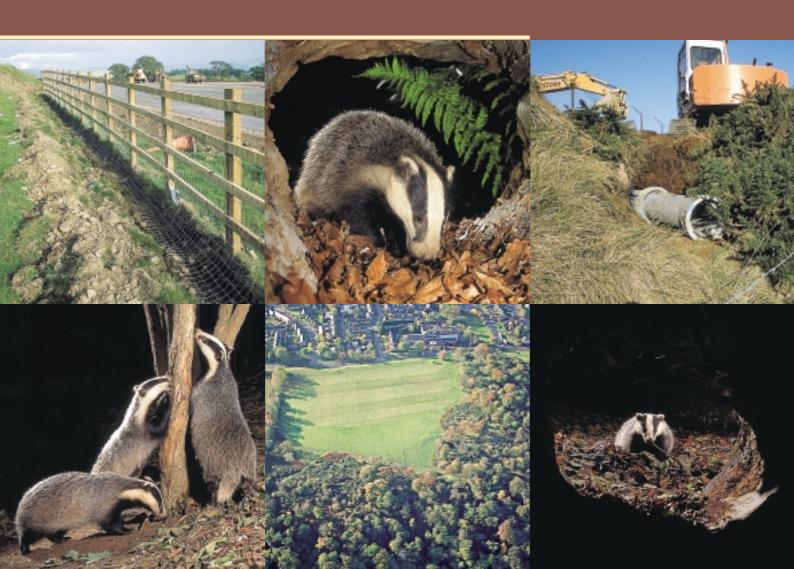


Scotland's Wildlife:

# Badgers and Development





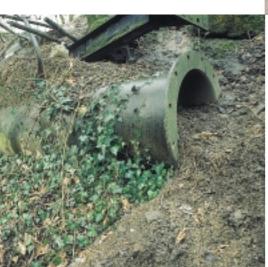
Badgers are extremely strong animals with powerful fore-legs and broad, spade-like fore-feet with strong claws - a set of adaptations that make them ideally-suited to a lifestyle in which digging plays an important part.



Badger hair is very distinctive and is often left in small tufts on barbed wire where a badger path passes underneath. The individual guard hairs are coarse and are typically white at each end with a black band in-between.



In common with many mammals, badgers use their droppings to mark their territory. The faeces are deposited in small excavated pits, collectively known as latrines. These are often located around the margins of a badger clan's territory or close to their main sett and are therefore useful in determining which areas are used by different social groups.



Badger setts are often located in woodland, hedgerows or amongst dense patches of gorse and scrub on steep banks close to fields. However, they also frequently excavate setts in disused railway cuttings or embankments, old quarries, open fields and even use landfills and former industrial sites.



# Scotland's Wildlife:

# Badgers and Development

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The badger *Meles meles* is one of our most popular and familiar mammals. However, as a consequence of their largely nocturnal habits, live badgers are seldom seen, despite their reasonably good numbers and widespread distribution, which extends over most of mainland Scotland.

Badgers have long been persecuted in Britain and this is the principal justification for their protection in law. However, badgers and their setts are also threatened, incidentally, as a result of everyday legitimate activities such as the construction and use of roads, industry, new housing, forestry operations and agricultural practices. These activities are not necessarily incompatible with the continued presence of badgers, provided the special needs of the animals are properly addressed and measures are taken to incorporate these requirements into planning proposals.

This booklet aims to provide developers and planners with an overview of the subject of badgers and development and of the associated protective legislation. It provides a framework for ensuring that adequate measures are in place to protect badgers from the possible consequences of development. It should not be regarded as a substitute for expert advice, which should always be sought from a badger specialist early in the planning process, if the presence of badgers is likely to become an issue. In this way, potential conflicts can be promptly identified and resolved and costly delays can therefore be prevented.



