BAT CONSERVATION IRELAND

BATS & HERITAGE STRUCTURES

Protecting bats during management, restoration and maintenance works at heritage sites

By Niamh Roche and Tina Aughney

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The Heritage Council

Lesser horseshoe bat © Paul van Hoof

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This booklet was created as part of a project on Bats and Heritage Structures.
An additional video resource summarising the information in this booklet can be found on YouTube at the following link: **https://www.youtube.com/watch?v=rNR5c2Xtv9M**

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INTRODUCTION TO BATS

Bats are mammals. This means they have fur covered bodies and give birth to live young. They are also nocturnal, in other words, they are active at night time. Irish bats only eat insects, such as midges, moths and greenfly, and sometimes other invertebrates, such as spiders and earwigs. There are nine species of bat in Ireland and different species of bat occupy slightly different niches in the landscape – for example Daubenton's bat, *Myotis daubentonii* (which is also known as the water bat), feeds on insects emerging from water, while the brown long-eared bat, *Plecotus auritus*, tends to feed on insects in and around leaves on trees.

A resting place of a bat is called a roost. Bats do not chew on wiring or insulation, and they do not bring nesting material into a roost. Bats can only gain access to a roost if there is an existing crevice – which can be as small as 2cm x 1cm. One species in Ireland, the lesser horseshoe bat, *Rhinolophus hipposideros*, requires a much larger opening to access a roost.

Bats would naturally choose to roost in cracks and hollows of trees, in caves, or in crevices in cliffs. However down through the centuries, as Ireland's landscape has become less wooded, and humans have constructed habitations, many bats swapped to roosting in buildings and other structures.

Brown long-eared bat © Paul van Hoof

Hibernating lesser horseshoe bat © Paul van Hoof

Bats are most active in the warmer months from April to September and they hibernate in the cooler winter months. In the summer female bats gather in nursery or maternity roosts, where they give birth to a single pup around June. In a roost, there may be any number of bats ranging from just one bat, a small number of individuals, or perhaps even more than 1,000 bats.

Each bat species has slightly different roosting requirements, some prefer to roost in large open attics of buildings, while others may prefer to tuck into small crevices in stonework under bridges. Some structures or buildings may even have several bat species present in various places on the same site. While some bats may be found in modern buildings, old buildings and stone structures tend to be favoured for roosting. In one survey of stone bridges in Co. Leitrim, up to 70% of bridges had evidence of use by bats.

Mature trees with cracks and crevices may be used by roosting bats © Dawn Quinn

Bats roosting in a roof crevice © Paul van Hoof

Bats may use heritage structures on a seasonal basis or may use different parts of the same structure at different times of the year – for example lesser horseshoe bats usually use attics and roof spaces in the summer for breeding but prefer to use underground sites such as cellars, tunnels, souterrains and caves for hibernating in the winter months.

In Ireland, bats are protected under domestic Irish wildlife legislation - the Wildlife Act - and under EU legislation – the Habitats Directive. Under the law it is an offence to intentionally disturb a bat or its roost. The lesser horseshoe bat, which is found in counties along the western seaboard, is additionally protected in that large roosts of this species are designated Special Areas of Conservation (SAC). There are 41 SACs for lesser horseshoe bats in Ireland.

Gable end of a modern house used by roosting bats © Niamh Roche

Checking for bat droppings at a souterrain in Kerry © Niamh Roche

When planning restoration, maintenance, or other works on a heritage site or structure it is important to consider and protect our natural heritage, this includes bats, birds, and other species, as well as built and cultural heritage.

Bats should be considered at the start of any projects on heritage structures, because, if they are present, this may have implications for timing of the works. Additional measures may need to be implemented to ensure their roosts are retained, the bats themselves are not harmed and to fully comply with the legislation.

In this document and associated video – Bat Conservation Ireland have asked several people about their experiences of advising on, or working on, structures of heritage importance where bats are present. We hope these resources will help others involved in management, maintenance, or construction at heritage sites in planning future projects and in conserving these protected species.

Moorehall Co Mayo is designated as a Special Area of Conservation for lesser horseshoe bats
© Niamh Roche

WHAT IS MEANT BY A HERITAGE SITE OR STRUCTURE?

These include traditional, archaeological and historic sites. It may include buildings, bridges and other structures as well as trees and landscapes.

