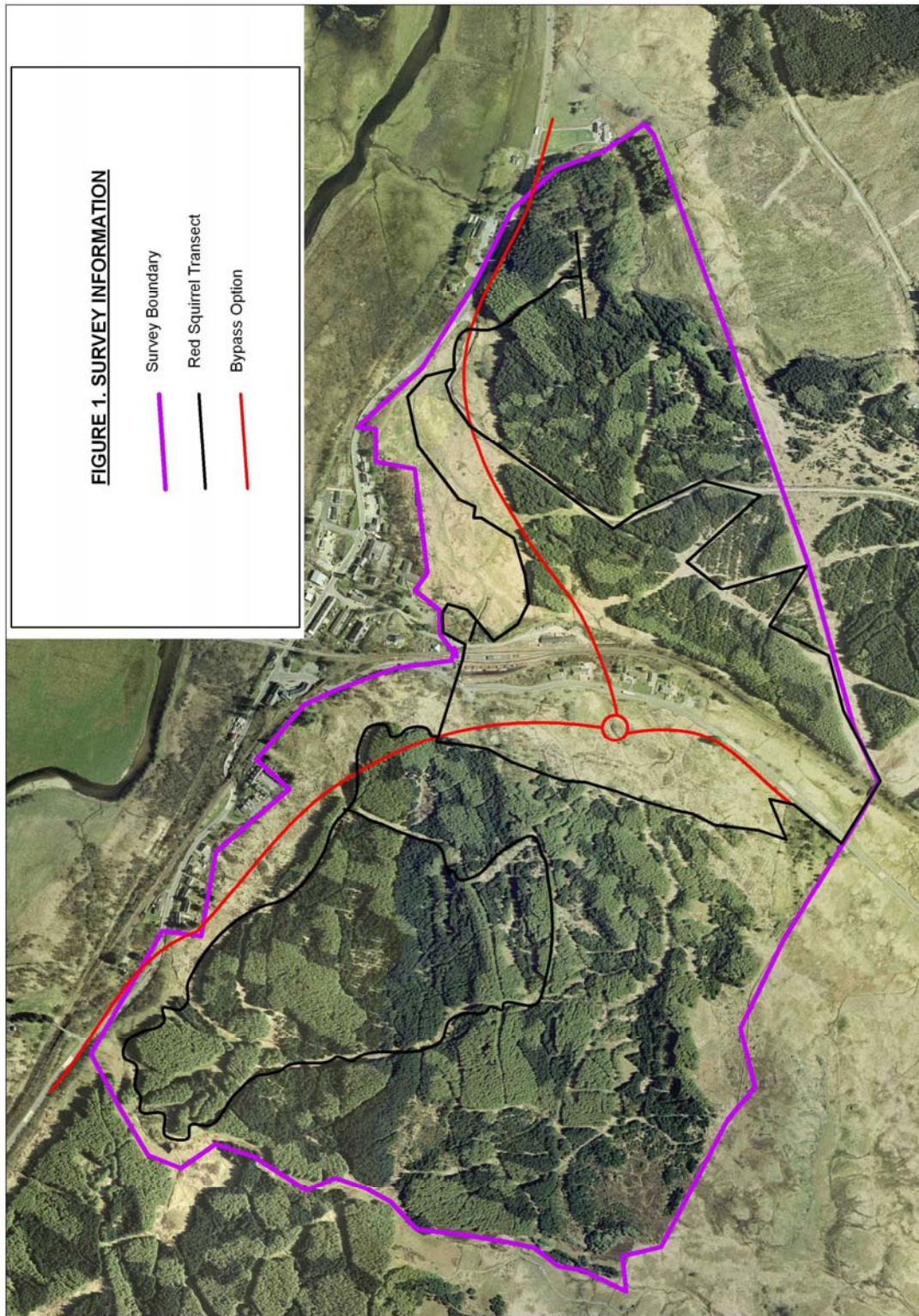


Figure 2. Habitat key and map.



