scott cawley

BAT SURVEY OF COUNTY LAOIS

SURVEYS OF SELECTED LAOIS COUNTY COUNCIL PROPERTIES FOR BATS

2008

An Chomhairle Oidhreachta
The Heritage Council

AN ACTION OF THE LAOIS HERITAGE PLAN 2007 - 2011

Front cover Photo: Brown long-eared bats, Borris-in-Ossory Courthouse; Durrow Courthouse; Timahoe Library.

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EXECUTIVE SUMMARY

The objectives of this Study were to:

- To carry out a field survey of bats at selected properties owned by Laois County Council and to make data collected available in map and report format.
- To use the data collected to make recommendations on management and maintenance of the properties included in the survey, conservation priorities and any future work that should be carried out.
- To collate and make this information available for future research, through a detailed survey report, annotated maps and a set of raw data.
- To produce a non-technical guidance document for the council staff, summarising the background to the survey and the methods used and detailing the bat species and numbers using each of the properties surveyed aspects of management which may affect the biodiversity value of the site, and practical site-specific management recommendations as appropriate.

Laois County Council provided the following list of buildings and locations that required surveying. The list comprised 21 locations including Parks, Playgrounds, Libraries, former Courthouses, former Churches and modern public offices.

Through a series of surveys during the daytime and nocturnal surveys of these properties, it was possible to determine if roosts were present and which bat species were using the properties. Confirmed roosts included Courthouses at Borris-in-Ossory and Stradbally and Libraries at Timahoe and Clonaslee. The latter two properties are former Church of Ireland churches.

Parks were also surveyed and showed a range of bat species using the area for feeding and commuting. The County is known to host seven out of the ten species of bat known to occur in Ireland and all were recorded using Council-owned properties as roosts or were feeding within their curtilage.

Species recorded roosting include Common and Soprano Pipistrelle bats, Natterer's bats, Brown Long-eared bats and Whiskered Bats. Then most significant roost sites were noted at Stradbally Courthouse, where Whiskered Bats have been recorded and at Timahoe Library, where three species of bats are known to roost in the same building.

Following the surveys, recommendations were provided as to how to protect the bats using the properties and how to minimise conflicts between humans using the buildings and the bats. All bats and their roosts are protected under Irish and international law and it is important for architects and property managers to be aware of procedures to be followed when preparing to renovate and repair these properties. Advice has also been provided on the management of Parks and open spaces in order to maximise their potential as feeding and commuting areas for bats.

1. INTRODUCTION

BACKGROUND

The objectives of this study were to:

(1) To carry out a field survey of bats at selected properties owned by Laois County Council and to make data collected available in map and report format.

(2) To use the data collected to make recommendations on management and maintenance of the properties included in the survey, conservation priorities and any future work that should be carried out.

(3) To collate and make this information available for future research, through a detailed survey report, annotated maps and a set of raw data.

(4) To produce a non-technical guidance document for the council staff, summarising the background to the survey and the methods used and detailing the bat species and numbers using each of the properties surveyed aspects of management which may affect the biodiversity value of the site, and practical site-specific management recommendations as appropriate.

Since bats are protected by law and are frequently found roosting within man-made structures, there is a need to protect bats during proposed building works and renovations/repairs of old structures. Bats are often encountered at a very late stage in such works and as a result there is usually a great deal of inconvenience to architects and builders when works are held up on account of bats having to be ensured the necessary protection.

Such negative experiences are, unfortunately, still rather common and have led to bats receiving more than their share of bad press. Rather than being seen as an important element of biodiversity that warrant protection, they have been portrayed as problematic factors that cost time and money or even prevent development in its tracks. Such views are, thankfully, being combated with awareness-raising and an increasing realisation that such problems can be addressed by a little forward planning and an appreciation of bat ecology and the legislative background to their protection. In many cases that Scott Cawley dealt with in 2005 and 2006, owners of properties, developers and architects foresaw the potential for bats to be present and allowed mitigation of potential impacts upon roosts to take place.

