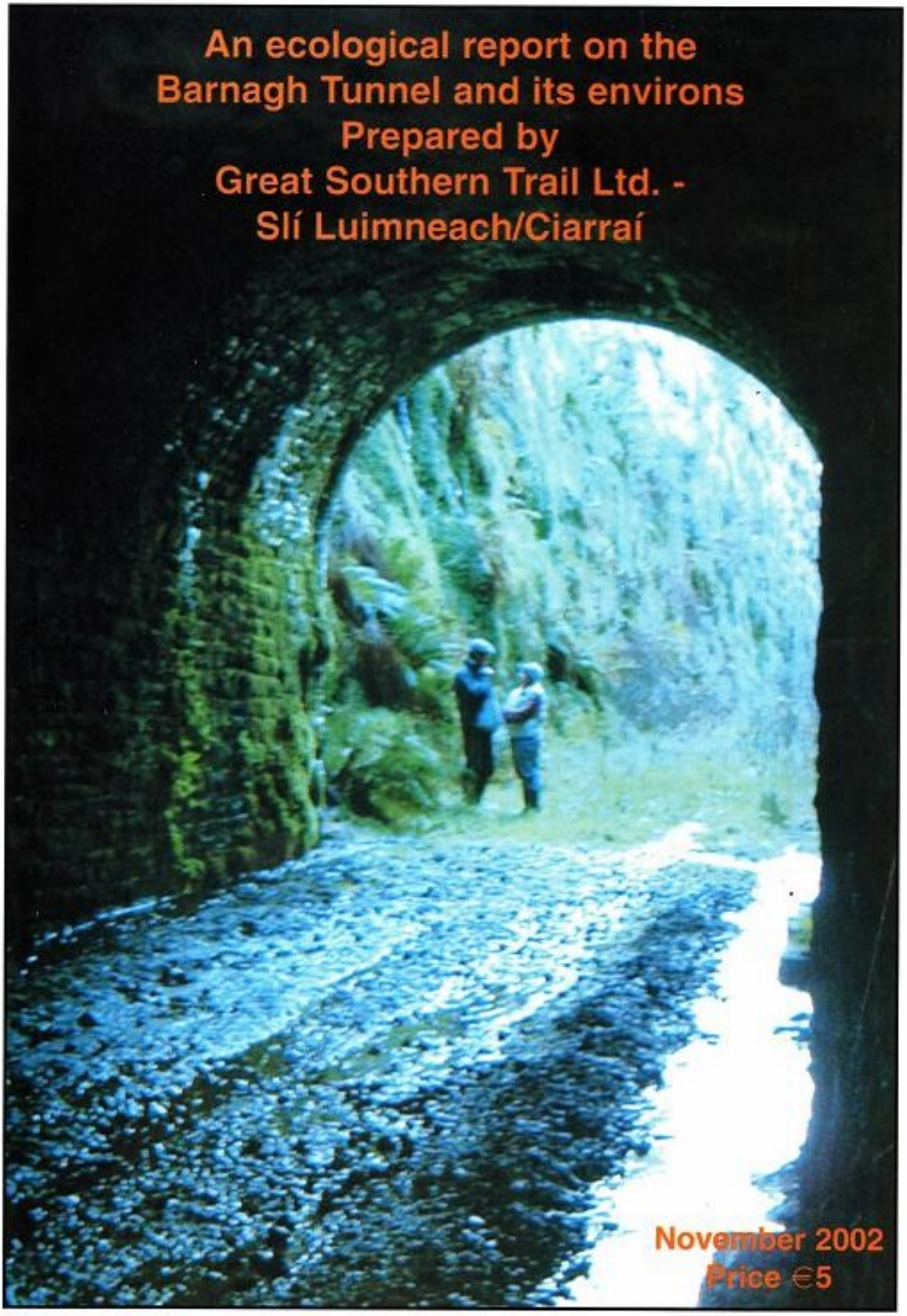
An ecological report on the Barnagh Tunnel and its environs

Prepared by

Great Southern Trail Ltd. -

Slí Luimneach/Ciarraí



November 2002

Price €5

The Great Southern Trail Ltd. acknowledges with gratitude the assistance of the Heritage Council towards the completion of this report.

Táimid i Slí Luimneach Ciarraí faoi chomaoin ag an gComhairle Oidhreachta as ucht na cabhrach a tugadh agus an tuairisc seo á ullmhú againn.

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Introduction by Dr John Breen

In 2001, a group of interested local people, Great Southern Trail Ltd., applied to the Heritage Council for support to develop access to the Barnagh Tunnel. Great Southern Trail Ltd. were requested by the Heritage Council to carry out an ecological report of the area. This is a brief introduction and overview to the report.

The Barnagh Tunnel

The site is located about 6 km south west of Newcastle West, County Limerick (see figure 1 Irish Grid Reference R 2230, R2330). Going south west from Newcastle West. the 19th Century railtrack was built on a steep incline. At 164 meters above sea level Barnagh (from the Irish *bearna.* a gap) was located at one of the highest points of the Irish railway system. When the railway was discontinued in the 19'lOs, the track was removed. The site remains separate from local farmland, has the limestone chippings of railways in places and also includes a tunnel and station house. All but the station house is the property of Córas Iompair Eireann.

Ecology Reports

Ecology reports were commissioned from experts, as follows.

- "Survey of the plants in the Barnagh Tunnel area, south-west of Newcastle West, Co. Limerick" by Sylvia Reynolds MSc and Dr Julian Reynolds. Sylvia Reynolds is the Botanical Society of the British Isles plant recorder for County Limerick.

- "Bat survey of Barnagh Railway Tunnel, Great Southern Trail, Co. Limerick" by Conor Kelleher who is a member of the Cork Bat Group.

- "The mammals of Barnagh Tunnel, Co Limerick" by Robert Imbusch MSc, a mammal specialist.

- "The birds of Barnagh, County Limerick with notes on butterflies and dragonflies" by Geoff Hunt of Birdwatch Ireland.(This latter report is presented in both the English and the Irish languages)

Overall commentary

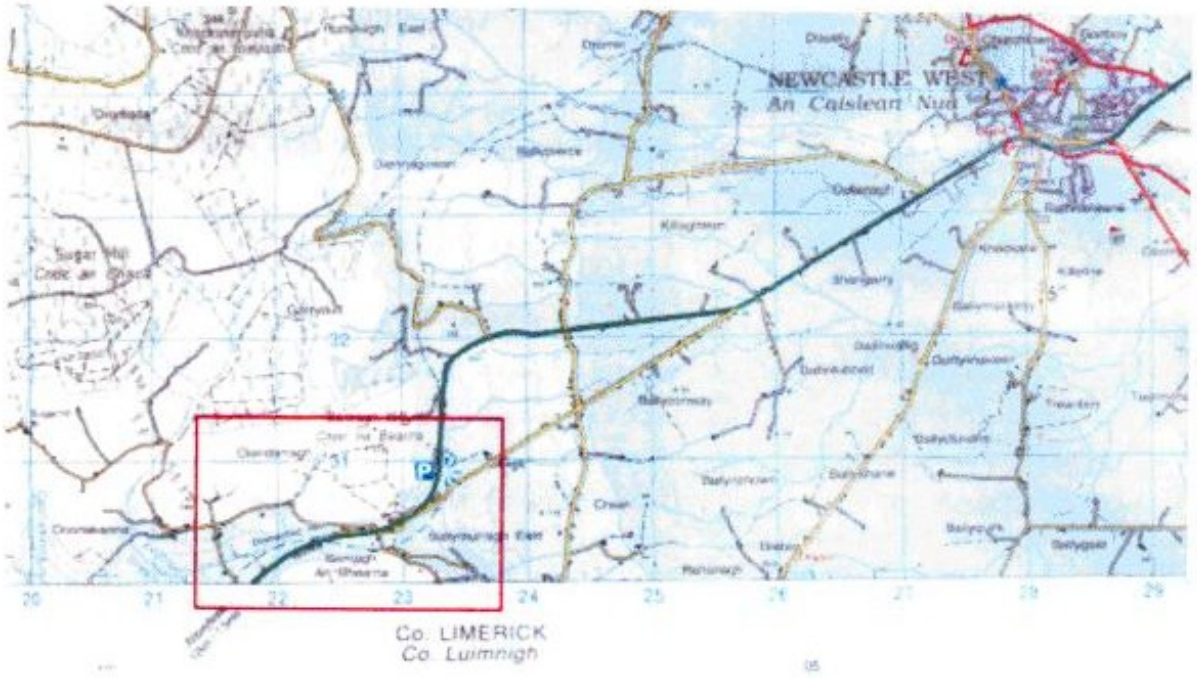
The reports can be read separately. I have visited the site and concur with the opinions and suggestions made by the authors of the reports. I was also impressed by the fact that the site is not derelict, nor the site of dumping, for example. Barnagh Tunnel and its environs is now a most valuable local asset. Because the railway was abandoned about thirty years ago, the site has been able to develop a unique local ecology. Although there are no major rare species present, the site now comprises an assemblage of species which should be carefully preserved and nurtured. However some ecologically sound management should occur to prevent, for example, total invasion by brambles, in places. Some seedling alien species (Sitka spruce) should be removed. The educational potential of the site might be developed: this could include from local ecology through to railway history. In addition to the management of the former track site, owned by Córas Iompair Eireann, it would be nice to see the full restoration of the former station building which is privately owned.

The individual experts make recommendations for the management and development in their reports. Conor Kelleher's suggestions ;or the development of the tunnel as a roosting site for bats seems very interesting and worth serious consideration. He cites similar situations where tunnels were developed successfully elsewhere in Europe. West of the tunnel, drainage has been impeded, apparently by road building. This means that there is now a lot of water at the base of the gorge. This area is referred to in the Reynolds' report on plants. On the one hand, it is desirable to improve drainage to allow pedestrian access. On the other hand, an interesting habitat has developed here. It may be possible to design a raised wooden gangway in this area.