Unlike many of its relatives, the badger is a highly social species



# Badger Biology

#### IDENTIFICATION

Badgers are members of the Mustelidae family of carnivores, which also includes the otter, polecat, mink, ferret, stoat, weasel and pine marten. The badger is the largest member of the family in Britain, weighing between 8 and 14 kg - exceptionally up to 22 kg¹ or more - and measuring about a metre in length. Weight varies considerably according to sex, the time of year and food availability, with males being generally heavier than females. The coat is predominantly grey, but the white-tipped guard hairs give the animals a somewhat 'grizzly' appearance. The badger's most distinctive feature is its conspicuous black and white striped face.

Badgers are extremely strong animals with powerful fore-legs and broad, spade-like fore-feet - a set of adaptations that make them ideally-suited to a lifestyle in which digging plays an important part. They have good hearing and, like other mustelids, a very well-developed sense of smell.

Badger road traffic victim records: Grampian
Badger Surveys 1990 – 1999 (unpublished data)



The badger's distinctive black and white face makes it one of our most easily identified wild mammals

4

### DISTRIBUTION AND STATUS

Britain is a stronghold of the Eurasian badger, which occurs from Ireland and Iberia in the west, through continental Europe and Asia, to Japan in the east. Although Scotland does not support the high densities of badgers that are to be found in the south-west of England, the species is quite common particularly in the lower-lying, more fertile parts of the country. While the Scottish badger population overall is probably stable, there are areas where badgers appear to be on the increase. There are no accurate figures for the total population in Scotland, but it has been estimated to be around 25,000.



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#### BADGER SETTS

Badgers live in a network of underground tunnels known as a 'sett'. The tunnels can have a combined length of several hundred metres, although individual tunnels probably rarely exceed 15 metres in length. Incorporated within these tunnels are a number of widened sections and cul-de-sacs used as nesting and sleeping chambers. Bedding material such as dry grass, bracken and other suitable vegetation is brought in to line these chambers, thereby helping to conserve heat.

Large quantities of rocks and soil can be excavated while badgers are digging and maintaining their setts. This piles up outside the entrance holes forming, characteristic and sometimes very distinctive spoil heaps. The entrance holes to the underground tunnels are typically a flattened arch shape around 20–30cm high by 25–35cm wide.

It is worth noting that badger setts may also be occupied by other species, notably rabbits and foxes, but also occasionally, otters.

Not surprisingly, the distribution of suitable soil types and underlying rock greatly influences where badgers choose to dig their setts. Favoured sites are in ground that is dry and relatively easy to dig, so sandy soils are preferred. Setts are often located in woodland, hedgerows or amongst dense patches of gorse and scrub on steep banks close to fields. However, they also frequently excavate setts in disused railway cuttings or embankments, old quarries, open fields and even landfill sites. Natural cavities such as rock crevices are also used.



A sett in 'typical' woodland surroundings







Most social groups or 'clans' of badgers have a number of setts in their territory. Not all setts serve the same purpose and they can be categorised according to their use. It should be noted that the status of a sett could change over time, particularly if other setts have been disturbed or land use changes have fragmented or removed feeding opportunities. Each clan has a main sett; the focus of activity and the place where the badgers normally live throughout the year and raise their cubs. It is usually the largest and evidently most active sett within the territory and may have in excess of 15–20 entrances, although 6–12 is more typical.

Another large sett is often found close to the main sett, known as an annex. Although generally smaller than the main sett it can be very active particularly during the spring when it may also be used for breeding. Annex setts are not necessarily occupied throughout the year.

Other categories of sett include subsidiary setts (which typically comprise 3–5 entrance holes) and smaller outlying setts (typically comprising one to two holes). These may be found some distance away from the main sett and are not usually linked to it by any obvious paths. They may only be occupied on a seasonal basis.

Setts can be situated in a surprisingly varied range of locations; sea cliffs, former industrial sites and field margins are just a few



#### OTHER FIELD SIGNS

Badgers are generally nocturnal and evidence of their presence in an area often comes from field signs rather than sightings of the animals. Although the signs are characteristic and sometimes quite obvious, developers should always consult a specialist capable of recognising and interpreting them, as early as possible, if the proposed development is likely to affect badgers.