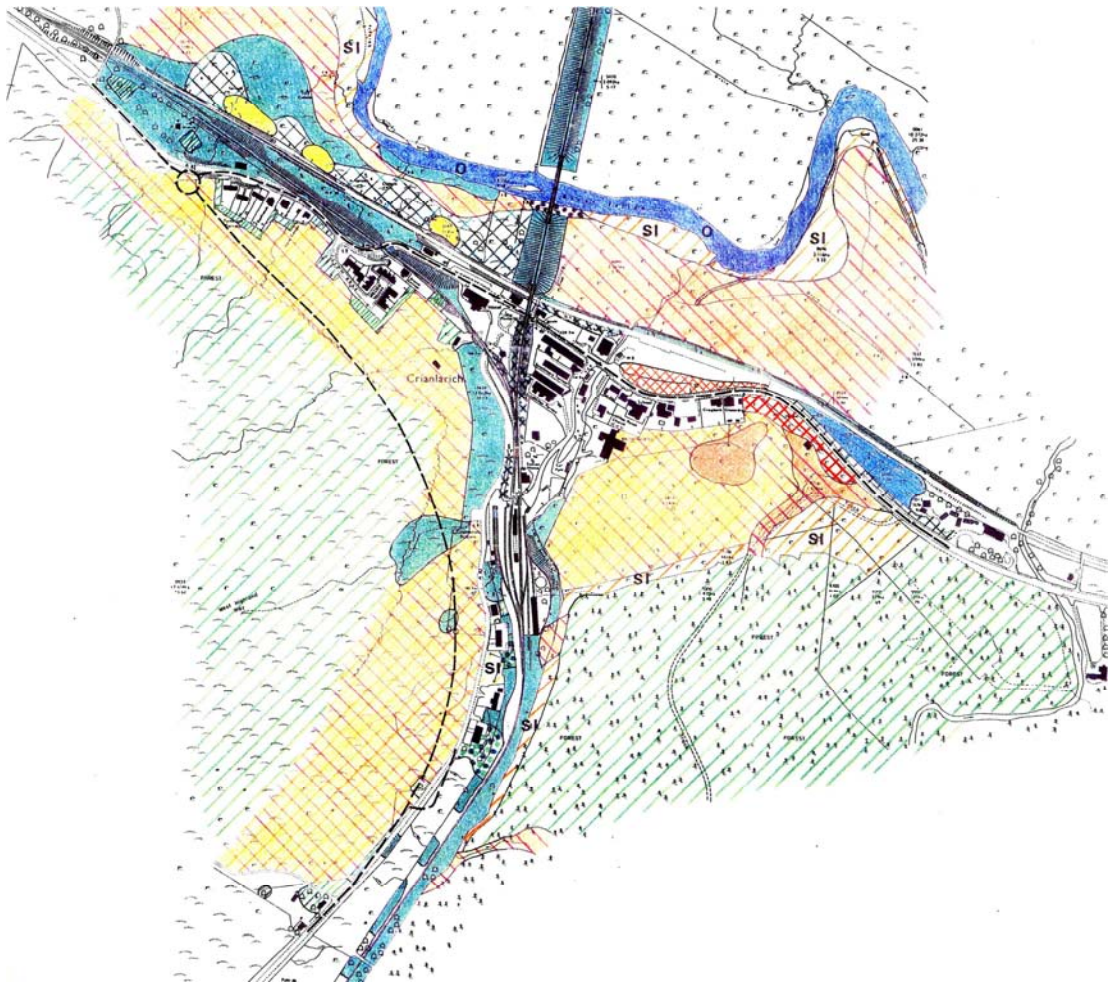


Figure 3. Red List birds

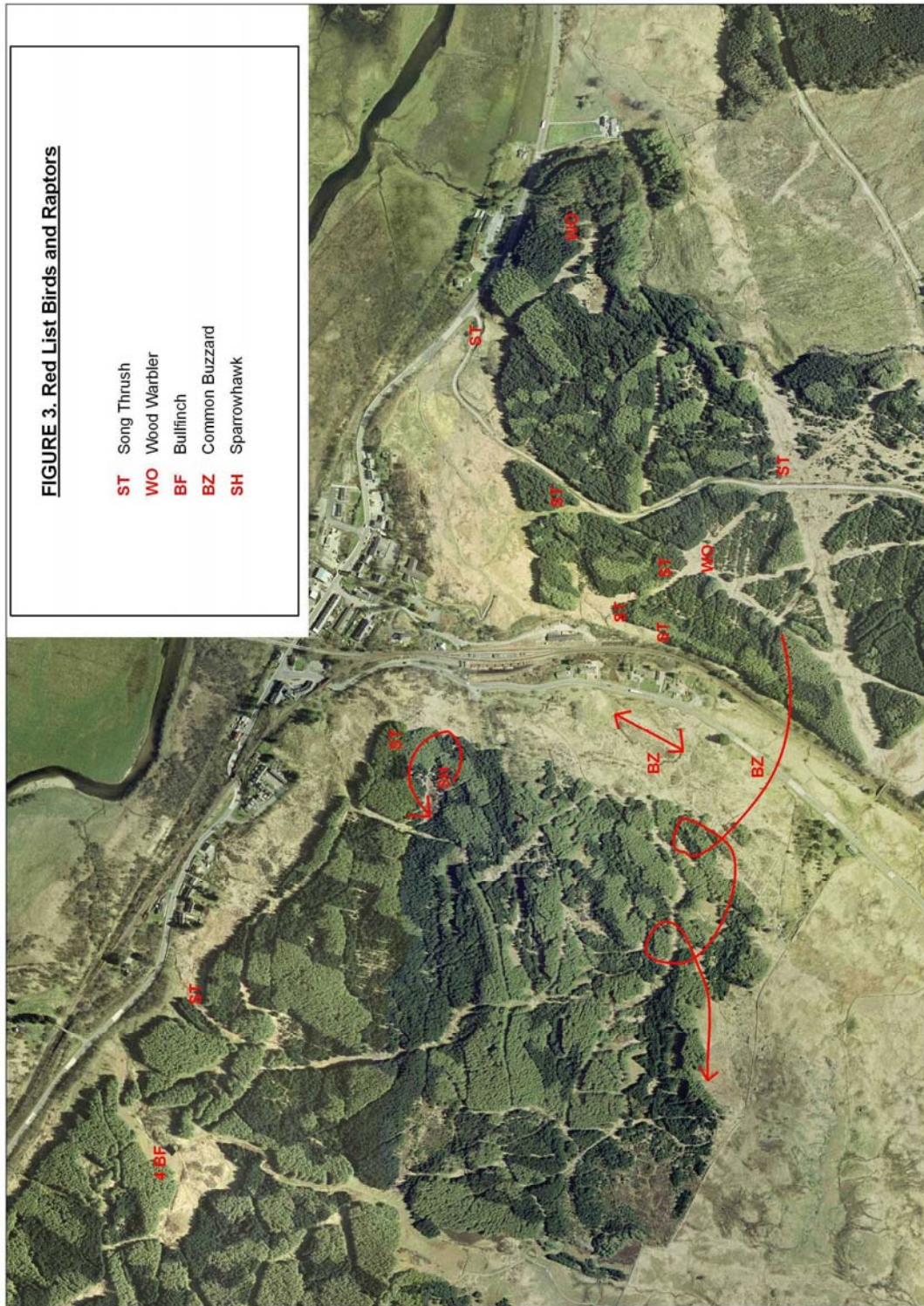


Figure 4. Amber List birds

