

BEST PRACTICE GUIDANCE - BADGER SURVEYS

DESK STUDY

In 2003 a comprehensive badger survey was undertaken of the main expansion areas of the City of Inverness, the A96 corridor as far as Dalcross and the area around Inverness Airport.¹ The results of this survey should be consulted as an essential precursor for planning further survey work. Badger populations are dynamic: sett status, sett distribution, badger numbers and social group composition can change over time. Therefore the results of the 2003 survey, while invaluable, are no substitute for contemporary data. New badger surveys will be required.

INITIAL FIELD SURVEYS

Badger surveys should be undertaken within an area of search extending 1km from the periphery of the proposed development area. Within this area of search all fence lines, woodland and scrub habitats should be systematically surveyed for evidence of badgers in the form of:

- Faeces: badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries.
- Setts, comprising either single isolated holes or a series of holes, likely to be interconnected underground.
- Paths between setts or leading to feeding areas.
- Scratching posts at the base of tree trunks.
- Snuffle holes (small scrapes where badgers have searched for insects, earthworms and plant tubers).
- Day nests (bundles of grass and other vegetation where badgers may sleep above ground).
- Hair traces.
- Footprints

When found, activity levels at setts should be scored using the following criteria:

- Number of well used holes (with one or more of the features : well worn entrance; freshly excavated soil; bedding material)

¹ Inverness Badger Survey 2003. Scottish Natural Heritage Commissioned Report No. 096

- Number of partially used holes (leaves or twigs in entrance and/or mosses and other plants growing in or around entrance)
- Number of disused holes (partially or completely blocked, with considerable amount of excavation required for reoccupation)

Setts should also be classified using the conventions shown in the following Table:

SETT TYPE	DEFINITION
Main	Several holes with large spoil heaps and obvious paths emanating from and between sett entrances.
Annexe	Normally less than 150m from main sett, comprising several holes. May not be in use all the time, even if main sett is very active.
Subsidiary	Usually at least 50m from main sett with no obvious paths connecting to other setts. May only be used intermittently.
Outlier	Little spoil outside holes. No obvious paths connecting to other setts and only used sporadically. May be used by foxes and rabbits.

The optimum time for undertaking badger surveys is February to April, coinciding with a peak in territorial activity and a period when vegetation cover is at a minimum, thereby enhancing the probability of detection of field signs. A secondary but less pronounced peak occurs in October. Surveys can be undertaken outside these favourable periods but field signs will be both less abundant and less obvious.

Data should be recorded on 1:25000 scale maps and *Microsoft Excel* spreadsheets. Six-figure grid references should be documented using the OS number system rather than the letter system for 100km squares. Eastings and northings should be recorded in separate columns. This will ensure that the data can be used by a GIS (Geographical Information Systems) package.

When planning initial badger surveys allow a survey rate of c. 2km² /day. This rate will vary depending on habitat conditions and experience.

BAIT MARKING SURVEYS

Bait marking surveys can be extremely useful for establishing the limits of badger social group territories. They are therefore essential where initial surveys indicate that 2 or more main setts are located within 1km of a proposed development area.

Bait-marking techniques rely upon the fact that badgers mark the boundaries of their territories with dung pits (or aggregations of these, known as 'latrines'). These are regularly maintained by a large proportion of the badger social group, although most of the marking activity is thought to be undertaken by the adult males.

Bait-marking requires the placement of food (usually a mixture of peanuts and syrup) at a main badger sett. This bait, containing harmless indigestible plastic markers, is then consumed by the resident badgers. During subsequent defecation the badgers deposit these coloured markers in dung pits throughout their range, including other setts used

by the social group, and on the boundaries of their territory. Different coloured markers are used for each main sett. By undertaking systematic surveys of latrine and dung-pit sites, and noting the colour of the markers contained in each, the boundaries of adjacent badger social groups can be determined.

Accurate delineation of territory boundaries requires that the study be undertaken at the correct time of the year (spring or autumn); that several adjacent badger social groups are included; and that baiting continues for an adequate period. The results of the bait-marking needs to be interpreted by a person with appropriate expertise (i.e. someone who already has experience in the implementation and assessment of bait marking studies). Badger social organization is not always straightforward (e.g. certain adult males have been recorded using more than one otherwise separate social group) and this can confuse the bait-marking results.

Bait marking is best undertaken during the period late February to late April, although it can also be done between early September and mid-October. These periods correspond with peaks in badger territorial marking activity, dung-pit use reaching a maximum in April and September. Spring bait-marking generates the best results.

Bait marking is demanding of both time and labour. A typical bait marking programme, involving 3 main setts and one person would require the following time and material resources:

work element	time element	material requirements
Project administration	1 day	
Field survey (sett location & classification; identification of the distribution of latrines).	2 days	
Field survey: bait marking (including bait feeding at allocated main setts & subsequent monitoring of latrines for marker dispersal)	21 days (depending on bait uptake and weather conditions)	
Bait marking materials (peanuts, syrup, food-grade plastic pellets)		c.150 kg of peanuts; c.35 kg of syrup; c.15 kg of plastic pellets.
Travel: 21 return journeys, office to site @ 80 miles each plus local mileage.	1800 miles (depending on location)	
Data analysis & report preparation, to include impact assessment & mitigation proposals	10 days	

Bait marking and latrine inspections should be undertaken on a daily basis for a period of c.3 weeks.

Suppliers of food-grade plastic granules come and go but at the time of writing the following company is known to provide the required materials:

Performance Master Batches Ltd. Brynmawr, Gwent. Tel. 01495 310583.

For other potential suppliers, search the internet under “food-grade plastic granules”.

It is recommended that round granules of 2mm diameter be purchased. The following bright colours (or variations) tend to work best: blue, red, green, orange, yellow, white.

Bait stations or latrines with markers may be discovered by members of the public and mistaken for poisoned baits. To avoid unnecessary alarm and subsequent diversion of time and resources, the local police, SNH and SSPCA offices should be advised in advance that bait marking will be taking place. They should be supplied with details of personnel, contact details, vehicle registrations, study area and the period within which the work will be undertaken.