Useful field signs include:-

- tufts of hair caught on barbed wire fences
- conspicuous badger paths
- footprints
- latrines small excavated pits in which droppings are deposited
- 'snuffle holes' small scrapes where badgers have searched for insects and plant tubers
- day nests bundles of grass and other vegetation where badgers may sleep above ground
- scratch marks on trees (usually near the sett)











#### DIET AND FEEDING BEHAVIOUR

Although taxonomically classified as carnivores, badgers actually eat a wide variety of foods. A large proportion of their diet consists of earthworms, but they are opportunistic foragers and will also feed on fruit, berries, small mammals, birds, carrion, insects and other invertebrates at various times of the year, often when earthworms are difficult to find. In view of the importance of earthworms in their diet, badgers commonly rely on grassland that is kept short by grazing or mowing and the loss of such feeding areas can have a major impact on the long-term viability of a social group. This is a very important consideration with respect to proposed developments.



Badgers are heavily influenced by landuse – the best areas comprise a patchwork of woodland and permanent pasture



Badger clans are effectively extended families, the size of which is heavily dependent on the habitat type and the availability of food. Average group size is about 4–6 adults, although in upland areas they often live singly or in pairs.

They are highly territorial animals and the individuals within a clan co-operate to defend the territory. Latrines are used to mark the boundary of this area where a well-marked path may also be present; this is regularly 'patrolled', particularly by the males. During badger surveys, individual territories can be mapped using a technique known as 'bait marking', which involves mixing harmless coloured marker pellets with food and then recovering them from the boundary latrines.

In areas of good quality habitat (i.e with plenty of improved and semi-improved permanent pasture), the size of a territory in Scotland is typically around 70–120 hectares. However, in the more marginal and unproductive areas represented by the intensive arable monocultures in the east and north-east, the range sizes can be much greater than this. In the wilder and more mountainous areas of the north-west, the animals are so sparsely distributed that they probably do not defend territories in the conventional sense, at all.



#### REPRODUCTION

Badgers mate at any time of year, but births can occur at any time from December to June, with the majority born between January and March. A badger clan will usually produce only one litter per year, although exceptions to this are not unusual. The newly born cubs are about 150mm long, pink, blind and totally dependent on their mother. They open their eyes after about five weeks but stay below ground until they are 8–10 weeks old and are not fully independent until about July.



# Badgers and the law

Badgers are protected in Britain by the Protection of Badgers Act 1992. The purpose of this Act is to protect the animals from deliberate cruelty and from the incidental effects of lawful activities which could cause them harm. Under this legislation it is an offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so
- interfere with a sett by damaging or destroying it
- obstruct access to, or any entrance of, a badger sett
- disturb a badger when it is occupying a sett

Note that if any of the above resulted from a person being **reckless**, even if they had no intention of committing the offence, their action would still be considered an offence.

A person is not guilty of an offence if it can be shown that the act was 'the incidental result of a lawful operation and could not have been reasonably avoided'; only a court can decide what is 'reasonable' in any set of circumstances. In practice, a developer can avoid running into problems here if the procedure summarised on page 14 is followed.

Penalties for offences under this legislation can be up to six months in prison and a fine of up to \$5,000 for each offence.

A badger sett is defined in the Act as 'any structure or place which displays signs indicating current use by a badger'. This can include culverts, pipes and holes under sheds, piles of boulders, old mines and quarries etc.

'Current use' does not simply mean 'current occupation' and for licensing purposes<sup>2</sup> it is defined as 'any sett within an occupied badger territory regardless of when it may have last been used'. A sett therefore, in an occupied territory, is classified as in current use even if it is only used seasonally or occasionally by badgers, and is afforded the same protection in law.



<sup>2</sup> This is the SNH definition of 'current use'. Note that it differs from that applied by English Nature.

The 1992 Act provides for licences to be issued for certain activities which would otherwise be prohibited. Scottish Natural Heritage (SNH) is the authority responsible for issuing licences under the Act for the purpose of development as defined under the Town and Country Planning (Scotland) Act 1972, now superseded by the Town and Country Planning (Scotland) Act 1997.