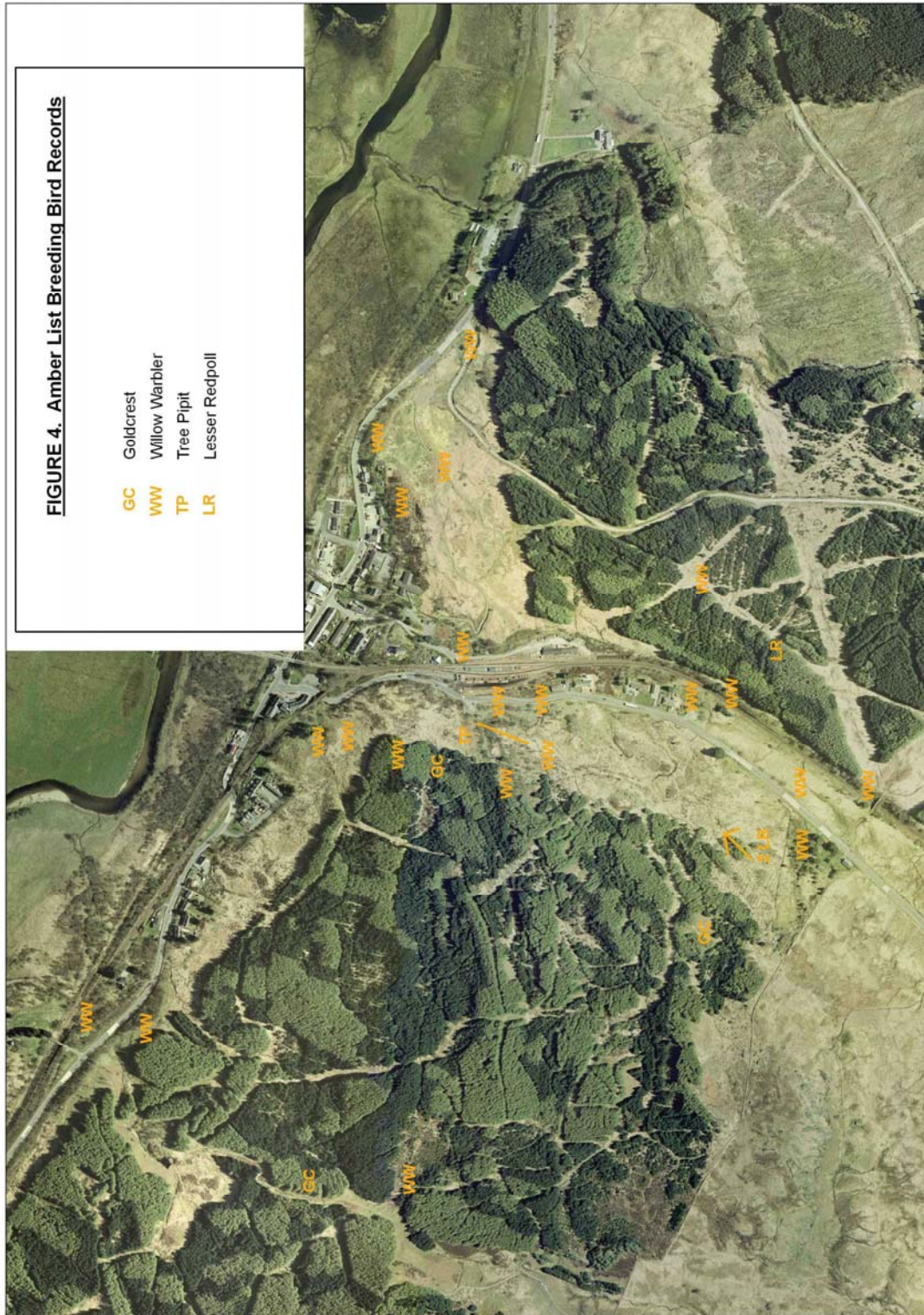
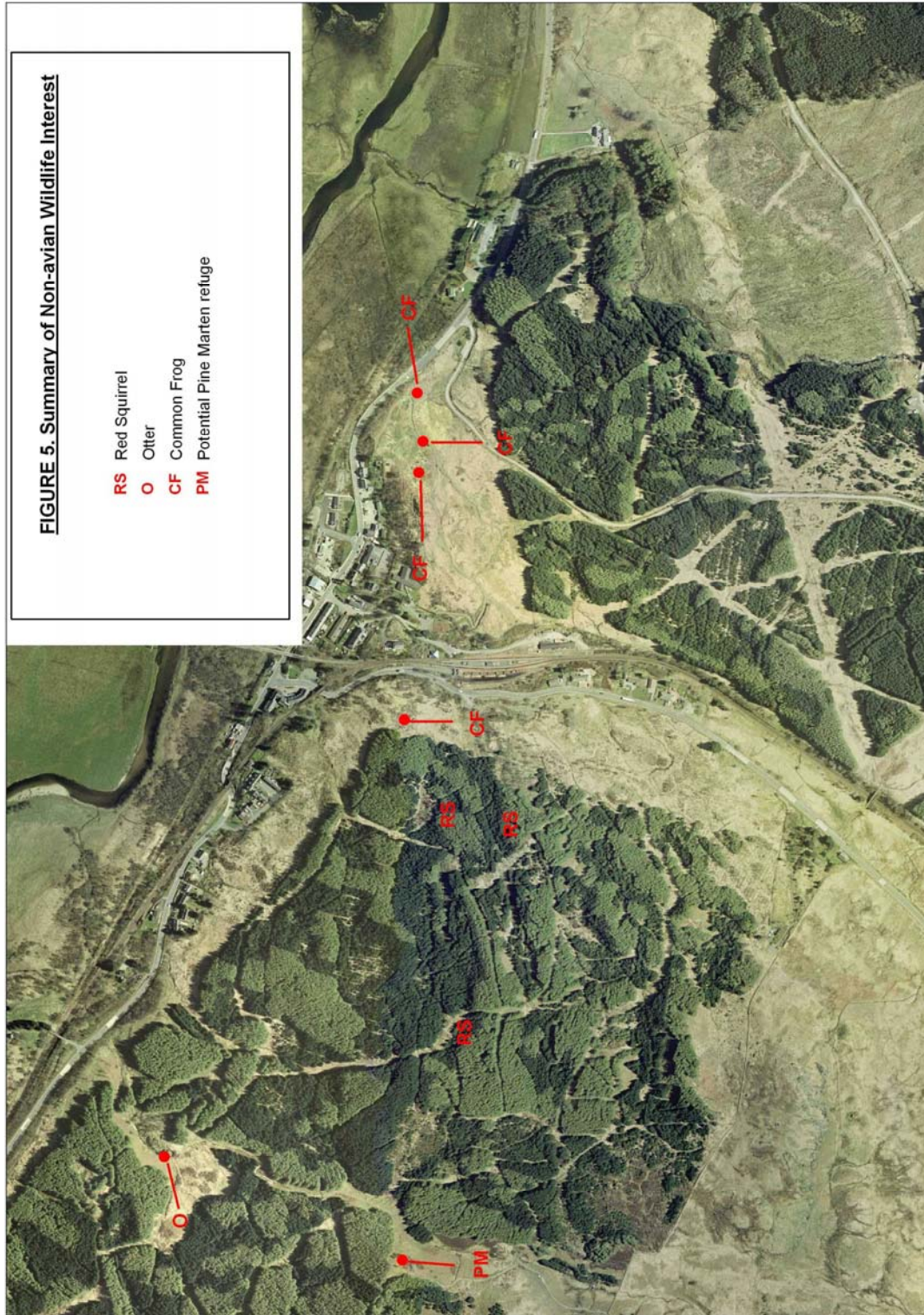


Figure 5. Non-avian nature conservation interest.





**ANNEX A. Selected views.**



**Eastern community wildlife area**



**Route of railway crossing**



**Wet heath west of the A82T**



**Western section behind Crianlarich**



**Westmost section to road convergence**



**Otter spraint site**



**Typical stand**