BATS AND THEIR ROOSTS

This report does not aim to provide detailed information on the roosting preferences of Irish bats or their ecology as there are many other sources of information that deal with this subject alone (refer to Hayden and Harrington (2001) and McAney (2006)). However, when discussing roosting opportunities, roosting preferences and types of roost in County Laois it is useful to outline the various types of roost used by the bats known to breed in Ireland.

All bats in Ireland may use buildings for a variety of purposes throughout the year and throughout their life cycle. Therefore a building can never, in reality, be presumed to be unused by bats at any time of year. However, surveys of bat roosts have indicated that certain species will prefer certain parts of buildings, or building types, for certain functions. This makes roost surveys and determining opportunities for bats much easier although with bats there are usually more ‘exceptions to the rule’ than rules.

Of the ten bats known to breed in Ireland, the lesser horseshoe bat (Rhinolophus hipposideros), is not likely to occur in Co Laois. It is only found in Counties Kerry, Limerick, Cork, Clare, Galway and Mayo.

Table 1.1: Roost Preferences for Bats likely to be encountered in Co. Laois

Species	**Summer Roosts (inc. maternity roosts)**	**Winter Roosts (for dormancy and hibernation)**	**Location within roost site**
Common Pipistrelle (*Pipistrellus pipistrellus*)	Found in widest range of buildings including modern buildings and flat roofs which are not often occupied by other bat species. Less often uses trees roosts.	Often moves around same building used for summer roost. Uses variety of crevice habitats.	Crevices, under tiles and slates when in small groups or singly. Breeding females in ridge-tree and in corners.
Soprano Pipistrelle(*Pipistrellus pygmaeus*)	As above. Often more frequent near water than *P. pipistrellus* and roosts in greater numbers (>100 is common).	As above.	As above.
Nathusius' Pipistrelle (*Pipistrellus nathusii*)	Unknown but recorded in cavity walls in brick buildings and under slates.	Unknown.	Unknown.
Brown long eared bat (*Plecotus auritus*)	Prefers large open roof spaces with stable temperatures throughout year e.g. churches, closed barns etc. Also found in trees and in crevices. Usually in small numbers.	Hibernates in similar structures to summer roosts but more often in crevices.	Frequently observed roosting in open along ridge beam but also found in crevice habitats.
Leisler's Bat (*Nyctalus leislerii*)	Tree roosts, stone buildings, chimneys and roof spaces. Usually in relatively small numbers.	As summer roosts. Variable.	Crevice-loving but when breeding found in more open spaces. Regularly moves between roosts.
Natterer's Bat (*Myotis nattereri*)	Breeding roosts more often in buildings. Single bats often found in bridges and crevices in stonework.	Hibernates underground and in bridges, deep crevices in stonework etc.	Crevice-loving but when breeding found in more open spaces.
Daubenton's Bat (*Myotis daubentoni*)	Predominantly around lakes and rivers in buildings, stonework and under bridges.	Hibernates underground and in bridges, deep crevices in stonework etc.	Crevice-loving but when breeding found in more open spaces.
Brandt's Bat (*Myotis brandtii*)/Whiskered Bat (*Myotis mystacinus*)	Predominantly around lakes and rivers in buildings, stonework and under bridges.	Hibernates underground and in bridges, deep crevices in stonework etc.	Crevice-loving but when breeding found in more open spaces.

Figure 1.1 Leisler's Bat

This is Ireland's largest bat and frequently recorded feeding above Parks and open pastures

Figure 1.2 Brown Long-eared Bats roosting on the ridge beam in Borris-in-Ossory Courthouse.

Figure 1.3 Borris in Ossory Courthouse showing gaps in soffit boards and missing glass above the door, which allow access for Pipistrelle and Brown Long-eared bats

Figure 1.4: Up to three species of bats use Timahoe Library in this former Church of Ireland. Two of the entry points are labelled.