A licence must be obtained from SNH for any work that may cause disturbance to a badger or involves the damage or destruction of a sett. Licences are generally, but not exclusively, issued to badger experts, whose role is to provide on-site advice and, where necessary, supervise all the licensed work. In some cases, the licence may be issued directly to the developer, in which case the badger expert would be named as their agent. To whom the licence is issued is dependent on the development, but also on what and who is involved in the necessary works. Should there be any uncertainty over the respective roles and responsibilities in this regard, the developer should contact SNH for clarification. Licences are not normally issued during the breeding season, which is between 30th November and 1st July, and cannot be issued retrospectively. Activities that necessarily involve disturbance should therefore be programmed to take place outwith this period. Licences are usually only issued after full planning permission has been granted so that there is no conflict with the planning process.



The exclusion of badgers from their setts for development purposes must be licensed by SNH. Successful exclusion normally involves oneway badger gates and appropriate fencing

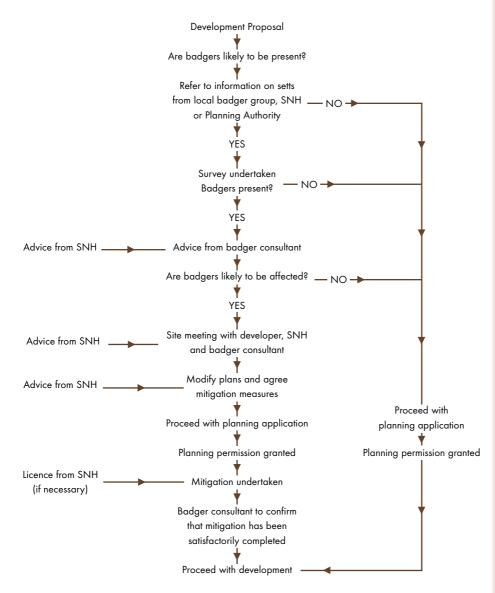
# Badgers and development

#### THE PLANNING SYSTEM

Developers should be aware that planning authorities are required to take account of protected species and habitat conservation when they consider planning applications. National Planning Policy Guideline (NPPG) 14 defines Government policy on natural heritage and land use planning in Scotland and provides guidance to local authorities on how consideration of these interests should be reflected within the planning system. Where protected species are present the local authority should consult SNH at the earliest possible stage, and certainly before outline planning permission is granted.

Where badgers are present or likely to be present, the planning authority may require a survey to be undertaken, paid for by the developer. This will enable the authority to take account of the presence of badgers, by considering the importance of a sett and the implications of its loss or disturbance, as well as, the likely effects of any development on the occupants. If badgers are likely to be affected, the planning authority may introduce planning conditions and/or agreements when determining individual applications.

WHICH CONTAINS BADGER SETTS



THE VARIOUS STAGES INVOLVED IN DEVELOPING LAND

A development site may not contain a badger sett, as such, but may be part of a clan's territory and relied upon as an important feeding area. Badgers cannot simply be pushed from one area to another, so it is important to extend the initial survey beyond the boundary of the proposed development in order that an assessment can be made of the extent of the territory and productivity loss that may result. The territory is the minimum area capable of supporting the badger clan and so the loss of territory may lead to a reduction in group size, which could ultimately lead to its extinction. Unfortunately, little information is available on what proportion of a territory can be destroyed before it starts to have a detrimental effect, so each case must be considered individually, in discussion with the surveyor and SNH.

The ideal objective is to ensure that the development will not result in the loss of setts and fully incorporates the badgers' foraging needs, thereby enabling them to remain in the area and find sufficient food. Appropriate mitigating measures should, therefore, be included within each proposal to facilitate this.



Careful considertation must be given to retaining sufficient foraging areas for badgers, where land is to be developed Work that disturbs badgers in their sett is illegal without a licence. Remember that disturbance can occur even if there is no direct interference or damage to the sett. It is difficult to know what badgers will find disturbing in each particular set of circumstances, and so for this reason, SNH advises that **any work which is proposed within 30m of the closest sett entrance may require a licence** and this can only be established by prior consultation and, if necessary, a site visit.