Heritage structures may be intact or ruined and they may have undergone changes of use or modifications through the years. In Ireland, many heritage structures are made of stone but mud, timber and brick have all been used as building materials. Natural slate or thatch are probably the most common roofing materials, but many sites have no roofs. Some heritage sites may include mature or veteran tree specimens within their grounds.

Bats forage on insects in green spaces, this can include gardens, woodlands, orchards, as well as over ponds, rivers and lakes. Bats typically commute across the landscape along linear features – this can include demesne stone walls, dry stone walls, tree lines and hedgerows. Any of these could be features of historic or heritage landscapes.

Stone bridge over canal © Tina Aughney

BATS ARE PROTECTED BY LAW - WHAT DOES THAT MEAN FOR BAT ROOST CUSTODIANS?

The overarching aim of the legislation is to maintain the favourable conservation status of bats in Ireland. A developer (owner or organisation carrying out works) should aim to entirely avoid any potential impact of a proposed development on bats and their breeding and resting places with professional advice.

Depending on what is planned, this may mean redesigning the development, changing timing of works, or carrying out other measures to avoid impacts on bats.

If the site in question is a breeding site or resting place for bats and/or the proposed activity could impact on a breeding site or resting place of a bat, then the developer must seek a derogation licence from the Minister for Housing, Local Government and Heritage. If the licence is granted, then the works as described in the licence application may proceed but all terms on the licence must be adhered-to.

Heritage landscape with mature trees at Cong Village, used by at least seven species of bat for foraging © Niamh Roche

Even if works do not require planning permission, or if they do and the planning authority does not request a bat survey, the developer must still ensure that the works are not an offence under the wildlife legislation.

Another aspect of the law which may impact planned works is the presence of an SAC for lesser horseshoe bats. A developer proposing to carry out any activity inside the boundaries of an SAC, or even outside the boundary, that may adversely impact on the integrity of an SAC, needs to ensure beforehand that all necessary consents are in place before the operation or activity commences. Depending on what is planned it may be necessary to carry out an Appropriate Assessment Screening of the development. For more details on this process in the context of bat SACs see **https://www.npws.ie/development-consultations**.

IF PLANNING WORKS ON A HERITAGE STRUCTURE, WHAT HAPPENS FIRST?

Do not assume, if no bats have been observed, that none are present. Irish bats are very small. For example, our most common species are the pipistrelles (common pipistrelle, *Pipistrellus pipistrellus*, and its sibling species, soprano pipistrelle, *P. pygmaeus*). These are similar-sized bats and only weigh about 5g when fully grown. With their wings folded up, they can fit into a small match box. The largest species in Ireland, Leisler's bat (*Nyctalus leisleri*), could easily fit into the palm of a human hand.

Since bats are so small, individuals can tuck into tiny crevices, although maternity colonies need bigger spaces. Because bats are nocturnal and do not advertise their presence, people are often unaware that bats are roosting in a building or structure. Old structures are quite likely to have bats present – particularly if the structure is in a situation where there is suitable habitat nearby where bats can forage, such as green spaces or rivers.

It is good practice, therefore, to first seek the services of a professional advisor or ecologist with experience in bat surveys.

Common pipistrelle bat, with its wings folded, it can fit into a small match box © Paul van Hoof

Leisler's bat
© Paul van Hoof

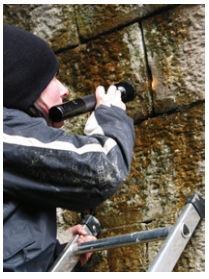
WHAT SHOULD BE LOOKED-FOR WHEN COMMISSIONING AN ECOLOGIST?

It is important to ensure that the ecologist involved in the project has a sound knowledge of Irish bat species, their ecology and how they are likely to use different types of buildings and structures. This thorough grounding in bat ecology is essential to ensure that an appropriate survey is undertaken and to document how the bats are using the site. From this, a plan can be formed in relation to management and mitigation measures that may be required. The ecologist will also need to have a good understanding of national and international best practice survey and mitigation guidelines, as well as being up to-date on scientific literature. It is also important that the ecologist has the appropriate licence to survey for bats. In order to enter a building or to survey a structure that is a known bat roost, the ecologist is required to have a licence that permits them to enter a roost. This licence is applied-for from the NPWS at the Department of Housing, Local Government and Heritage. Although this is not essential for every type of survey, it is strongly recommended that consultants possess such a licence so they do not need to leave if bats are found at a site.