Bat activity outside the roost is primarily dependent upon the air temperature and the availability of food i.e. flying insects. The maritime climate of Ireland usually prevents very cold nights for long periods and it is suspected that many bats may not hibernate in the physiological sense of the word. Bats may become dormant when temperatures are too low to justify active flight but may become active again on milder days. It is quite common to see bats flying in late autumn when the urge to mate and possibly to move to hibernation sites is strong.

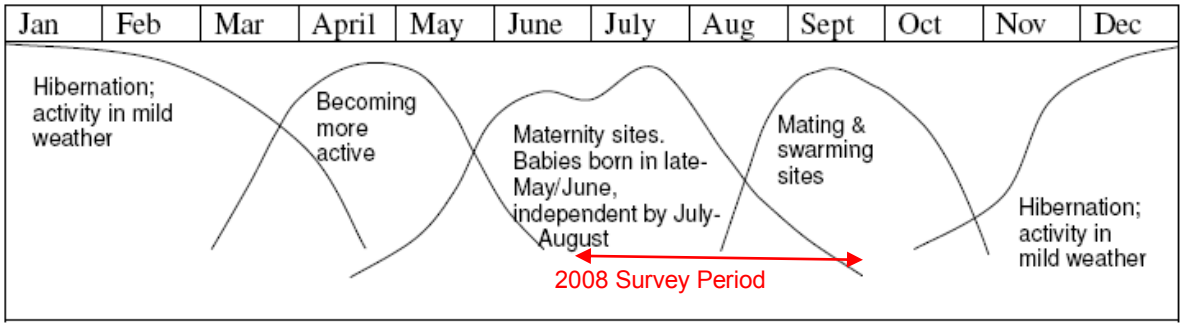

Figure 1.5: The Bat Year (taken from Bat Mitigation Guidelines for Ireland (2006))

County Laois offers superb opportunities for bats in terms of undisturbed woodland, hedgerows, rivers, lakes and agricultural land. The properties owned and managed by Laois County Council provide multiple roost opportunities in mature trees, roof spaces and stonework.

BATS AND THE LAW IN IRELAND

All bat species are protected under Irish Law in the form of the *Wildlife Act, 1976* and *Wildlife (Amendment) Act (2000).* These make it an offence to

- Intentionally kill, injure or take a bat;
- Possess or control any live or dead specimen or anything derived from a bat;
- Wilfully interfere with any structure or place used for breeding or resting by a bat;
- Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose

At the international level, the Habitats Directive (*EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora*) is implemented in Ireland by the *European Communities (Natural Habitats) Regulations 1997-2005*. These regulations allow the Irish Government to designate sites for rare or vulnerable species. Special Areas of Conservation have been established under these regulations, for Lesser horseshoe bats in Ireland and strict procedures regarding management of these sites is prescribed. All other bats species are also protected under the Regulations and unlike the Wildlife Acts, the Habitats Regulations cover all activities without exemption.

Offences pertaining to bats and their roosts are similar to those under the Wildlife Act. However with the Habitats Regulations, if a roost or bat is affected accidentally then this is not a defence in law. Whilst this may seem rather weighted against developers, the Regulations allow developers to obtain derogation from the Regulations to allow them, in certain circumstances, to disturb bats and their roosts.

Such derogations are provided by the Minister for the Environment, Heritage and Local Government through the Species and Regulations Unit of the National Parks and Wildlife Service. Derogations are

provided only where the applicant has provided evidence that the works being permitted will not affect the favourable conservation status of the bat species involved. Applicants have to provide proposals to mitigate for loss or disturbance to roosts and will be subject to monitoring and reporting requirements.

Furthermore as a signatory to the European Bats Agreement ('Eurobats') (*Agreement on the Conservation of Bats in Europe*) 1993, Ireland is required to protect their habitats, requiring the identification and protection from damage or disturbance, of important feeding areas. All Irish bat species are listed in Appendix II of the Bern Convention (1979), as species requiring strict protection.