There are some activities that can cause disturbance at much greater distances (e.g blasting or pile driving). While each case must be considered individually, it is generally recommended that such activities are avoided within 100 metres of the closest sett entrance. Other activities may also pose a temporary threat to badgers or cause disturbance to them whilst they are in the sett. Therefore, some or all of the following may be added as conditions of a licence, as appropriate:-

- the use of noisy plant and machinery in the vicinity of the protection zone (see page 17) should cease at least two hours before sunset
- security lighting should be directed away from setts
- chemicals should be stored as far away from the setts and badger paths as possible
- trenches must be covered at the end of each working day, or include a means of escape for any animal falling in. (Badgers will continue to use established paths across a site even when construction work has started)
- any temporarily exposed open pipe system should be capped in such a way as to prevent badgers gaining access, as may happen when contractors are off-site
- badger gates may need to be installed in perimeter fencing; if so, specialist advice should be sought
- water sources (for badgers) should always be safeguarded
- trees should be felled away from setts and must not block badger paths<sup>3</sup>



<sup>3</sup> All forestry operations should be undertaken in accordance with Forestry Practice Guide 9 -Forest Operations and Badger Setts.



#### SETT PROTECTION

Irrespective of whether or not a licence is required, where development is taking place in the general vicinity of an active sett and there is a risk of accidental damage or disturbance occurring, it is good practice to take the appropriate measures to protect the sett during the construction phase and, in some cases, thereafter. Protection zones serve two main purposes: in the short term, they protect the sett (including all the underground tunnels) from damage and the badgers from disturbance while works are being carried out on the site. In the long-term, they ensure badgers are not disturbed by general day-to-day activities resulting from the development once it is completed. In addition, they help the developer by preventing construction machinery from falling into holes and tunnels.

The boundary of the protection zone should be at least 30 metres from the nearest sett entrance. Before any work starts on site, the protection zone should be clearly demarcated by using coloured tape or some other form of obvious visible marking. Scrub and vegetation should not be cleared from the sett area. All contractors and sub-contractors should be notified of the presence of badgers and instructed to keep out of the protection zone.

Planting the protection zone with dense native shrubs such as gorse, blackthorn, hawthorn, holly and elder can enhance the long term protection of a sett. Furthermore, in some cases, for example housing developments, the creation of a 'buffer zone' of undeveloped land between the nearest gardens and the periphery of the protection zone will further enhance the security afforded to the badgers. It will also reduce the possibility of conflicts arising between the new residents and the badgers, as can sometimes happen if the latter continue to forage in areas which have been transformed into gardens as a result of the development.



It is the responsibility of the developer to demonstrate that his/her proposals will not have a detrimental impact on badgers. This is likely to involve the implementation of appropriate mitigation measures to safeguard the animals, their setts and their foraging habitat.

#### LOSS OF FORAGING

If a significant proportion of a territory is to be lost to the development, and includes important feeding areas, it may be possible to enhance the foraging value of the remaining territory to compensate for any feeding areas lost. However, supplementary feeding with 'artificial' foodstuffs is not recommended as this can lead to the badgers becoming largely dependent on humans. A better approach, provided it does not conflict with other natural heritage interests (such as the conservation of species-rich unimproved grassland), is to consider improving the quality of the remaining areas of grassland, through appropriate management, thereby increasing the abundance of earthworms. It is irresponsible to expect badgers to replace lost foraging by feeding in gardens or other amenity areas. This will only lead to animosity from neighbouring landowners, many of whom will not welcome badgers digging up their lawns, vegetable plots and flower-beds.

#### CORRIDORS

Badgers are creatures of habit and use well-established paths to travel between setts and feeding areas in their territory. The initial badger survey should identify these paths, enabling the development to be planned in such a way that the badgers have undeveloped corridors of suitable habitat to link with other setts and feeding areas outwith the site.