Otherwise, I support the view that the Barnagh Tunnel should be more available to the members of the public. It is interesting and close to the main road. However some ecologically-sound development of the access is needed before "the average" member of the public will be enticed to enter and stroll along the former rail track. I believe the group of interested locals calling themselves the Great Southern Trail Ltd. have organized this report in a professional manner and I recommend it to you. I also believe that they are keen to take on board the suggestions made by the experts in the report and that they are motivated to preserve both the ecological habitat structure and the architectural heritage in the area.

John Breen BSc PhD
Senior Lecturer, Environmental Biology
University of Limerick
26 November 2002

(a)



(b)

Figure 1. The location of Barnagh Tunnel, (a) Showing location including Newcastle West (b) area of red rectangle enlarged. Based on the Ordnance Survey, Discovery Series No. 64.

Survey of plants in the Barnagh Tunnel area, south-west of Newcastle West, Co. Limerick (grid reference R2230, R2330).

Report prepared for Great Southern Trail Limited
by
Mrs Sylvia Reynolds M.Sc. and Dr Julian Reynolds
115 Weirview Drive, Stillorgan, Co. Dublin (phone 01-2887856)

Sylvia Reynolds is the Botanical Society of the British Isles plant recorder for Co. Limerick (since 1983), and has published numerous plant records for the county. In response to an application to The Heritage Council for funding to clear the approaches and interior of the Barnagh Railway Tunnel, Great Southern Trail Ltd. were requested to first carry out an ecological survey of the site. This report on the plants forms part of that ecological survey. We wOLlld like to thank Mr Liam O'Mahony for guiding us on our first field visit.

Introduction

The area surveyed for this report was the stretch of abandoned railway line from the access point near the car park/viewpoint on the main road about 6 km south-west of Newcastle West to the old railway station west of Barnagh tunnel. To record as complete a list of vascular plants as possible, the site was visited on 4 May. 7 July and 22 August 2002. The stretch of railway line is a little over 1 km in length. Going from east to west, there are several fairly distinct sections: (1) the raised railway bank, (2) the overgrown wooded section with stream on one side, *(3)* the deep railway cutting on the east side of the tunnel, (4) the Barnagh tunnel. (5) the deep railway cutting on the west side of the tunnel, and (6) the cutting as it becomes progressively shallower towards the old station (Sketch map). The main habitat features and plants found along each section are described below. This is followed by a general evaluation. recommendations and a list of vascular plants. Scientific and common names follow Scannell & Synnott (1987) *Eensus Catalogue of the Flora of Ireland.*

Habitats and plants

There is a panoramic view from the car park eastwards towards the Galty Mountains (Photo 1). The steep descent from the car park to the railway bank has a litter and sanitation problem. It was unstable underfoot and very overgrown on the first two visits, but this had been improved by 22 August. However, two trees lay across the start of the level path on that date, and extensive bulldozing was noted along the edge of the adjacent field. The path passes first through Willow scrub, with some Elder *(Sanibucus nigra)* and Nettles *(Urtica dioica).*

(1) The **raised dry embankment** is surfaced with limestone chippings, and in places falls away steeply to sparsely vegetated 'scree' slopes. On either side of the central path, shallow lime stone grassland has developed, with a limited but characteristic range of species (Photo 2). This semi-natural habitat is quite different from the surrounding Limerick countryside. Typical species found here are Oxeye daisy *(Leucanthernum vulgare),* Mouse-ear hawkweed *(Hieraciurn pilosella),* Wild strawberry *(Fragaria i'esca),* Common bird's-foot-trefoil *(Lotus corniculatus),* Fairy flax *(Linum catharticum),* Common centaury *(Centaurium ervthraea),* Quaking-grass *(Briza media),* Field wood-rush *(Luzula campestris)* and Rustyback fern *(Ceterach ofticina ruin).* In July the Oxeye daisies were in flower and Wild strawberries were in fruit. One patch of Spotted-orchids *(Dactviorhiza sp.)* was seen in July, while in August there were many plants of blue-flowered Devil's-bit scabious *(Succisa pratensis)* as well as the smaller white-/mauve-flowered Eyebright *(Euphrasia sp.).* Willow bushes (mainly *Salix cinerea)* and Gorse (mainly *Ulex europaeus)* with Brambles *(Rubus fruticosus)* and Honeysuckle *(Lonicera peric[vmenum)* were encroaching onto the central path. In one area, there are a number of active anthills (Photo 3) covered with a variety of plants including Germander speedwell *(Veronica chamaedrys)* and Lesser trefoil *(Trifo/iuin dubium).*

(2) Between the open raised bank and deep cutting on the east side of the tunnel is **scrub woodland** where the path is nearly closed over with shrubs and small trees including Rusty willow *(Sa/ix cinerea),* Ash *(Fraxinus excelsior),* Hawthorn *(Crataegus mono gina)* and Sycamore *~Acer pseudoplatanus).* A little stream flows along one side of the path, bordered mainly by liverworts. Growing in this damp and more shaded area were, for example. Scaly male-fern *(Drvopteris affinis),* Soft shield-fern *(Polvstichum setiferum),* Hedge woundwort *(Stachvs sylvatica),* Remote sedge *(Carex remota)* and False brome grass *~IBrachvpodium sylvaticunO.*

(3) The **deep cutting** through acidic shale rocks on the **east side** of the tunnel has vegetated steep rocky sides (Photo *5),* topped with Gorse and in one place a fairly large Pedunculate oak *(Quercus robur).* The rock surfaces were wet in places throughout the summer, and supported a luxuriant growth of bryophytes, both mosses and liverworts. Flowering plants such as Oxeye daisy *(Leucanthernum vu/ga re)* and Sheep's sorrel *(Rumex acetose/la)* as well as a patch of Wild turnip *(Brassica rapa)* grew on the drier ledges. A conspicuous feature were the clumps of ferns, mainly Scaly male-fern

(Drvopteris affinis) and Lady-fern *~Athyriurn fiuix-femina)* along the bottom edges of the cutting. Polypody (Polypodium vulgare s.s.), Maidenhair spleenwort *(Asp/en iuni trichomanes)* and smaller amounts of Black spleenwort (A. *adiantum-nigrum)* grew on the rocks. The lichen Peltigera membranacea (identified by Howard Fox of the National Herbarium at Glasnevin, Co. Dublin) was found here too. In May, the yellow flowers of Golden-saxifrage *(Chrysospleniimnz oppositifoiium)* were particularly noticeable on damp substrates here and elsewhere (Photo 4). One patch of Wild raspberry *(Rubus idae us)* produced fruits by August.

The floor of the cutting was somewhat wet and muddy in places where drainage was impeded. Characteristic plants were Water-cress *(Nasturtium officinale,* and possibly the hybrid with *N. microphvl/um),* Floating sweet-grass *(Glyceriafluitans),* Square-stalked St. John's-wort *(Hvpericum tetrapterwn),* Great willowherb *(Epilobiurn hirsuturn)* and in one place a dense stand of Water figwort *(Scrophularia auriculata).*

(4) The stonework surrounding the **tunnel entrances** supported several clumps of ferns, including Hart's-tongue *(Phvllitis scolopendrium)* on the east side and Lady-fern *~7Athyrium fihix-fernina)* on the west side, as well as Golden-saxifrage and Herb-Robert *(Geranium robertian urn).* There were relatively few plants inside the tunnel, and then only occulTing near the openings.

(5) In the **deep rock cutting** on the west side of the tunnel (Photo 6), the most striking feature of the cliff-like and often dripping rocky sides was the luxuriant growth of mosses and liver worts and of Golden-saxifrage, particularly on the north-facing side. Scaly male-fern and Lady-fern grow in large clumps. There were also a few small plants of Royal fern *(Osmunda rega/is)* and scattered Common dog-violet *(Viola rix'iniana).* Further along, Ling heather *(Ca/luna x'ulgaris)* and Bilberry *(Vaccinium myrtillus)* grow on the sides with other acid-loving plants such as Hard-fern *(Blechnum spicant),* Heath bedstraw *(Galium saxati/e),* Slender St. John's-wort *(H~pericum pu/c JirunO,* a few patches of *Sphagnum* moss and the relatively uncommon Fir clubmoss (Huperzia selago) (Photo 7).

Drainage across the floor of the cutting was impeded throughout this area (Photo 8), with a shallow stream containing abundant Common duckweed *(Lemna minor)* flowing towards the

tunnel. The variety of plants here was greater than that on the damp floor of the east side, and included the sedges *Carex demissa, C. echinata* and *C. disticha,* Common cottongrass *(Eriophorum angustifo/ium),* Heath wood-rush *(Luzula in u/tiflora),* Bulbous rush *(Jun cus bulbosus),* Ragged-Robin *(Lye/in is fibs-eu* cu/i), Cuckooflower *(Cardamine pratensis),* Lesser spearwort *(Ranuncu/us flamin u/a),* Marsh thistle *(Cirsium pa/ustre).* Hoary willowherb *(Epi/obium parviifiorum),* Marsh wi llowherb *(F. pa/ustre),* Brooklime *(Veronica beecabunga)* and Spotted-orchid *(Dactv/orhiza* sp.).

(6) The sides **of the cutting** became progressively less high, less shaded and drier towards the old railway station, with the Heather and Bilberry giving way to Gorse, Rusty willow, Hawthorn and Brambles. The floor of the cutting was very wet and spongy underfoot at each visit, and was covered by dense vegetation including Rushes *(Juncits effusus* and *J. acuti*

florusX grasses such as Yorkshire-fog *(Holcus /anatus),* Creeping soft-grass *(H. mo//is)* and Floating sweet-grass *(GR'ceria fiuitans),* and Horsetails *(Equisetum am-reuse and F. pa/ustre).* There was one small patch of the fairly uncommon Smooth-stalked sedge *(Carex /aevigata).*

Around the former station (Photo 9), originally planted shrubs of Wilson's honeysuckle *(Lou icera nitida)* and Escallonia *(Esca//on ia macrant/ia)* have become nearly impenetrable thickets, and Montbretia *(Tritonia x crocosmiiflora)* is well established. However, the former platform area was very attractive in July with native Spotted-orchids *(Dactylorhiza sp.)* and Imperforate St. John's-wort *(Hypericuni maculatum).* Just beyond the station, the railway line is completely blocked by dumped soil.