WHAT DOES A BAT ECOLOGIST DO?

For the developer – the aim of engaging an ecologist to do a survey for bats - is to ensure that development can proceed without breaking the law. It is very important that the consultant conducts a thorough survey. The survey should include background information – such as checking for available bat records, but bear in mind that bats are under-recorded, and a desk review is unlikely to be sufficient.

Checking bridge crevices for bats
© Tina Aughney



Field surveys may include internal inspections of buildings or underground tunnels looking for signs of bat presence, such as droppings, discarded insect wings or staining around crevices where bats enter and exit.

The field work may also include surveys with bat detectors and other equipment such as thermal imaging cameras or video recorders with infrared lamps in the hours of darkness.

Bats are most active from late spring to early autumn so, ideally, bat surveys should be carried out at that time. Exceptions might be if the site is mainly underground and has potential for hibernating bats, or, if there is a very large colony and a lot of droppings are visible even in winter.

Using bat detectors
© BCIreland

Cellar of a derelict house that could be used by hibernating bats © Niamh Roche

Sometimes the full extent of a building might not be accessible - for example if the roof has deteriorated, if it is structurally unsound or if there is no access point via an attic hatch. In this case it would be important to carry out a survey during the active season to see if bats emerge from it at dusk or return to it at dawn.

The ecologist should be able to determine whether bats are present or absent and then, what type of bats are present, as well as the extent and pattern of usage by bats.

This heritage building may require a dusk and dawn survey to determine if bats are present, it is also in an advanced state of dereliction and may be structurally unsound in places © Niamh Roche

The amount of surveying required may depend on a combination of what is planned for the site, along with how important it is for bats from a conservation perspective. This is one of the reasons it is important to get an ecologist on board early in the process so that it is possible to carry out a thorough survey.

THE IMPORTANCE OF COMMUNICATION

All too often, ecologists spend time surveying and report writing, and developers spend money commissioning surveys, only for the report to disappear into a quagmire of files and left on a shelf unread.

The developer has a responsibility to comply with wildlife legislation and the ecologist has a responsibility to communicate clearly with their client. It is not enough to simply commission a bat survey and report, follow up action may need to be taken by all parties.

From the get-go, once the ecologist has been commissioned, the project manager should inform all members in the team involved in planning and designing the works that mitigation measures for bats may need to be incorporated and that this may impact on planned timelines. This team may include a project architect, conservation architect, engineers, construction firm, contractors such as roofers and/or others.

As soon as possible following completion of the survey, the ecologist must indicate if bats are present and need to be protected during planned works. Sometimes the best way to start this process of communication is in a team meeting to describe what has been found and what options may be available to carry out the work while complying with the legislation. Some compromises may be necessary in order to ensure the dual aims can be met, whereby bats remain protected and the works can be completed.

The ecologist will also need to write a clear and detailed report as this will be submitted along with any derogation licence or planning application. This report should also be disseminated to the core project team and all members of the team should familiarise themselves with the measures needed to protect the bats. Further communication between project managers, ecologist and the on-site team may also be needed, for example in the form of toolbox talks while the works are ongoing.

WHAT KIND OF WORKS MIGHT IMPACT BATS?

Works on a building or structure can disturb bats. The level of disturbance really depends on the type of roost that is present and the level of works that are required. The kinds of works that may impact bats include, but are not limited to

- conversions of barns or other heritage buildings into dwellings
- restoration of derelict buildings or ruins
- maintenance or preservation works of heritage buildings, such as repointing or reroofing
- alterations in roof voids
- tree surgery works or removal of trees used by bats
- introduction of artificial lighting inside or near a roost or roost entrance.

WHAT IS A DEROGATION LICENCE?

This is a licence from the Minister of Housing, Local Government and Heritage to allow actions that may disturb bats.

When applying for a derogation licence the developer must clearly state the reason they are seeking the licence and describe alternative solutions which were given serious consideration. Any mitigation intended to ensure that there is no impact or minimal impact on the bats must be clearly described in detail, giving examples of how it worked in other places.