Badger gates must always be positioned on existing badger runs, if they are to be effective

# RELOCATING BADGERS: EXCLUSION AND THE PROVISION OF ARTIFICIAL SETTS

Every effort should be made to retain setts on the site, critically main setts. However, if the destruction of a sett is unavoidable, SNH can licence the exclusion of badgers from the sett, followed by its immediate destruction. Exclusion can be humanely achieved by a combination of badger-proof fencing and/or specially designed one-way gates that allow the badgers out of the sett area, but prevent their re-entry. A licence will only be issued if there are alternative suitable setts available to the badgers, within the same territory. If other suitable setts are not available, an artificial sett must be provided, but this must be seen as the least preferred option with regard to the badgers' interests. Artificial setts can be costly, time-consuming to construct and need careful advance planning; moreover, there are no guarantees that they will be used by badgers. The site must be carefully selected in consultation with landowners and SNH and all work supervised by a badger expert. The most successful artificial setts have been located less than 100 metres from the original natural sett and constructed at least six months before the badgers are excluded, thereby giving them time to find and investigate the new sett.



An artificial sett in construction

#### ROAD SAFETY

More badgers die on roads than from any other cause. Badgers can be assisted to cross roads safely by the provision of purpose-built underpasses and badger-proof fencing. It is important that such underpasses are located on or close to existing badger paths.

When new roads are planned, the proposed measures to protect badgers must be specified as early as possible during the design stage, thereby enabling tunnels and fencing to be fully integrated with features such as drainage, cuttings and embankments. The correct positioning and specification for these structures is essential, otherwise they will be ineffective and a waste of money. Many contractors are unaware of the very fine attention to detail which is required to make badger fencing effective; junctions with minor roads and gates, in particular, can present a challenge to the fencing contractor and badger specialist alike. Needless to say, if badger fencing is required, the services of such a specialist will invariably be essential.

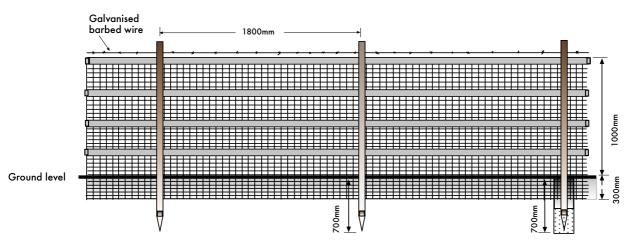






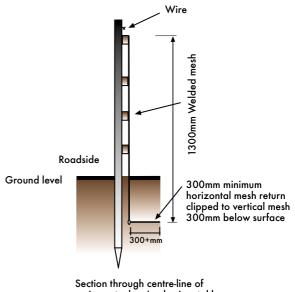
A completed badger tunnel with associated fencing

Max. mesh: 25mm x 50mm - gauge 2.50 Minimum height above ground: 1000mm Minimum depth below ground: 300mm plus a minimum 300mm horizontal mesh return The return will consist of a separate roll attached with special clips to the vertical mesh



BADGER RESISTANT MESH ATTACHED TO A TIMBER & FOUR RAIL FENCE





Section through centre-line of main posts showing horizontal lap

Most roadside fencing is not actually badger-proof. The fencing specification given on page 21 is considered to be the most effective at managing the movements of badgers in the vicinity of roads.

The fence should be constructed of welded mesh of at least 2.5mm gauge, with a maximum mesh size of 25 x 50mm. It should be at least 1 metre high (above ground level) and extend below ground for at least 300mm with a separate 300 mm underground horizontal 'lap' attached to the base of the vertical section with clips (on the badgers' side). In areas of expected 'high attack' (where site or ground conditions constrain the preferred position and/or reduce the number of badger tunnels) the fencing specification may need height and depth modifications and the inclusion of an additional overhang.

Dry stone walling, which is an ever increasing feature on new motorways and road upgrades (mainly for aesthetic reasons), should not be regarded as a suitable badger barrier and where necessary should be designed to incorporate a suitable wire overhang.

Remember that all the necessary components of the mitigation works must be in place before the new or altered road is open to traffic!