Finally, all but two bat species in Ireland are listed as '*internationally important*' in the Irish Red Data Book (1993). Natterer's and the whiskered bat are both listed as indeterminate. Brandt's bat status is not yet determined in Ireland.

The bat surveys undertaken in this study were carried out under a derogation licence issued by the National Parks and Wildlife Service. This derogation allowed bats to be photographed within their roosts under strict conditions for the purposes of this study. No other type of disturbance took place at bat roosts.

2. OBJECTIVES

The objectives of the study were as follows:

- To carry out a field survey of bats at selected Local Authority owned properties in County Laois and to make data collected available in map and report format.
- To use the data collected to make recommendations on management and maintenance of the properties included in the survey, conservation priorities and any future work that should be carried out.
- To collate and make this information available for future research, through a detailed survey report, annotated maps and a set of raw data.
- To produce a non-technical guidance document for County Council staff, summarising the background to the survey and the methods used and detailing the bat species and numbers using each of the properties surveyed aspects of management which may affect the biodiversity value of the site, and practical site-specific management recommendations as appropriate.

3. METHODOLOGY

PROPERTIES SELECTED FOR SURVEY

Laois County Council provided the following list of buildings and locations that required surveying. The list comprised 21 locations including Parks, Playgrounds, Libraries, former Courthouses, former Churches and modern public offices.

1. County Hall, Portlaoise
2. Courthouse, Borris-in-Ossory
3. Courthouse, Stradbally
4. Courthouse, Mountmellick
5. Courthouse, Durrow
6. Abbeyleix Library
7. Clonaslee Library
8. Timahoe Library
9. Borris-in-Ossory Library
10. Mountmellick Library
11. Mountrath Library
12. Portlaoise Library
13. Portarlington Library
14. Rathdowney Library
15. Ballylinan Library
16. People's Park and River Triogue Park, Portlaoise
17. People's Park, Portarlington
18. Playground, Heritage House, Abbeyleix
19. Ballinakill Outdoor Swimming Pool
20. Kyletalesha Civic Amenity Site
21. Park and Playground, Mountrath

DAYTIME SURVEYS OF STRUCTURES

Following contact with the caretaker or property manager, a visual assessment of the interior and exterior of each structure/location was undertaken during daytime hours by Scott Cawley ecologists. Health and safety risk assessments always preceded any entry to the properties to ensure that such risks were minimised and that safe working practices were adopted.

A full examination of the interior and exterior of the structures was undertaken to search for the presence of bats and identify potential roost sites. Bat activity is usually detected by the following signs:

- bat droppings (these will accumulate under an established roost or under access points);
- insect remains (under feeding perches);
- oil (from fur) and urine stains;
- scratch marks;
- bat corpses.

Interior surveys were restricted to accessible areas and those that were safe to enter. These included roof interiors (referred to as attics or loft spaces), cellars, rooms and interiors of sheds and outbuildings.

The majority of buildings were surveyed to identify evidence of roosts and therefore there was an emphasis upon certain areas within structures such as attics and old outbuildings. Surveys of hibernation sites were not included in the surveys as they are very difficult to carry out with an acceptable level of confidence. Bats often hibernate in deep crevices in cavity walls and other frigid environments and therefore are hard to detect. In addition, the project timetable commenced in mid-summer when such sites would not be occupied. Nevertheless, during the structural surveys, the potential for hibernacula to be present was included in the scope of the analyses.

The surveys extended into late summer and early autumn (September) when bats disperse from summer roosts and maternity roosts and move through a series of 'transition' roosts during the bat mating season. Occupation of roosts in this period is very transient and one-off surveys usually have to draw cautious conclusions as to bat presence/absence. Therefore it is important to realise that these surveys represent a snapshot of bat activity within each structure at that point in time.