The two main categories relating to bats when a derogation licence is likely to be awarded, are A and C below.

(A) In the interests of protecting wild fauna and flora and conserving natural habitats (Example: if bats are present in a barn with a deteriorating roof – in this instance reroofing the building in a bat-friendly manner may cause some disturbance but will in the long-term help conserve the bats)

(B) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;

(C) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and the beneficial consequences of primary importance for the environment; (An example could be a bridge requiring urgent structural repairs).

The Minister may also choose not to grant a derogation licence.

IS A DEROGATION LICENCE ALWAYS NEEDED FOR WORKS ON HERITAGE STRUCTURES?

No licence is required if the proposed activity is unlikely to result in an offence. The onus of satisfying themselves that a development will not damage or destroy a breeding site or resting place of a bat rests with the developer. This underlines the importance of seeking professional advice because a developer can only really be sure of this if a thorough assessment has been conducted.

Examples of works that, if carefully planned, may not need a licence include:

- Works near to or at roosts (e.g. re-roofing) if carried out while bats are not present and the access points and roosting area are not affected
- Remedial timber treatment, carried out with the correct (non-toxic to bats) chemicals while bats are not present

But the decision as to whether a licence is required or not should be made in liaison with the site ecologist.

It should be noted that if the works require planning permission and this is granted by the Planning Authority bats must still be protected and the law must still be complied-with. Even if the planning authority has not requested a bat survey, a survey and/or a derogation licence may still be needed.

WHAT KIND OF MITIGATION MEASURES MAY BE NEEDED TO PROTECT BATS?

The kinds of measures that can be suggested to protect bats depend on a combination of the species present, type of roost and type of works. A number of the following strategies may need to be applied in combination:

1. **Protecting the point/points where bats enter and exit and ensuring this is not closed or otherwise interfered with.**
   This may be done by marking the spot and then, after bats have left, closing it with bubble wrap to ensure they cannot return for the duration of the works. It may also mean ensuring it remains in darkness and no lighting is used or installed close to it during or after the works. Covering walls with curtains of hessian or construction fabric ensures bats cannot return to roost in other crevices during the works, for example during repointing of ruins or bridge arches. If the works require removal of the exit/entrance point then an alternative suitable replacement will need to be instated, such as bat slates on a roof or moulded flashing.

2. **Protecting the space where bats roost.**
   This could mean, for example, retaining an attic space instead of converting it to another use, retaining it in part, installing a false ceiling so the bat roost is separated from a lower floor, or modifying plans to convert a series of buildings so that a roost can be retained in one section. If timbers need to be treated, chemicals that are safe for bat roosts should be used.

3. **Carrying out works more slowly than is usual, so bats can move or escape.**
   This may occur, for example, if reroofing a large roof is required. Temporary partitions may be installed between sections of roof and work may then be carried out on a section-by-section basis. Or more slowly may mean simply removing slates carefully one at a time, rather than quickly in rows.

4. **Timing the works so bats will not be present when they are carried out.**
   This may mean working outside the summer breeding season if the roost is used during the summer, or during the summer if the roost is a hibernaculum.

5. **If the roost cannot be retained, alternative roosting options may need to be provided.**
   This is usually the option of last resort because it can be very difficult to recreate specific conditions favoured by bats in a roost, particularly a site that has been used regularly for a long time. Examples here might be if there are such serious structural integrity issues in a bridge that crevices cannot be retained, it may be necessary to instead attach bat boxes to the structure, on the advice of the ecologist.

6. **Retaining commuting and foraging spaces.**
   It may not be sufficient to protect a roost if the green space where the bats commute and forage will be lost. The immediate vicinity of the roost, and bat foraging areas must also be considered in plans for the heritage site. Consider maintaining surrounding landscapes and gardens in a wildlife friendly manner – for example by signing up to the All Ireland Pollinator Plan.

CELEBRATE PROTECTING YOUR BATS!