### TRANSLOCATION

Translocation involves the trapping of badgers and moving them to a totally new location, away from their existing territory (It should not be confused with 'relocation' which is discussed earlier). There are strong ecological and ethical reasons against this procedure in the context of proposed developments and as such, it is not normally a realistic option for developers.

Development proposals must be designed, and mitigation put in place, to ensure that badgers can continue to survive on the site.

# Useful information sources

Licensing and list of recommended badger experts:

The Licensing Officer
Scottish Natural Heritage

2 Anderson Place

Edinburgh EH6 5NP

Tel: 0131 554 9797

Badger welfare:

Scottish Society for the Protection of Cruelty to Animals

**Braehead Mains** 

603 Queensferry Road

Edinburgh

**EH4 6EA** 

Tel: 0131 339 0222

Your local SNH office is at;

### Local voluntary badger groups:

The Development Officer

**Scottish Badgers** 

13 Eddie Avenue

Brechin

Angus

DD9 6YD

DD) 01D

Tel: 01356 624851

### The National Federation of Badger Groups (NFBG)

Cloisters Business Centre 8 Battersea Park Road London SW8 4BG

Tel: 020 7498 3220

### The Mammal Society

15 Cloisters Business Centre 8 Battersea Park Road London SW8 4BG Tel: 020 7498 4358



Forestry Commission (1995) Forest Operations and Badger Setts. Forest Practice Guide 9.

Harris, S., Jefferies, D., Cheeseman, C. and Booty, C. (1994) Problems with badgers? (Third revised edition). RSPCA.

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Kruuk, H. (1989) The Social Badger: Ecology and behaviour of a group-living carnivore Meles meles. Oxford University Press.

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Neal, E. and Cheeseman, C. (1996) Badgers. Poyser Natural History Series.

Protection of Badgers Act 1992 HMSO.

RSPCA (1994) Focus on Badgers. (slide pack with written commentary)

Scottish Natural Heritage (1997) Badgers. 'Naturally Scottish' Series.

The Scottish Office Development Department (1999) National Planning Policy Guideline NPPG 14 Natural Heritage.

Woods, M. (1995) The Badger. The Mammal Society, London.

Laurie Campbell, Lorne Gill (SNH), Mike Harris, Pat & Angus Macdonald, Rob Raynor (SNH), RSPCA



Artificial setts need careful advance planning; the site must be carefully selected and all work supervised by a badger expert. The most successful artificial setts have been located less than 100 metres from the original natural sett and constructed at least six months before the badgers are excluded.



More badgers die on roads than from any other cause. Badgers can be assisted to cross roads safely by the provision of purpose-built underpasses and badger-proof fencing. It is important that such underpasses are located on or close to existing badger paths.



Construction work may pose a temporary threat to badgers and so appropriate measures should be taken to minimise any disruption caused. For example, a temporarily exposed open pipe system should be capped to prevent badgers gaining access, as may happen when contractors are off-site.



If a development necessitates the loss of a sett, SNH can licence the exclusion of badgers, followed by the immediate destruction of the sett.

Exclusion can be humanely achieved by a combination of badger-proof fencing and one-way gates that allow the badgers out of the sett, but prevent their re-entry. A licence will only be issued if there are alternative suitable setts available.



## Scottish Natural Heritage

is a government body established by Parliament in 1992, responsible to the Scottish Executive and Scottish Parliament.

#### Our mission:

Working with Scotland's people to care for our natural heritage

#### Our aim:

Scotland's natural heritage is a local, national and global asset.

We promote its care and improvement, its responsible enjoyment, its greater understanding and appreciation and its sustainable use now and for future generations.

#### Our operating principles:

We work in partnership, by co-operation, negotiation and consensus, where possible, with all relevant interests in Scotland: public, private and voluntary organisations, and individuals.

We operate in a devolved manner, delegating decision-making to the local level within the organisation to encourage and assist SNH to be accessible, sensitive and responsive to local needs and circumstances.

We operate in an open and accountable manner in all our activities.



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