Throughout the year, bats have different roosting needs depending upon the stage in their life cycle (e.g. breeding, mating). Therefore some roosts will move position around a locality and even within a single structure during the year. The daytime roost surveys therefore had to address the possibility of different uses of the building during the year.

Dusk Emergence and Dawn Swarming Surveys

Dusk emergence surveys involved surveyors observing a building or an area to record bats leaving the roost to feed at dusk and to record bat activity and behaviour. The dusk surveys commenced immediately prior to dusk and for up to two hours after dusk. This time period is usually adequate to cover emergence times for different species of bats. The surveyors searched for bats emerging from 'roost access points' from structures and was assisted by ultrasonic detectors to identify bat species. Where many bats occur within a roost, some species are very vocal prior to emergence and can be heard with the unaided ear.

Ultrasonic Bat detectors used included a heterodyne/time expansion (*Pettersson D240x*) detector that allows bat calls to be recorded and played back at slower speeds, which aids identification of the species with specialist software. Bat calls were recorded onto a *Creative Nano plus* Mp3 recorder and were analysed later with *BatSound 3.31*.

The dawn surveys were undertaken on the following mornings in a similar manner to the dusk surveys. In large roosts, particularly maternity roosts, bats will 'swarm' around entrances to roost sites prior to entering the roost. The aim of the dawn surveys was to identify roost access points, to count numbers of bats swarming around roost sites and to identify species re-entering any roost site. The dawn surveys were undertaken from up to two hours prior to sunrise to just after sunrise.

Figure 3.1: Recording Equipment used during detector survey

Left-Right: Pettersson D240x Time Expansion detector linked to Creative Nano Plus Mp3 recorder, Anabat SD1 Bat detector

Bat activity throughout the night was recorded using an unattended *Anabat* detector. This can be left at the monitoring location and will record all bat activity in the area. The detector records onto a memory card that can be analysed using specialist software. Whilst not as accurate as the time expansion detector recordings, the *Anabat* system provides an indication of the levels of the bat activity and the species present in the area. It cannot confirm if bats are using roosts however as it merely records whatever bats are in the area regardless of where they have come from.

4. RESULTS

PREVIOUS RECORDS OF BATS IN CO LAOIS

The collection of records of bats is still in its infancy in Ireland compared to other European countries. Bat Conservation Ireland (BCI) coordinate and maintain the national database of bat records and have provided data for this study. Ad-hoc bat surveys by enthusiasts and consultant ecologists as well as systematic monitoring schemes such as the All-Ireland Daubenton's Bat Waterways Surveys and the Car Transect Surveys obtain records of bats across the country. The latest national survey, the BATLAS 2010 project will be the most important survey to take place yet for this species and is currently underway. Roost Data from Bat Conservation Ireland for the County is shown in Table 4.1. Data from surveys of bridges in Laois and Offaly (Keeley, 2007) are also included.

Table 4.1: Summary of Bat records for Co. Laois.

Location	**Bats present**	**Date**
Annagh Bridge	1 x unidentified	29/6/07
Ballymacrory Bridge	Daubenton's bat droppings	31/5/07
Cardtown Bridge Roost	Natterer's bat, 1 unidentified	30/5/07
Church ruins, Clonkeen	Soprano Pipistrelle x 2	26/9/05
Cottage, Clonkeen	Common Pipistrelle x 2	26/9/05
Derelict farmyard, Togher	Natterer's bat x 3, Brown long eared x 2 and Leis (detector)	15/7/06
Derrynaseera Bridge	Unidentified droppings	29/5/07
Farmhouse, Togher	Soprano Pipistrelle x 2	15/7/06
Farmshed, Togher	Soprano Pipistrelle (detector)	15/7/06
Hollybrook, Camcloon, Ballyfin	Brown long eared x 14	12/7/99
Hooban Household, Churchfield, Castletown	Unidentified x 60 individuals	10/1999
Mill Bridge Roost, Coolrain	Daubenton's x 1	29/5/07
Roost 2, Aghaboe	Common Pipistrelle (visual)	1/10/05
Roost 2, Grantstown	Brown long eared (visual)	1/10/05
Roost, Aghaboe	Common Pipistrelle & Brown long eared (visual)	1/10/05
Roost, Grantstown	Common pipistrelle, Soprano Pipistrelle & Brown long eared (visual)	1/10/05
St Brigids, Ballintubbert, Stradbally,	Brown long eared droppings	17/5/98
St Peters, Curraclone,	Brown long eared droppings and 1 individual	17/5/98
Twomile Bridge Roost, Dernacart	Daubenton's bat x 1	24/5/07
Bay Bridge, Owenass River.	Soprano Pipistrelle and Daubenton's bat.	2007