Works that protect bats as well as heritage sites deserve to be applauded and shared with the local community and visitors. This can be done via any number of methods such as site information panels, in person bat walks or talks, articles in newsletters, signage, posts on social media and other forms of communication. Members of the public are often fascinated by bats and sharing the fact that wildlife is protected on your site will generate positive publicity and good will. Examples of positive publicity about bat protection at heritage sites can be found on the National Trust's website **www.nationaltrust.org.uk/features/bats-at-our-places**

THE NATIONAL PARKS AND WILDLIFE SERVICE

The National Parks and Wildlife Service is part of the Heritage Division of the Department of Housing, Local Government & Heritage. The role of National Parks and Wildlife Service (NPWS) includes securing the conservation of a representative range of ecosystems to maintain and enhance populations of flora and fauna in Ireland. It also designates and advises on the protection of habitats and species identified for nature conservation (Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) and Special Protection Areas (SPA) having particular regard to the need to consult with interested parties. The NPWS also makes the necessary arrangements for the implementation of National and EU legislation and policies for nature conservation and biodiversity including the EU Habitats and Birds Directives, and for the ratification and implementation of the range of international Conventions and Agreements relating to the natural heritage. A network of NPWS Conservation Rangers are stationed across the country and can provide advice on bats and bat roosts.

TRADITIONAL FARM BUILDING SCHEME

The Heritage Council, in partnership with the Department of Agriculture, Food and the Marine, manages the GLAS traditional farm buildings grant scheme. The principal objective of this scheme is to ensure that traditional farm buildings and other related structures that contribute to the character of the landscape and are of significant heritage value, are conserved for active agricultural use. Only farmers approved in the Green Low-Carbon Agri-Environment Scheme (GLAS) are eligible to apply, although this scheme is currently being replaced with the ACRES scheme (as of 2022). Part of the standard practice The Heritage Council requests that building owners commission a bat survey prior to works to restore traditional farm buildings. The cost of the bat survey is included in the grant payment to the building owner, with the entire grant not exceeding 75% of the overall costs.

CASE STUDIES OF BAT PROTECTION AT HERITAGE SITES

A Farm Building in County Meath

This building is in private ownership. It is situated in a working farmyard and was originally constructed in the 16th Century as a residence. Over time it was converted to use as a granary but prior to reroofing in 2021 it was in a semi-derelict state with large holes in the slate roof and rotting floorboards.

The ground floor is used for farm vehicle storage. The habitat in the area includes organic arable land, hedgerows, broadleaved woodland and small rivers, ideal foraging habitat for many bat species.

The owner successfully applied for grant assistance under the GLAS Traditional Farm Buildings Scheme (administered by the Heritage Council) to reroof it, and under the terms of the grant award, commissioned an ecologist to carry out a survey of the building. The ecologist explained the legislation protecting bats to the site owner prior to carrying out the survey and explained that a derogation licence would need to be applied-for if bats were found as the planned works were likely to result in disturbance to the roost.

Building prior to reroofing – farm machinery stored at ground floor level © Niamh Roche

Interior of building prior to reroofing – light coming through unglazed window opes and holes in the roof. Rook nesting material visible but the reroofing was carried out in autumn, outside the nesting season for birds. © Niamh Roche

The bat survey took place in July and August, ideal months for this kind of activity. The survey was carried out at dusk and dawn using bat detectors, and a bat detector was left in the building for a week to record any bats that may use it less frequently. The building was found to be home to a number of bat species including whiskered bats (*Myotis mystacinus*) and brown long-eared bats (*Plecotus auritus*). The brown long-eared bats were observed roosting in crevices in stonework and behind roof cross battens. Bats gained access to the building via unglazed window openings.

The bats were present in summer, but it was also considered a strong possibility that some of the bats would continue to use the building later in the season and possibly hibernate there – due to the presence of extensive crevices in the walls. Therefore, it was suggested that the best time to carry out the reroofing would be in early autumn, when bats would still be reasonably active and therefore able to fly away if disturbed, but well past the breeding time of year. Hibernating bats can be very vulnerable since it takes them some time to wake up when completely torpid and bats hibernating behind slates would be much more vulnerable to injury while the slates are being removed.

A derogation licence was awarded by the NPWS to carry out the re-roofing in September or October under certain conditions.

Slates were removed one by one on a phased basis, in September © Niamh Roche

The re-roofing took place in September. A tool box talk was given on site by the ecologist prior to commencement. Slates were carefully removed one by one by the roofer. The slate removal was carried out on a phased basis over a number of days. An additional benefit of removing the slates one by one was that many remained intact and were salvaged to re-use on the building.