Evaluation

The stretch of abandoned railway line surveyed contains two distinct and contrasting habitats linked by a transitional area, all showing little sign of disturbance. The exposed and open railway bank with its limestone grassland flora has the most colourful-flowered plants. It is linked by an overgrown section of young woodland to the shaded cuttings on either side of Barnagh tunnel – quite unusual with large ferns and luxuriantly-growing bryophytes. Some of these features had already been noted in an earlier report (Gordon D'Arey, 1992). Apart from

the plant (and animal) interest, the raised bank affords great views across the county towards the Galtees, contrasting with the cutting which is quite hidden from the nearby main road (Photo 10).

Over the three visits, about 140 vascular plant species were recorded, the majority of them native flowering plants (see list below). There were hardly any weedy species. indicating the lack of disturbance, and only a small number of non-natives such as occasional plants of New Zealand willowherb *(Epilobium brunnescens)* on the damp rock faces, self-sown Sitka spruce *(Picea sitchensis)* on the raised bank near the parent trees, a few Sycamore *(Acer pseudoplatanus)* and Beech *(Fagus SN'lvatica)* trees, Butterfly-bush *(Buddleja davidii).* Cotoneaster *(Cotoneaster* sp., probably bird-sown) and Wilson's honeysuckle *(Lonicera nitida)* which had probably come from the old station. Sycamore is now a well established member of the Irish flora.

The railway cutting provides a haven for species which can no longer flourish in the surrounding rushy pastureland. Although mainly flowering plants and ferns were recorded, it is obvious that the cutting is an important site for bryophytes (liverworts and mosses).

Recommendations

One of the main attractions of this stretch of the railway line is its wildness. This provides an attractive wilderness experience for walkers, but the intact habitats also have considerable educational value. Any development, whether for amenity or educational purposes, should therefore cause as little disturbance as possible. On no account should herbicides be used in any clearing work, nor should plants or seeds be introduced. More specific recommendations are as follows:

- The approach from the car park needs careful consideration if a safe and attractive entry point is to be provided.

On the raised bank the limestone chippings are essential to maintain the characteristic vegetation. Woody plants such as Willows, Gorse and Brambles can be cleared back, and for aesthetic reasons, the cleared material should be removed entirely rather than dumped over the edges. The self-sown Spruce trees near the bridge over the road along this section should be removed. Care should be taken not to disturb the anthills or their distinctive vegetation.

In the more wooded transition area between the bank and cutting, Willows and other small trees or shrubs can be cut back or removed where they impede the path. The stream and its banks should be left alone.

Better defined drainage can be created in the cutting on the east side of the tunnel, and the path might be raised somewhat using local shale stone (not limestone) chippings. Much of the vegetation in the middle would have to be removed and judicious clearing would allow the stream to run along one side. The stream is an interesting feature, containing snail leeches (Glossiphonia species), cased caddis larvae, and the endemic Irish shrimp Gammarus duebeni. The vegetation on the rocky sides should not be touched.

The floor of the tunnel could be similarly raised and made less muddy. but the stonework out side both entrances should not be cleaned of its vegetation.

To make a useable and drier path in the deep cutting on the west side of the tunnel, the construction of a slightly raised wooden boardwalk could be considered, together with better-defined drainage. The clumps of ferns along each side are a distinctive feature and should be left. The vegetation on the wet rocky sides, including the mosses and liverworts, should not be cleared at all. To retain and maintain this interesting habitat, it is also important that the water dripping down is not impeded in any way.

The final section from the deep cutting to the station would also require improved drainage, continuance of the pathway, and some clearance of vegetation from the floor of the cutting. As elsewhere, the cleared material should be removed from the site.

In conclusion, from the botanical point of view the natural and semi-natural habitats along the stretch of abandoned railway line on either side of the Barnagh tunnel are well worth preserving, and also worth managing, in a controlled way, for educational purposes and for the enjoyment of the public.

Report completed 12 September 2002.

List of vascular plants found in the Barnagh tunnel area on 4 May, 7 July and 22 August, 2002.

Plant names follow Scannell & Synnott (1987) *Census Catalogue of the Flora of Ireland.*

* = not native in Ireland; none of these species were frequent at this site.

Trees and shrubs:
* *Acer pseudoplatanus* (Sycamore; now part of the established Irish flora)
* *Buddleja davidii* (Butterfly-bush)
* *Cotoneaster sp.* (Cotoneaster)
Crataegus mono gvna (Hawthorn)
* *Fagus sylvatica* (Beech)
Fraxinus excelsior (Ash)
* *Lou icera nitida* (Wilson's honeysuckle)
* *Picea sitchensis* (Sitka spruce)
Q*uercus robur* (Pedunculate oak)
Salix aurita (Eared willow)
Salix cinerea (Rusty willow)
Sambucus nigra (Elder)
Ulex europaeus (Gorse)
Ulex gal/li (Autumn gorse)

Other woody' plants:
Calluna vulgaris (Heather, Ling)
Hedera helix (Ivy)
Hvpericurn androsaen'ium (Tutsan)
Lou icera periclvmen urn (Honey suckle)
Rosa can ma agg. (Wild rose)
Rosa tomentosa agg. (Downy-rose)
Rubus fruticosus (Bramble)
Rubus idaeus (Raspberry)
Vaccinium mvrtillus (Bilberry)

Herbaceous plants, excluding grasses, sedges and rushes (see below):
Achillea inillefoliu,'n (Yarrow)
Ange/ica svh'estris (Wild angeli ca)
Be//is I)erellllis (Daisy)
Brassica rapa (Wild turnip)
Cardamine flexuosa (Wavy bitter-cress)
Cardamine pratensis (Cuckooflower)
Centaurea nigra (Common knapweed)
Ceniaurium eryth raea (Common centaury)

Cerastium fontanuin (Comm on mouse—car)
Chn'sosplen lain oppositifoliutn (Golden- saxifrage)
Cirs jam pa lustre (Marsh thistle)
Crepis capi/laris (Smooth hawk' s-beard)
Dactvlorhiza sp. (Spotted-orchid)
Digitalis purpurea (Foxglove)
Epilobium brunnescens (New Zealand willowherb)

Epilobium hirsutuni (Great willowherb)
Epilobium montanum (Broad-leaved willowherb)
Epilobium palustre (Marsh willowherb)
Epilobium parv'iflorwn (Hoary willowherb)
Euphrasia sp. (Eyebright)
Fragaria vesca (Wild strawberry)
Galium aparine (Cleavers)
Ga/iw'n pa lustre (Common marsh-bedstraw)
Galium saxatile (Heath bedstraw)
Geranium robertianum (Herb-Robert)
Heracleum ***sphondx'lium*** (Hogweed)

Hieraciu;n pilosel/a (Mouse-ear hawkweed)
Hypericum maculatunz (Imperforate St. John' s-wort)
Hvpericum pulch rum (Slender St. John's-wort)
Hypericum tetrapterum (Square-stalked St. John's-wort)
Hvpochoeris radicata (Cat's-ear)
Lapsana comm un is (Nipplewort)
Lathyrus pratensis (Meadow vetchling)
Lemna minor (Common duckweed)
Leon todon autumnalis (Autumn hawkbit)
Leucanthemum vulgare (Qxeye daisy)
Lin urn catha rticum (Fairy flax)
Lotus cormcu/atus (Common bird' s-foot-trefoil)
Lye/rn is flos-cuculi (Ragged-Robin)
Medicago lupulina (Black medick)
Nasturtium officinale (Water-cress; hybrid with N. microphyllum probably there too)
Oxalis acetose i/a (Wood-sorrel)
Piantago lanceolata (Ribwort plantain)
Poten ti/ia reptans (Creeping cinquefoil)
Potentilia sterilis (Barren strawberry)
Prirnu/a sp. (Primrose or Cowslip; leaves only in one place)
Prune/la x'ulgaris (Selfheal)
Ranunculus acris (Meadow buttercup)
Ran unculus flea rio subsp. flea rio (Lesser celandine)

Rcrnunculus flainmula (Lesser spearwort)
Ran unculus repens (Creeping buttercup)
Rumex acetosella (Sheep's sorrel)
Rumex acetosa (Common sorrel)
Scrophuiaria auricuiata (Water figwort)
Scroph u/aria nodosa (Common figwort)
Senecio jacobaea (Common ragwort)
Soneh us oleraceus (Smooth sow—thistle)
Stachvs s~'lx'atica (Hedge woundwort)
Ste/la na a/sine (Bog stitchwort)
Ste//aria graminea (Lesser stitchwort)
Succisa pratensis (Devil's-bit scabious)
Taraxacun'i. officinale (Dandelion)
Trijirdium dub ium (Lesser trefoil)