The ecologist was on hand to assess any bats that may be found as the slates were removed. In the event, two bats were disturbed when slates were removed, but both flew immediately away unharmed towards nearby trees. The reroofing took place afterwards using salvaged natural slate. No roofing felt was used.

Bats still use the building for roosting.

Since there was no change of use of the building and windows were not closed, there were no further mitigation measures required for this piece of work which was simply to stabilise the roof.

The building newly re-roofed in October © Niamh Roche

Gallagher's House, New Mills, Letterkenny

Gallagher's House is part of a complex that comprises a corn mill, flax mill and other ancillary buildings. The building (1820 – 1870) was the dwelling house of the family who owned the mill and also served as a shop and public house. The entire Newmills complex is a national monument in state care (National Monument No. 639) and is maintained by the Office of Public Works.

A bat ecologist was contacted by the OPW because the eastern section of the roof of Gallagher's House was in need of re-roofing. Many of the slates had lifted and some had slipped out of position. Roof timbers in the building were also in a state of decay from woodworm and wet rot and therefore required replacement or treatment. In addition, support beams had to be inserted at first floor level in the dwelling house.

An initial site visit in March revealed the presence of at least one bat roost. This was followed up by a summer survey at dusk and dawn using bat detectors. A maternity roost of 22 Leisler's bats *Nyctalus leisleri* and roost of c.30 Natterer's bats *Myotis nattereri* bats were found in the loft space above stables. Re-roofing was planned for the eastern section of the dwelling house, while the bats were found in the central and western sections of the roof. The ecologist concluded that if re-roofing of the building could be conducted in a sensitive manner and under derogation licence that it would be possible to retain the two roosting sites.

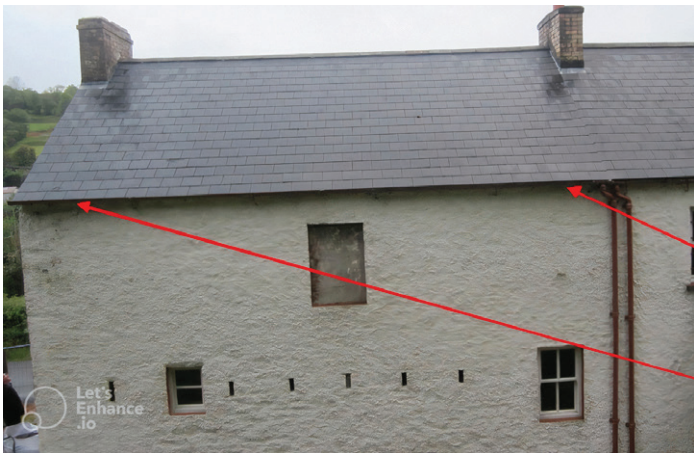
Front façade of Gallaghers, Newmills © Caroline Shiel

The ecologist recommended that the following measures should be followed in order to ensure that the bat roosts would be retained

- Ridge slates should be removed by hand in case any bats were roosting underneath them.
- It would be necessary to retain the exact bat exit/entry points, which had been found during the bat surveys, so that bats could continue to roost in the roof space of Gallagher's House.
- Any new wood used during the renovation of the roof of the property should be pre-treated with timber treatment products which are non-toxic to bats.
- Existing roofing timbers should not be treated with preservative until after September when the maternity roosts had dispersed. The ideal time to treat timbers is September/October which allows plenty of time for the timbers to dry and odours to dissipate prior to bats returning the following spring.
- Traditional hessian reinforced bitumen felt membrane was recommended. However, if a breathable roofing membrane was to be used under the slates, it should be fitted only to within 1m of the ridge beam in both the central attic space containing the Leisler's bats and the loft space. The upper 1m of slates should be fitted with traditional hessian felt.

Rear of building showing section of roof (to right) in poor condition. The remainder of the roof is in good condition
© Caroline Shiel

Rear of building showing exit points used by Leisler's bats on left and Natterer's bats on right
© Caroline Shiel



Roofing Felt

Modern roofing felt can have a poor outcome in bat roosts, particularly sites used by large numbers of bats. Modern felt is made of tiny polypropylene threads, but as bats hang from the liner or crawl over it, their claws become entangled. This can cause bats to become trapped and die. It can also result in poorly functioning roof liner as it no longer acts as an intact membrane. In bat roosts, traditional hessian bitumen liner may perform better and be more appropriate for heritage sites. In some cases bitumen felt can used on the top 1m section of the roof, closest to the apex, if this is where the bats roost, while modern roofing felt can be used lower down.