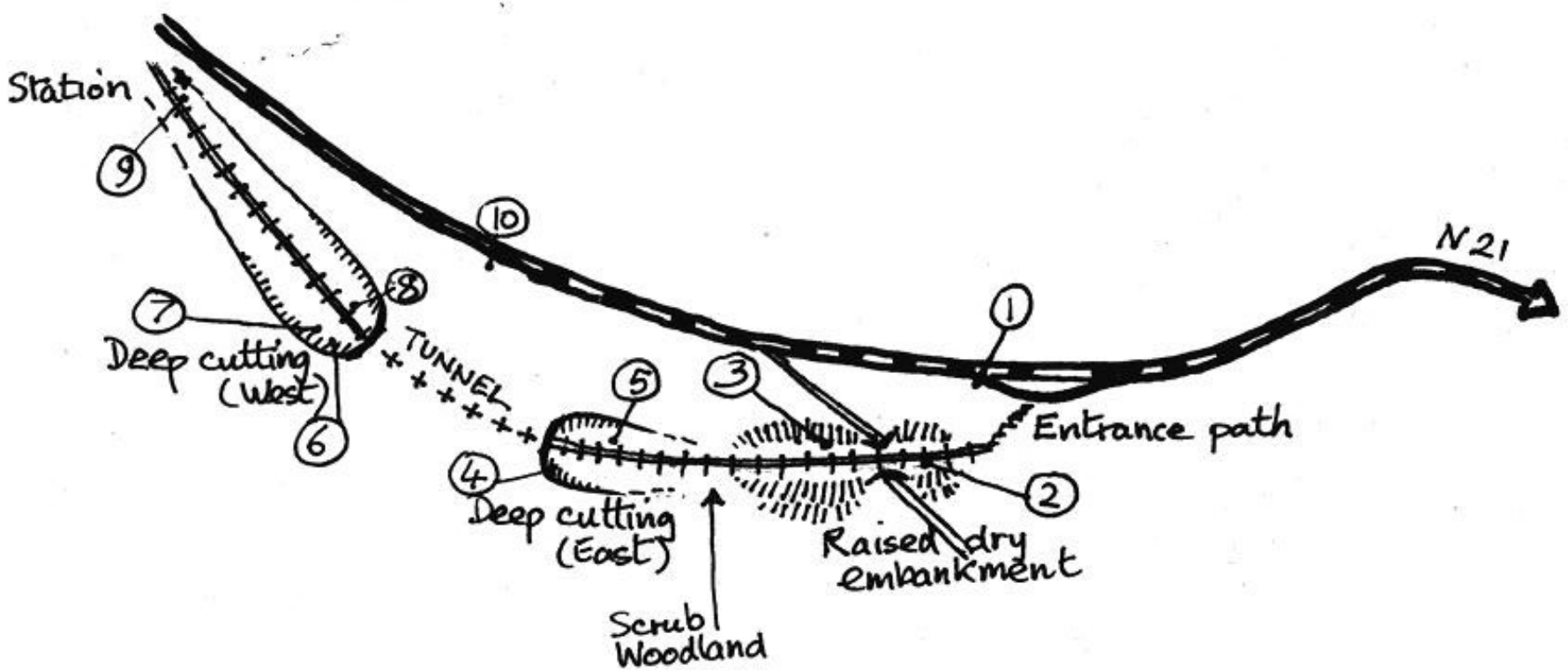
Trifolium pratense (Red clover)
Trifolium repens (White clover)
Tussilago farfara (Colt's-foot)
Urtica dioica (Common nettle)
Valeriana officinalis (Common valerian)
Veronica beccabunga (Brooklime)
Veronica chamaedrvs (Germander speedwell)
Vicia sativa (Common vetch)
Vicia sepium (Bush vetch)
Viola riviniana (Common dog-violet)

Grasses, sedges and rushes:
Airci caryophyllea (Silver hair-grass)
Anthoxanthum odoratum (Sweet vernal-grass)
A rrhenatherum elatius (False oat-grass)
Brachypodiuni sylvaticum (False brome)
Briza media (Quaking-grass)
Carex demissa (Common yellow-sedge)
Carex disticha (Brown sedge)
Carex echinata (Star sedge)
Carexflacca (Glaucous sedge)
Carex lae v'igata (Smooth- stalked sedge)
Carex remota (Remote sedge)
Carex svlvatica (Wood-sedge)
Cvnosurus cristatus (Crested dog's-tail grass)
Dact)'lis glomerata (Cock's-foot grass)
Eriophorum angustifoliuni (Common cottongrass)
Festuca rubra (Red fescue)

Gkvceria flu hans (Floating sweet-grass)
Holcus lanatus (Yorkshire-fog)
Holcus mo//is (Creeping soft-grass)
Juncus acutflorus (Sharp-flowered rush)
Juncus bulbosus (Bulbous rush)
Juncus con glomeratus (Compact rush)
Juncus effusus (Soft rush)
Juncus inflexus (Hard rush)
Luzula campes Iris (Field wood-rush)
Luzula multiflora (Heath wood-rush)
Poa pratensis (Smooth meadow-grass)
Poa trivia/is (Rough meadow-grass)

Ferns, horsetails and clubmoss:
Aspleniwn adiantum -nigrum (Black spleenwort)
Asp/en ium [rich oinanes subsp. quadriv'alens (Maidenhair spleenwort)
Athx'rium filix-femina (Lady-fern)
Blechnum spicant (Hard fern)
Ceterach officinarum (Rustyback fern)
Dtyopteris affin is (Scaly male-fern)
Drvopteris dilatata (B road buckler-fern)

Dry opteris fihix-rnas (Male-fern)
Equiseturn arv'ense (Field horsetail)
Equisetum paiustre (Marsh horsetail)
Huperzia selago (Fir clubmoss)
Osmunda regalis (Royal fern)
Phyllitis sco/opendriumn (Hart's-tongue fern)
Polypodiumn i'ulgare s.s. (Polypody)
Polystichum setife rum (Soft shield-fern)
Pteridium aquilinum (Bracken)



Sketch Map of Barnagh Tunnel, showing habitats and locations of photographs (numbered)

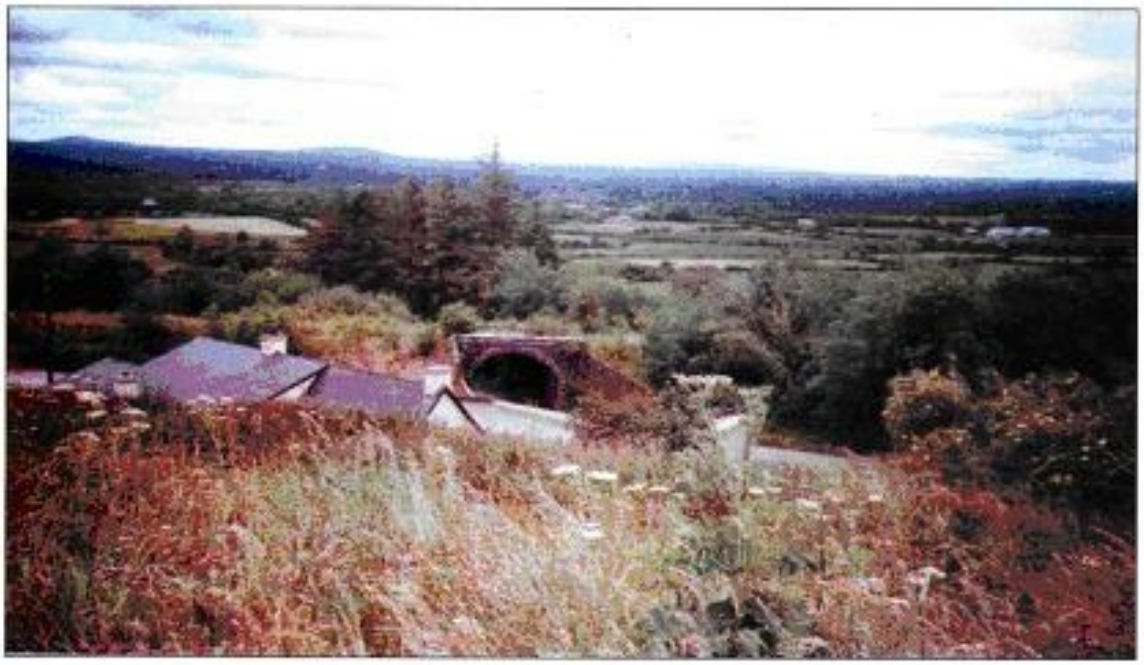


Photo 1 - View eastwards across raised embankment, showing road underpass.

Photo 2 - General view of raised embankment, showing gorse and oxeye daisies.

Photo 3 - Ant hill on embankment

Photo 4 - Wet Rock face with golden saxifrage.

Photo 7 - Fir clubmoss on wet rocks in cutting on west side of tunnel.

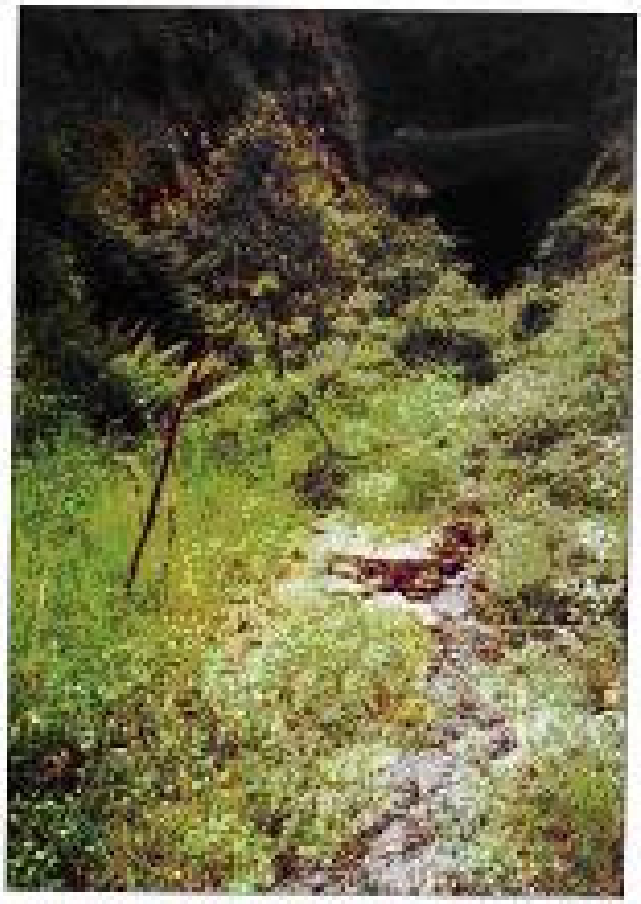


Photo 8 - Impeded drainage on floor of cutting just west of tunnel.