In the event, re-roofing was postponed by a year and another bat survey was carried out during the following active season. During that survey, the number of bats in the Natterer's bat colony totalled 76 which is a significant roost of this species. The roof section over the loft space at the western end of the house was not repaired. The central section above the roost of Natterer's bats was replaced and a support beam inserted in the attic space. This work was conducted after the bats had left the building in autumn to avoid disturbance to the bat colonies. The work was conducted under a derogation licence issued by the National Parks and Wildlife Service and under the supervision of the bat ecologist who carried out several site visits and on-site meetings during the course of the works.

One of the conditions of the derogation licence was that the bat roosts would be monitored to ensure they were still using the building after the works were completed and a report be forwarded to NPWS on completion of the works. A bat survey was conducted during the summer following the works. Emergence counts of Leisler's bats and Natterer's bats were conducted and 78 Natterer's bats were counted emerging from the rear of the building from the same exit point as recorded in previous surveys. 55 Leisler's bats were counted emerging from the same exit point as used previously. Both species had successfully bred in 2019 as evidenced by a dead juvenile of each species found outside on the walls of the house. It was concluded that the bat roosts had experienced no adverse effects as a result of the roof works at Gallagher's House.

An additional species – swifts were discovered nesting along the front elevation of the building. Swifts traditionally return to the same nesting site every year. Swifts are of conservation concern and are amber-listed in Ireland due to a decline in the breeding population. Their nesting locations were retained during the works.

6-Arch Stone Pedestrian Bridge

This bridge required works to ensure its integrity within a flood relief zone and also as a pedestrian bridge. Planned works included two phases – one was re-pointing of arches and walls and the second was re-surfacing of the upper side of the bridge. Additional flood relief works were also undertaken upstream and downstream of the structure, but these did not directly impact the bats or their roosts.

A bat survey identified that bats were roosting in numerous arches and, therefore, the proposed works required a derogation licence from the NPWS. In order to undertake the works, the following information was required:

- Identify which arches were used as a roosting site for bats.
- Identify the bat species and number of bats roosting.
- Determine the timing of works and procedures required to ensure that the bridge was bat-free during works and to ensure that roosting was available post-works.

Each archway was inspected during the daytime and crevices that were used by bats and/or were suitable for roosting, were marked. Discussions with on-site engineers identified the extent of works required to ensure the structural integrity of the bridge for the future. Five of the six arches were used by individual bats (Daubenton's bat, Natterer's bat and brown long-eared bat) while one arch was used by a cluster of bats (Daubenton's bat). Therefore, works were planned for the five less significant arches, while it was decided that no works would be undertaken on the archway with clusters of bats.

Daubenton's bat in crevice © Tina Aughney

Phase 1 involved "closing" the arches to allow re-pointing of crevices and this was undertaken during the spring. They were closed using debris/wind break netting after a dusk survey was completed to ensure that no bats were present. A small number of crevices in each arch were also marked to be retained (i.e. not re-pointed to ensure that there were roosting crevices available post-works). The individual "curtains" for the arches could be opened during the day to allow re-pointing to be undertaken but it was essential to close the arches at night-time to ensure bats did not return to roost. Alternative roosting in the form of bat boxes and bat tubes were provided on an adjacent bridge.

Phase 2 of the works required re-surfacing of the upper surface of the bridge. As this was across the whole bridge, the whole bridge needed to be temporarily bat-free to ensure that no bats were harmed during the works. This meant closing the main archway used by bats. The primary focus of the bat survey for this arch was to determine what type of bat roost was present. Depending on the time of the year, bat form different roosts. A maternity roost is the principal summer roost when females come together to give birth to a single baby. This is an important roost type due to its vulnerability. Therefore, as works were planned for mid-August to early September, a survey was undertaken in mid-August to determine what type of roost was in the main "bat" arch. A system using a harp trap was set up and 22 Daubenton's bats were captured. Examination of these individuals determined that they were all male bats and the ecologist concluded that the bridge was not a vulnerable maternity roost.