Photo 9 - Former station and shallow cutting, looking eastwards towards the tunnel.

Photo 10 - View across deep cutting on west side of tunnel (looking southwards from the main road)

BAT SURVEY OF BARNAGH RAILWAY TUNNEL, GREAT SOUTHERN TRAIL, CO. LIMERICK.

on behalf of Great Southern Trail Ltd.

by Conor Kelleher .14th August 2002

CONTENTS

1. SUMMARY

The disused railway tunnel at Barnagh, Co. Limerick, was surveyed for bat activity on 27th of July and 12th of August 2002.

The survey entailed inspecting/assessing the structure for bat use and, using heterodyne detectors, assessing bat activity near the site.

The weather during the survey was good; with light winds, sunshine and an average of 13 degree temperatures. Such conditions would aid bat activity.

A brown long-eared bat night roost was noted within the tunnel in July but use during the summer months by other species may be occasional and hence missed during a short inspection.

Several bats of three species were detected foraging or commuting adjacent to the tunnel during the survey in August. The commonest of these was the common pipistrelle, the others being soprano pipistrelle and Leisler's bat.

Another species which could be expected to be present over the nearby river but was not detected during the present survey is Daubenton's bat. Whiskered, Natterer's and lesser horseshoe bats might also be expected to occur in the area.

The habitat adjacent to the site, along the route of the old track, consists of a wet cutting with much willow growth. The cutting forms a sheltered area which allows the build-up of insects and hence is an excellent site for foraging bats.

The tunnel is in good condition and would be favoured by bats as a winter retreat, if enhanced. The structure's current open state is not conducive to stable temperatures and so the it would presently be of limited use to these animals.

Suggestions for enhancements to the tunnel to increase its value as a hibernation site form part of this report.

2. INTRODUCTION

2.1 **Bats**

The bat is the only mammal that is capable of true flight. There are nearly 1000 species worldwide. Representing almost a quarter of all mammal species. There are 35 species in Europe. In Ireland, 9 species of bat are currently known to exist. These are classified into two families, the Rhinolophidae (Horseshoe bats) and the Vespertilionidae (Common bats).

2.2 **Prey**

All the European bat species feed exclusively on insects. Vast numbers are consumed each night. A tiny Pipistrelle, weighing only 4 to 8 gramrnes, will eat up to 3000 insects *every* night. This incredible consumption ensures a build up of fat in the bat's body to allow it to survive the winter deep in hibernation.

2.3 **Breeding and longevity**

Irish bats can produce one young per year but, more usually, only one young is born every *two* years (Boyd & Stebbings, 1989). This slow rate of reproduction inhibits repopulation in areas of rapid decline. Although bats have been known to live for twenty or more years, this is rare as most die in their first and the average lifespan, in the wild, is four years.

2.4 **Threats**

All bat species are in decline as they face many threats to their highly developed and specialised lifestyles. Untold numbers of bats have succumbed to poisons used as woodworm treatments within their roosting sites (Racey, P. A. & Swift, S. 1986). Agricultural intensification, with the loss of hedgerows, treelines, woodlands and species rich grasslands have impacted greatly on their survival. Their habitual roosting sites in caves, mines, trees and disused buildings are constantly being destroyed. Hibernation sites are quanied or filled in. Summer roosts are prone to disturbance from vandals. Agricultural pesticides accumulate in their prey, reaching lethal doses (Jefferies, D. J. 1972). Chemical treatments in cattle production sterilise dung thus ensuring that no insects can breed within it to be fed upon by bats. Likewise, river pollution, from agricultural runoff, decimates aquatic insect populations. Road building, with the resultant loss of foraging and roosting sites is a significant cause in the reduction of bat populations across Europe.

2.5 **Extinction**

As recently as 1992. our UK neighbours lost their largest species of bat, the greater mouse-eared *Myotis invotis,* when it became the first mammal to become extinct in Britain since the wolf in the 18th century.

3. LEGISLATION

3.1 Wildlife Act 1976

In the Republic, under Schedule 5, of the *Wildlife Act 1976,* all bats, and their roosts, are protected by law. It is unlawful to disturb either without the appropriate licence. The *Wildlife (Northern Ireland)* Order 1985 serves the same purpose north of the border. The Act has recently been amended 2000.

3.2 Bern and Bonn Conventions

Ireland has also ratified two international wildlife laws pertaining to bats, these are known as the ~Bern' and 'Bonn' Conventions.

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), in relation to bats, exists to conserve all species and their habitats.

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries.

3.3 EU Habitat and Species Directive

Also, the *EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992),* seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken.

4. OBJECTIVE

The objective of this survey was to:

- investigate the tunnel for signs of bat use,
- identify any potential bat species using the structure and
- suggest enhancements and other measures to increase bat use of the site.

5. THE SPECIES

Eight of the nine known Irish species of bat can be expected to occur in the vicinity of Barnagh Tunnel. The following brief notes on each will serve to illustrate their diversity and importance.

5.1 Common or bandit pipistrelle Pipistrellus pipistrellus

This species was only recently separated from its sibling, the soprano or brown pipistrelle *Pipistreiius pygmaeus,* which is detailed below (Barratt, E. M., Deauville, R. Burland. T. M., Bruford, M. W., Jones, G., Racey, P. A. & Wayne, R. K., 1997). The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features like hedgerows and treelines as well as within woodland. It rarely uses tunnels for hibernation.

5.2 Soprano or brown pipistrelle Pipistrellus pygmaeus

The soprano pipistrelles echolocation calls peak at 55 kHz. The difference in echolocation calls between the pipistrelle species makes them easy to identify. The pipistrelles are the smallest and most often seen of our bats. They fly at head height, taking small prey such as midges and small moths. Summer roost sites are usually in buildings but tree holes and heavy ivy are also used. Roost numbers can exceed 1500 animals in mid-summer. Like its sibling, this species rarely uses tunnels for hibernation.

Both the above species are considered as *internationally important.*

5.3 Brown long-eared bat Plecotus auritus

This species of bat is a ~gleaner'. It hunts amongst the foliage of trees and shrubs, hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey.

Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach. Hence, it needs oversize ears to hear the returning echoes.

As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked.

The species is often found in tunnels.

The species is considered as *International v Important.*

5.4 Leisler's bat *Nyctalus leisleri*

This species is Ireland's largest, with a wingspan of up to 320mm. It is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level.

Leisler's bat feeds on moths, caddis-flies and beetles. The echolocation calls are sometimes audible to the human ear being around 15kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and Ireland holds the largest national population. It is seldom found in tunnels.

The species is considered as *Internationcillv important.*

5.5 **Whiskered bat** Myotis mystacinus

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees.

Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. They frequently make use of underground sites, including railway tunnels, for hibernation.

The status of the species has not been determined but it is classed as *Threatened* and is listed in the *Irish Red Data Book.*

5.6 **Daubenton's bat Myotis *daubentonii***

This bat species feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs. It can also be found foraging in woodlands.

Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water. It feeds on caddis flies, moths, mosquitoes, midges etc.

It is often found roosting beneath bridges or in tunnels. It also makes use of hollows in trees. It is one of the most common species found hibernating in disused railway tunnels.

It is classed as *Internationalb' Important.*

5.7 **Natterer's bat *(Myotis nattereri,)***

This species has a slow to medium flight, usually over trees but sometimes over water. They follow hedges and treelines to their feeding sites, consuming flies, moths and caddis-flies.

Natterer's bats are frequently recorded in underground hibernation sites, including tunnels, in winter but there are few records of summer roosts. Those that are known are usually in old stone buildings but they have been found in trees and bat boxes.

Like the previous species, the status of the Natterer's bat has not been determined but, it too, is classed as Threatened and is listed in the Irish Red Data Book.

5.8 Lesser horseshoe bat *(Rhinolophus hipposideros)*

This species is the only representative of the Rhinolophidae family in Ireland. It differs from our other species in both habits and looks, having a unique noseleaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body.

Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. They often carry their prey to a perch to consume, leaving the remains beneath as an indication of their presence.

The echolocation call of this species is of constant frequency and, on a bat detector, sounds like a melodious warble.

This species is also considered as *Internationally Important* and it is an Annex II species under the *EC Habitats Directive 1992.* It readily occupies disused railway tunnels.

6. BAT SURVEY

6.1 Assessment of Barnagh Tunnel for bat use

This structure offers much to bats seeking a safe roosting site. There is an expanse of crevices and cracks in which these animals can secrete themselves.

The brick and stone within the four internal alcoves also offer crevices and fissures. The proximity of the local river and nearby trees would also aid bats in commuting to and from the structure.

At present, the tunnel is open at both ends. This ensures that airflow is constant and uninhibited causing large variations in the internal temperatures. This effect would be a serious deterrent to bats hoping to use the site for hibernation. Bats prefer stable temperatures when hibernating and, with the suggested enhancements as given later in this report, the internal temperature regime can be adjusted accordingly to offer bats exactly what they need.

The humidity within the tunnel is high which also suits bats as they need moisture to prevent dehydration within the winter months.

6.2 Survey constraints

6.2.1Time

The limited time given to a detector survey on-site would serve as a ‘snap-shot’ of overall bat activity. A prolonged survey period would, undoubtedly, lead to more records.

The tunnel would be used by bats during the winter season more so than in the summer months so the absence of the animals within the structure during the present survey was not surprising.

6.2.2 **Detector** sensitivity

Depending on the sensitivity of the detector, the presence of brown long-eared bat can often be overlooked. As it is a whispering species, its presence sometimes goes unnoticed.

6.3 **Survey** methods

6.3.1Building survey techniques

When surveying a structure, all internal areas are checked, including cracks, crevices and fissures etc. The outside of the structure is viewed for possible bat access points.

As well as a visual assessment of the site, an aural and olfactory one is also undertaken. Signs of bat habitation e.g. insect remains, droppings, lack of cobwebs in certain areas, staining, grease marks etc. may be present. The usual musky bat odour can be apparent in some roosts as can the sounds of bats themselves.

6.3.2 Detector survey techniques

Both the Pettersson D200 and QMC Mini 2 heterodyne bat detectors were used during the survey as a means to determine bat activity and to identify individual bat species.

Bat passes - a continuous stream of sound from an echolocating animal - were recorded. These often included ‘feeding buzzes’ which indicate that the bat is actually feeding and catching insects as opposed to commuting.

7. SURVEY RESULTS

The survey was undertaken on the 27th of July and 12th of August 2002.

7.1 Foraging and commuting bats

The most common species detected adjacent to the site was shown to be the common pipistrelle. This species was seen feeding along the old track and along treelines and hedgerows.

The soprano pipistrelle was detected feeding within the cutting to the east of the tunnel.

One Leisler's bat was noted commuting over the site.

7.2 Tunnel

Signs of a feeding brown long-eared bat were noted within one of the alcoves in the tunnel. This is a temporary summer night roost used for feeding on large insects which cannot be consumed on the wing. It may also be used as a temporary shelter during inclement weather.

7.3 Overall indication of significance of site for bats

The tunnel is situated in an area which is frequented by bats and offers an excellent opportunity for enhancement as a hibernation site. Species most often found in underground sites during the winter months include whiskered, Natterer's, Daubenton's and lesser horseshoe bats. All these species may be expected to occur on-site as they are known in the local area (Richardson, P. 2000).

Apart from Daubenton's bat, the three species of bat which make regular use of tunnels for hibernation represent the rarest and most important of the Irish bat fauna. Lesser horseshoe bats, in particular, are under increasing pressure throughout their range and this species requires very specific circumstances for roosting both in summer and winter. The provision of a safe haven during the winter months would undoubtedly aid the local population.

The enhancement of the Barnagh Tunnel offers an excellent opportunity to highlight the conservation of bats to the public who will use the tunnel as part of the Great Southern Trail.

8. CONSERVATION AND ENHANCEMENT MEASURES

Several pro-active measures can be taken to enhance the roosting opportunities for the local bat populations. See Figure 1 for illustration of the main enhancements.

Measure 1 - partial blocking of the alcoves
The four internal alcoves should be blocked up with cavity blocks to lessen the disturbance to bats roosting within them. A minimum gap of 300mm x 100mm should be left open at the top. This will allow species like the lesser horseshoe bat to access the area behind the blocks. The blocks themselves will also offer roosting sites within their cavities for other species.

Measure 2 - partial blocking of the tunnel ends
This should be carried out as illustrated in Figure 1. However, to ensure that the tunnel can be accessible to walkers and cyclists during the summer months when the bats are absent, an access door should be included at both ends. These doors should be closed from September 30th to March 31st each year to prevent disturbance to hibernating bats.

Measure 3 - internal v'aiis for horseshoe bats
Two block walls should be added internally to provide an area of stable temperatures for lesser horseshoe bats as illustrated in Figure 1.

Measure 4 - timber planks
Lengths of timber planking should be mounted on the tunnel walls in several places. Bats will use such timbers as safe areas behind which they can roost. These should be mounted over two metres from the floor to prevent the bats being preyed upon by predators.

Measure 5 - timing of works
Enhancement works should be carried out during the summer months to prevent disturbance to any bats which may be in the tunnel in winter.

Measure 6 - crevices, cracks and fissures
Any crevices, cracks or fissures should be retained. Where re-pointing has to be undertaken for safety reasons, no pressure grouting of fissures should be undertaken without first surveying for bat occupation.

Measure 7 linear landscape features
Linear landscape features such as treelines and hedgerows adjacent to the tunnel should be retained or enhanced to offer continuous corridors for bats and other wildlife to commute to the site. -

Measure 8 - lighting
Lighting should be avoided as it has been shown to deter bat species from using sites.

Measure 9 - access
Access to the tunnel by the public should be prevented from September 30th to March 31st to avoid disturbance to the hibernating animals.

Measure 10 - display boards
A visual display board promoting bat conservation should be mounted at one of the tunnel entrances to educate visitors. This should outline a brief life-history of bats, threats to their survival and highlight the use of the tunnel as a hibernacula.

Measure]] - monitoring
Any enhancement measures incorporated into the development plan should be monitored for effectiveness over the first five years and, based on the results, alterations and/or further enhancements should be undertaken.

The bat population should be surveyed twice yearly by specialists to assess the usage of the site by these animals. These two counts should be undertaken in January and February after a cold spell of weather to ensure that maximum numbers will be present.

9. DISCUSSION

The provision and enhancement of hibernation sites has been proven to be very effective in the conservation of bats. For instance, in one case, in Wiltshire, UK, a similar tunnel was developed in the same way as outlined above with excellent results. Prior to enhancement, the tunnel held 117 bats but since the works, 678 bats have been recorded using the site. Many of these were behind timber planking on the tunnel walls.

It is estimated that bat populations across Europe have decreased by up to 60% in the last 20 years.
The lesser horseshoe bat population in Poland alone decreased by 87% between the years 1950 to
1990 (Kokurewicz T. 1990).

Being highly specialised animals, bats serve as biological indicators and are often amongst the first animal species to show signs of population change due to the activities of man. Destruction of roosts and foraging areas are the two prime reasons for the decline of Ireland's bat species. This should be borne in mind when planning and developing sites. Efforts should be made to retain known bat colonies and methods to lessen disturbance to these animals should be incorporated into any development.

The enhancement of the Barnagh Tunnel as a bat hibernation site would not alone aid local bat populations but it would also highlight the needs and usefulness of these animals to the general public and therefore dispel many of the misconceptions associated with them.

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Appendix 1

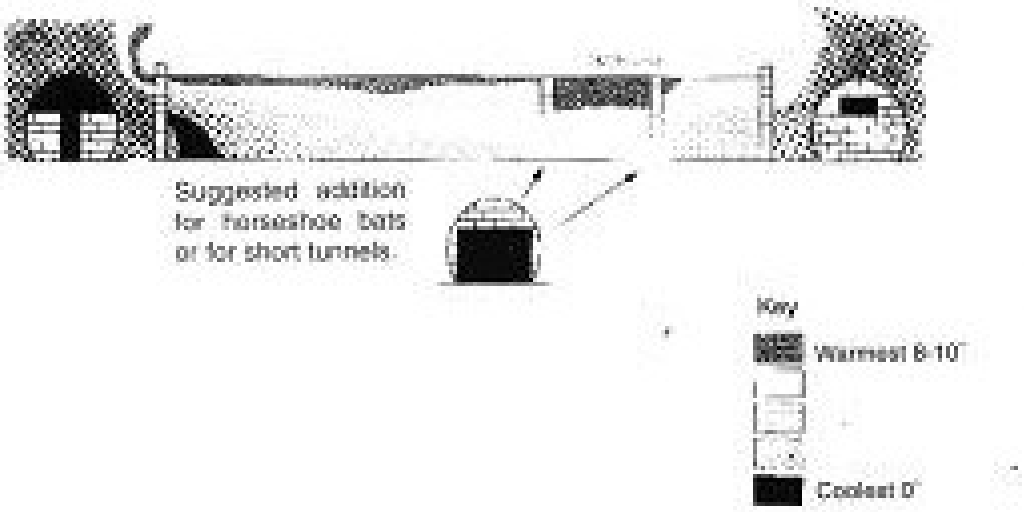

Fig 1: Use of blocks within the tunnel

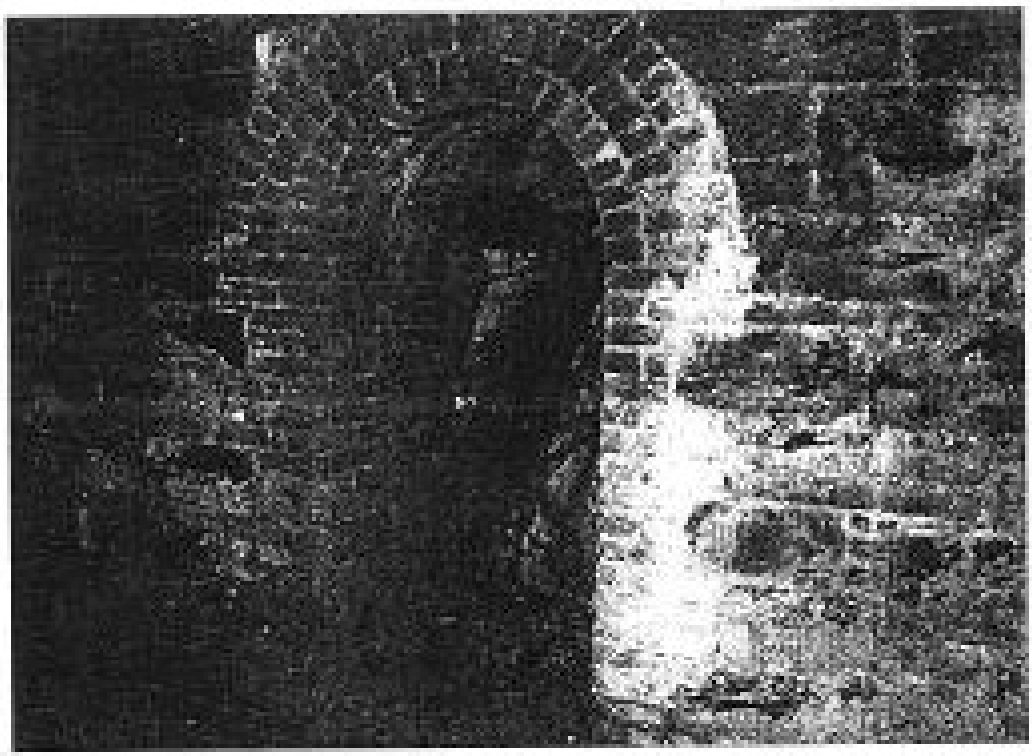

Fig 2: Internal alcove

Appendix 2 Useful contacts

Cork County Bat Group:
Spring Lane,
Carrigagulla,
Ballinagree,
Macroom,
Co. Cork
PH: 021-7339247
Mobile: 087-2980297
E-mail: conorkelleher@eircom.net

Information:

The Bat Conservation Trust,
15 Cloisters House,
8 Battersea Park Road,
London SW1 4BG
United Kingdom.