Individual arches of bridge with one of the dry arches closed
© Tina Aughney

Open curtains to allow work to be undertaken during the daytime
© Tina Aughney

Bats were temporarily excluded to allow works to be completed. Surveillance of potential bat activity was continuously undertaken during the works to ensure that no bats re-roosted (e.g. plywood sheets were laid in the archway to facilitate visual surveillance of bat droppings). Once works were completed, all the arches were re-opened, and monitoring has since shown that the bats have moved back in.

Harp trap in place during survey of "bat" arch © Tina Aughney

Plywood sheets below the main roosting site to determine if bats are present during Phase 2 works © Tina Aughney

AND FINALLY, TO SUMMARISE...

1. Developer/site owner contacts bat ecologist for initial consultation and to discuss whether there is a need for bat survey and report, even if none have been requested by planning authority or planning permission is not required. The presence of an SAC for lesser horseshoe bats onsite or nearby, may mean that it is necessary to carry out an Appropriate Assessment of the proposal and/or seek additional consents.
2. Bat ecologist commissioned to carry out survey if the works are deemed to have potential impact on bats. The most likely time period that bat surveys will be carried out is May-August unless there is reason to believe the site is used in winter.
3. Results of bat survey communicated to the project manager and team.
4. If no bats or signs of bats are found, the project may proceed with no mitigation or derogation – although the ecologist may recommend elements of wildlife friendly building materials/methods to use e.g installation of bat bricks or swift boxes, use of wildlife friendly timber treatments, minimal use of lighting.
5. If survey confirms the presence of bats and these are likely to be impacted by the planned works then the project manager, ecologist and project team must communicate clearly with each other and discuss in detail how the works may proceed while complying with the legislation. There may be options that need to be teased out, or compromises needed, regarding working methods, timing or materials. Timing of works may have to be adjusted, additional materials may need to be sourced e.g. lead flashing that can be moulded to create exit points, bitumen felt as opposed to standard roofing felt.
6. Once a clear plan of action with appropriate mitigation has been agreed between the parties, an application may be made in writing to the NPWS for a derogation licence. The NPWS will require the detailed bat survey report in order to assess the derogation licence application.
7. Extra time may be needed for the NPWS to review and revert.
8. Works on or near a bat roost that may impact on bats may not proceed unless the derogation licence has been received.
9. Once the derogation licence is received it should be fully reviewed by all parties so that all conditions are adhered-to during the works. The derogation licence is usually issued to the developer with the ecologist acting as the developer's Agent.

10. The NPWS may require the ecologist to be present for the works in order to ensure that bats are not unnecessarily disturbed or harmed during the project.
11. Toolbox talks can be used to communicate with the on-site team.
12. There may be a requirement for follow-up monitoring as the work progresses or has been completed.
13. The NPWS is likely to stipulate that a final report should be submitted once the works are completed.
14. Having carried out all this work to ensure that bats and their roosts are protected, make sure to celebrate and share details of your hard work with the public and site users!

RESOURCES

For an excellent overview of wildlife in buildings, including various species of birds, bats and pine martens, see this publication by Sullivan and Lusby (2021)
https://birdwatchireland.ie/wildlife-in-buildings/

The Bat Conservation Trust in the UK have produced very comprehensive survey guidelines that can be used as a reference: 3rd edition of Bat Surveys:
Best Practice Guidelines in 2016 (Collins, 2016).
https://www.bats.org.uk/resources/guidance-for-professionals

For details on bats and developments (which can include repointing, reroofing and other similar maintenance works) there is a document available online: Bat Mitigation Guidelines for Ireland - Version 2 Irish Wildlife Manual number 134
https://www.npws.ie/publications/irish-wildlife-manuals

For details on pesticides suitable for timber treatment in or near bat roosts
https://www.gov.uk/government/publications/bat-roosts-insecticides-and-timber-treatments/timber-treatment-products-suitable-for-use-in-or-near-bat-roosts

For bat and wildlife friendly landscape management see the All Ireland Pollinator Plan
https://pollinators.ie/

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Bat Conservation Ireland
Registered Address:
Carmichael Centre,
4-7 North Brunswick Street,
Dublin 7

E-mail: admin@batconservationireland.org
Website: www.batconservationireland.org

Registered Number: 494343
Charity Number: 13016
Charity Registration Number: 20039417