PH: 00 44 207 627 2629
E-mail: enquiries@bats.org.uk

Web site: www.bats.org.uk

The Mammals of Barnagh Tunnel, Co. Limerick
A study by Robert Imbusch BSc., MSc. on behalf of the Great Southern Trail Ltd., 2002

Introduction

The present survey is part of an environmental impact survey for a development of a walkway at the abandoned railway tunnel at Barnagh. The trail is located in west Limerick, roughly 6 km south west of Newcastle West and is located in the foothills of the Mullaghareirk Mountains. The beginning of the trail offers spectacular views across County Limerick from its elevated position.

The present study focuses on the mammals of Bamagh with the exception of the order chiroptera or bats. Due to the elusive nature of most mammal species, this group were surveyed primarily by recording the different habitat types that make up the area surrounding Barnagh Tunnel. This information was then used to extrapolate the most likely species to inhabit the area. Signs of the presence of mammals, such as droppings and tracks, were also considered on this occasion however due to the elevated, rock substrate of the first half of the walk, there was no mud patches in which tracks could be found. Although the conditions over the second half of the trail are wetter, no tracks were observed on this occasion. One possible reason for this is that this part of the trail offers little cover to larger mammals. Any tracks made by smaller mammals are likely to have been washed away by heavy rainfall.

The Habitat of Barnagh Tunnel.

The habitat of west Limerick is dominated by farmland, mostly grassland for cattle grazing and silage making. This is evident from the view across County Limerick from the beginning of the trail. Looking more closely at the habitat of the walkway at Barnagh, one can generally divide it into two halves. The first half of the walkway is elevated and well drained and surrounded to the south by farmland. The second half of the walkway consists of the tunnel itself and is ravine-like in nature and much wetter.

The farmland consists initially of improved grassland fields divided by hedgerows. As one progresses the farmland becomes less intensive and more elevated. Along the first section of the walkway and to the north the habitat consists initially of woody plants such as Gorse and Bramble. Further on the habitat to the north of the walkway is replaced by broadleaved woodland.

The second half of the walkway, west of the stream, dramatically changes as one approaches the entrance to the old railway tunnel. The walkway itself becomes much wetter in nature as one enters this ravine-like habitat. A similar habitat is found at the other end of the tunnel and the tall, steep sides gradually taper as one approaches the N2 1. The land surrounding the tunnel further west is more mountainous by nature and the habitat here is open peatland. Thus

the diverse habitat of the Barnagh trail constantly changes along its length. This diversity of habitat no doubt gives rise to a rich and diverse plant and animal community.

The Mammals of Barnagh Tunnel.

The open pasture farmland to the south of the trail is ideal habitat for rabbits and hares. There is plenty of cover given by hedgerows and earthen banks into which rabbits may burrow. These species are important prey for predators such as the fox and the stoat. These predators also feed on smaller prey items such as bank voles and wood mice. These smaller mammals are dependent on good cover as provided by the bramble and gorse area at the beginning of the trail. Bramble is also an excellent food source of blackberries for bank voles and wood mice. This habitat also provides excellent cover and plenty of insects and grubs for foraging hedgehogs and pygmy shrews.

Small mammals not only provide a large part of the diet of larger mammalian predators, they are also an important food source of raptors such as the nocturnal barn owl and the kestrel. The habitat around the Barnagh trail is also likely to be inhabited by badgers. Although the ravened entrances to the tunnel may not be particularly attractive to many mammals, the tunnel itself is undoubtedly used as a roost by bats.

Recommendations.

There are two factors to be considered regarding the impact of the proposed walkway, firstly the development of the walkway itself and secondly the subsequent increase of human passage into the area. One of the most important aspects of the walkway itself, which should be considered for conservation, is the expanse of woody undergrowth at the beginning of the trail. This mixture of bramble, gorse and fern which is presently acting as cover and a food source especially for smaller mammals should be retained as much as possible. The presence of people along the trail is likely to have a minimal impact on the mammals in the area. One reason for this is that many of the mammals mentioned above, such as the fox, the badger and the hedgehog, are nocturnal or, like the rabbit, restrict their activity to dusk and dawn, a time at which few people would be likely to be walking this stretch. Also the nature of the walkway, being elevated at the beginning and the tunnel at the second half restricts walkers to the pathway thus mmimising habitat and animal disturbance.

Conclusions.

Overall the development of the Barnagh Tunnel walkway is likely to have a minimal impact on the mammals living there. The most important consideration is the conservation of woody undergrowth on which mammals depend for cover. In fact, the greatest mammalian impact is likely to be the disturbance to bats roosting within the tunnel, a group that have been considered separately to the rest of the mammals for the purpose of this study.

Barnagh Tunnel Mammal List and Notes.

Order Insectivora

Hedgehog, *Erinaceus* europeus, Linnaeus, 1 *'158. Distribution*- Considered widespread and common in Ireland. *Habitat*- Deciduous woodland and wherever grassland meets woodland or scrub. Also found in suburban areas and gardens. *Protection*- The hedgehog is protected in the Republic of Ireland and is listed in Appendix III of the Bern Convention as a species requiring protection.

Pygmy Shrew, *Sorex minutus,* Linnaeus 1766. *Distribution*- widespread and common in Ireland. *Habitat*- Areas of heavy ground cover, deciduous and coniferous woodland and peatlands.

Protection- The Pygmy Shrew is protected in the Republic of Ireland and Northern Ireland and is listed in Appendix III of the Bern Convention as a species requiring protection.

Order Chiroptera –Bats have been considered separately for the purposes of this report.

Order Lagomorpha.

Rabbit, *Oryctoiagus cuniculus,* Linnaeus 1758. *Distribution*- Widespread and common. *Habitat*-

Short grass habitat, may be extremely common on lowland pastures. *Protection*- Classified as a pest but is an important prey species.

Irish Hare, *Lepus timidus hibernicus,* Linnaeus 1759. *Distribution*- Widespread and common. *Habitat*- Open habitats such as lowland permanent pasture. *Pvtection*- Protected in the Republic of Ireland and Northern Ireland but also classified as a game species which may be hunted under licence. Is listed as internationally important and in Appendix III of the Berne Convention as a protected species, and in Annex V of the Habitats Directive as a species which may be exploited but not to the extent that its favourable conservation status is compromised.

Order Rodentia.

Bank Vole, *Clethrionomys glareolus,* Linnaeus 1780. *Distribution*- The Bank Vole arrived in Ireland in 1964. By the early 1990's they were found all over Munster and were moving into Leinster. *Habitat*- Found where there is dense undergrowth. *Protection*- Classified as a pest but has become an important prey species of the Fox and endangered Barn Owl.

Wood Mouse, *Apodemus svlvaticus,* Linnaeus 1758. *Distribution*- Widespread in wooded areas. *Habitat*- Found almost everywhere except in water-saturated areas. *Protection*- May occasionally become a pest locally, however is an important prey species.

Order Carnivora.

Red Fox, *Vulpes vulpes,* Linnaeus 1758. Distribution- Widespread and common all over Ireland. *Habitat*- Farmland, woodland, uplands and in suburban areas. *Protection*- Although the Fox is sometimes considered to be a pest, its role as a predator is important at controlling rabbit populations and vermin such as mice and rats.

Irish Stoat, *Muste/a erminea hibernica,* Linnaeus 1758. *Distribution*- Widespread in Ireland and is locally limited only by the availability of suitable cover and sufficient food. *Habitat*- Woodland, farmland, moorland, mountain, marshes, hedgerows, dry-stone walls, heather or scree. In Ireland they are particularly associated with open woodland and rocky scrubland. *Pivtection*- The stoat is listed in Appendix III of the Bern Convention as a species requiring protection and is now totally protected in the Republic of Ireland.

Badger, *Me/es me/es,* Linnaeus 1758. *Distribution*- Common and widespread in Ireland. Habitat- Generally considered to be animals of woodland and farm mosaics. *P,vtection*- The Badger is protected in the Republic of Ireland. It is listed in Appendix III of the Bern Convention as a species requiring protection and whose exploitation must be regulated.

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The birds of Barnagh, County Limerick with notes on butterflies and dragonflies

Prepared by

Geoff Hunt, Birdwatch Ireland

for

Great Southern Trail, Ltd.

The name Barnagh comes from the Irish word “bearna” and when translated means “gap in the hill”. When the railway company surveyed the area for a possible route from Limerick to Tralee, at this point they chose the lowest route through the hills. Even that wasn’t low enough so they cut out a gorge and built a tunnel. The railway is now disused and what is left is a marvellous wildlife habitat with excellent views of the Golden Vale below. Wildlife corridors such as this are very important for the survival of many species. Left to its own devices it will support many generations to come. This in turn will benefit humankind.

On one’s first arrival you should take in the fantastic view of Limerick County.

Birds of Barnagh

Autumn and winter

During winter when the fields become flooded you will see flocks of Black Headed Gulls, Golden Plover, Curlew and Lapwings. Lapwings have a fluttery flight similar to that of butterflies. Their black and white wings are diagnostic making them easy to identify. Also at this time large flocks of our winter thrushes from Scandinavia can be seen. Mixed flocks of Redwing and Fieldfare can be as seen in their thousands in the wet grass lands, in the evening tune they often roost in the Hawthorn hedgerows. Look out for woodcock at dusk, which come down from Sugar Hill to the wet meadows to feed

Spring and summer

Our resident species of birds would have started to nest already and will soon be joined by the summer visitors. The first to arrive are the sand martins at the end of March. These species would be passing through to their nesting colonies usually in sand banks or sand pits. The last of the arrivais would be in May.

High in the skies the swallows would be joined by skylarks whose constant singing can be heard. Above the forestry at nearby Garryduff hen harriers are occasionally seen circling. Listen for the unmistakable call of the cuckoo. In the evening look out for grey heron going to roost. If you are really lucky you might by chance see a barn owl, which breeds locally.

There is a lot to look out for it is a case of knowing when and where to watch. From the lay-by scan the valley below for the kestrel, which would be hovering in the sky. Sparrowhawks can be seen hedge hopping in the fields below. Other birds to look for include wood pigeon. pheasant magpie.

rook, jackdaw hooded crow, and meadow *pipit.* Do not forget to check the hill above you. Make your way down the steep path and on to the rail track .The trees in this area have many resident species, including, robin, wren, dunnock, coal tit, blue tit, great tit, long tail tit, blackbird and song thrush. A blackcap was seen in July 2001 which is a summer visitor very thinly populated on the western side of Ireland. As you walk along the track toward the tunnel listen out for chiffchaff and willow warbler. As you enter the gorge one is usually greeted by the barking calls of the raven which has been nesting here for many years. Like the ravens of the Tower of London they too are guarding something precious. The other side of the tunnel is particularly good for finches; bullfinch greenfinch and chaffinch. A list of birds is provided in the table.

Table 1. List of birds of the Barnagh area. Liosta Eanlaith

Greenfinch	Starling	Lapwing	Smólach ceoil
Redpoll	Hooded crow	Black headed	Sacán
Chaffinch	Jackdaw	Glasán darach	Druid
Willow warbler	Raven	Deargéadan	Caróg liath
Chiffchaff	Sand martin	Rirua	Cág
Robin	Swift	Ceolaire saul	Fiach dubh
Great tit	Cuckoo	Tiuf-teaf	Gabhlán gainimh
Coal tit	Phesant	Spideog	Gabhlán gaoithe
Tree creeper	Hen harrier	Meantán mór	Cuach
Durmoek	Kestrel	Meantán dubh	Piasün
Song Thrush	Mallard	Snag	Cronán na gcearc
Fieldfare	Woodcock	Donnóg	Pocaire gaoithe

Mallard
Creabhar
Pilibin
Gull Sléibhin
Linnet
Bullfinch
Meadow pipit
Blackcap
Stonechat
Skylark
Blue tit
Long tailed tit
Wren
Gold crest

House sparrow
Rook
Blackbird
Redwing
Magpie
Swallow
House martin
Barn owl
Wood pigeon
Sparrow hawk
Merlin
Grey heron
Snipe
Curlew
Golden Plover

Gleoiseach
Corcrán coille
Riabhog mhóna
Caipin dubh
Caislin cloch
Fuiseog
Meantán gorm
Meantán earrfhada
Dreolin
Ciorbhui
Lon dubh
Deargán snaechta
Gaelbhan binne
Rücach
Snag breac

Fáinleog
Gabhlán binne
Scréachog
reilige
Colm coille
Spiorog
Meirlitin
Con réisc
Naosach
Crotach
Feadog bhui

Butterflies of Barnagh

A list of butterflies is in Table 2. Additional observations and notes are provided below.

7 May 01
Orange tips were seen feeding on lady's smock. Speckled woods were found in the trees and shrubs, as they prefer shaded areas. Green veined white were plentiful and one peacock was found sun bathing on the gravel rail track.

6 June 02
3 Speckled woods, 8 brange tips and *5* green veined whites. Additional species
2 large white were seen near the entrance to the tunnel and 3 painted lady were sun bathing on the gravel rail track.
16 August 02
20 green veined white and 2 large white
Additional species
20 meadow brown
3 ringlet were seen between the station and the tunnel.
1 small tortoiseshell was feeding on knapweed, at the old station,

Table 2. Butterflies of the Barnagh area. Liosta Féileacán

Large white	Banóg mhór
Green veined white	Bánóg uaine
Orange tip	Bánóg rinnbhui
Small tortoiseshell	Ruán beag
Peacock	Peacog
Speckled wood	Breacfhéileacán coille
Meadow brown	Donnóg fhéir
Ringlet	Fáinneog
Painted Lady	Aileánn

Dragonflies of Barnagh

2 Common hawkers were seen patrolling the rail track between the station and the tunnel on 16 August 02.

Conclusions

Bamagh tunnel is truly one of the unknown jewels of Limerick's countryside. It is well worth the visit when you look at the workmanship that went into building this fine feature. It is possible to walk through the tunnel and come out at the far end by the old station. Wellingtons would be needed for this stretch, as it is water logged. I would suggest a boardwalk be erected in this area. This would benefit the wildlife whilst making it easier to pass.

Geoff Hunt, Birdwatch Ireland

BEARNA CO. LUIMNIGH

EANLAITH AGUS FEILEACAIN

CULRA:

Rinne an comhlacht iarnróid iarracht an tsli is isle tn na sléibhte a thóghaint and iad ag leagadh na ráilli in Iarthar Luimnigh. Ach fós bhi orthu mám a thochailt agus tollán a bhriseadh. Faoi láthair tá an t-iarnród tréigthe ach tá gnáthog iontach fagtha againn agus radharc aoibhinn ar an "Golden Vale". Ta an-tábhacht ag baint lena leithéid de "phasáiste" don dülra. Agus tá muidne, an cine daonna, nios saibhre dá bharr.

Ag teacht ar an láthair duit leag do shtiil ar an radharc aoibhinn i dtosach.

Eanlaith Bearna

Fomhar agus Geimhreadh.

Sa gheirnhreadh nuair a fhanann an t-uisce ar na páirceanna feicfidh tü an sléibhin, an fheadóg bhui, an crotach agus an pilibin. Ma fhéachann tti ar eitilt an fhéileacáin tá nós eosiiil les seo ag an bpilibin. Is éasca iad a aithint on dubh agus ban transnánach ar na sciatháin. Feictear an-chuid srnólach o Chrioch Lochlann sa gheimhreadh chomh maith. Ar an dtalamh fliuch tá na rnilte deargán sneachta agus sacáin agus iad rneasctha. Urn thráthnóna bailionn siad i measc na sceacha geala. Bi ag faire amach don creabhar Ic titirn na hoiche nuair a thagann siad anuas ó Chnoe an Chaca chun bia a fháil.

Earrach agus Samhradh.

Beidh ár n-éanlaith düchasaeh ag tosnü ar na neadacha agus beidh na cuairteoiri linn ar ball. An chéad chuairteoir ná an gabhlan gainirnh, sin ag deireadh Mhárta. Beidh said seo ag triall ar neadacha sna bruacha gainimh no sna claise gainimh. I ml Bealtaine beidh na cuairteoiri is déanai 'inn.
Go h-ard 59 spéir cloisfear na fáinleoga agus sior-chanadh na fuiseoige. Ag an gcoifl thuas i nGarrai Dubh beidh crornán na gcearc Ic feiscint amanna; biodh cluas agat don chuach. Urn thráthnóna scans go bhfeicfidh fri an corn réisc ag dul ar fara. An té a bhfuil an t-ádh dearg air feicfidh sé an scréachóg reilige _siolraionn siad go háitiñil.

Ag féaehaint amach thar an ngleann tá scans agat an pocaire gaoithe a fheiceáil ar foluain sa spéir. Ta spioróga ag cuardach na gclaiocha thios. Chornh rnaith leo seo tá an colm coille, an piasün, an snag breac, an rticaeh, an cág, an caróg liath, an niabhóg mhóna. Anois dinigh an an gcnoc taobh than diot. Agus seo déanta agat hi ag siül go cürarnach ar an gcasán sios go dti an sean-iarnród féin. I measc na gcrann anseo tá an spideóg, an dreoilin, an donnog, an rneantán dubh, an meantán gorm, an meantán

mór, an rneantán earrfhada, an Ion dubh agus an srnólach ceoil. I ml Iüil 2001 chonacthas caipin dubh, éan atá deacair teacht air in iarthar na tire. Nuair a bheidh tü gar don tollán cloisfidh tü an tiuf-teaf agus an ceolaire saul. Direach agus tü I mbéal an tollàin scans go gcloisfidh tü an "tafann" a dhéanann an fiach duhh atá ag neadü anseo le hlianta. Man aon le fiacha Tür Londain tá na fiacha dubha anseo ag cosaint rud éigin luachmhar. Ar an dtaobh cue den tollan tá an corcan coille, an glasan danach agus an ni rua.

Féileacáin Bhearna

07-05-01
Bhi bánóga rinnbhui ag ithe ar "lady's smock". Fe scáth na gcrann bhi na breacfhéileacáin coille le feiscint. Bhi bánóga uaine flüirseach go leor agus ag glacadh na gréine do féin ar an ngairbheal bhi an phéacóg.

06-06-02
3 breachfhéileacán coille, 8 banog rinnbhuf, 5 bánóg uaine.
Lena chois bhi:
2 bánóg mhór gar don tollán agus 3 áileánn ag glacadh gréine ar an ngaineamh.

16-08-02
20 bánóg uaine and 2 bánóg mhór
Sa bhreis bhi:
20 donnóg fhéir 3 fáinneog idir an stáisiün agus an phluais. 1 r~uán beag ag ithe ar minscoth gar don
stáisii2tn.

Snáthaidi Mhóra Bhearna

Ag dul suas- sios ar an sean iarnród bhi 2 mangaire coitianta _16-08-02. Chonacthas an "common darter" chomh maith.

Ar Deireadh.

Is for le rá go bhfuil tollán an Bhearna ar cheann des na seoda i gCo. Luimnigh. Féach ar an obair a dhein na saoir cloiche fadó.

Faoi láthair tá buataisi arda ag teastáil mar go bhfuil uisee ag lui ann. Mholfainn casán adhrnaid anseo. Bheadh sé ag tacü leis an dülra agus áisiüil don siñlai.

Geoff Hunt, Birdwatch Ireland.