Species records collected by the Car Transect method include Common Pipistrelle and Leisler's bats. The BCI also includes records for Whiskered/Brandt's Bat and Leisler's Bat. Overall, County Laois is known to host seven or eight (since Whiskered and Brandt's bats are virtually indistinguishable) out of the ten possible bat species known to occur in Ireland.

The two species that have not yet been recorded include Nathusius's Pipistrelle (known to occur in other Counties in the Republic including Co. Offaly but otherwise relatively rare) and the Lesser Horseshoe bat, which only occurs along western seaboard counties.

RESULTS OF SURVEYS

Table 4.2 shows the summary of the list of selected properties in Co. Laois. The results describe the locations and their suitability for use by bats, any evidence of bats using the locations and, where possible, the species responsible for the evidence.

Table 4.2: Summary of Surveys of Laois County Council properties

Location	**Evidence for Roosts**	**Dusk/Dawn Surveys**	**Bat Activity in area**
County Hall, Portlaoise	No evidence of bats. Modern design with few ideal spaces for bats. Mostly concrete/metal/glass construction.	No bats detected emerging from buildings and no activity at dawn.	Very little activity. Several areas floodlit near retail buildings. Only three Common Pipistrelle bats recorded 45 minutes after dusk suggesting no roost nearby.
Courthouse, Borris-in-Ossory	8 Brown Long-eared bats and one *Pipistrellus* species seen roosting. Survey undertaken in 2002 recorded Soprano Pipistrelle bats using building as a mating roost and also evidence of Brown Long-eared and possibly Whiskered bats.	Brown long-eared bats appear to fly inside the property and leave via the gap in the eaves and over the door in the 'courtyard'. Survey undertaken around perimeter recorded the species roosting in the Courthouse.	Little other activity in area apart from those species known to be roosting.
Courthouse, Stradbally	Roost survey undertaken in May 2008 by Hopkirk and Russ identified an established possible Whiskered Bat roost. The roof space was re-examined in August 2008 and similar results were recorded.	The nocturnal survey undertaken in May 2008 identified Whiskered Bats commuting to the possible roost entry point at dawn.	Common Pipistrelle recorded commuting in 'courtyard'. Whiskered bats also recorded.

Location	Evidence for Roosts	Dusk/Dawn Surveys	Bat Activity in area
Courthouse, Mountmellick	No evidence seen within roof space. Most areas suitable for bats however. Some butterfly wings inside rooms suggesting bat feeding activity.	Common Pipistrelle bats commuting in garden behind residence throughout night. None seen to emerge from building.	Common pipistrelle bats commuting in area.
Courthouse, Durrow	Roof space not accessed but building recently renovated and unlikely to be accessible to bats. No evidence of bats and no obvious access points.	Survey around perimeter did not detect any bats leaving or re-entering the building.	No bats recorded.
Abbeyleix Library	Building has been significantly refurbished and is not deemed suitable for bats.	Not surveyed.	Not surveyed.
Clonaslee Library	Roof above nave surveyed. Several droppings belonging to Brown long-eared bats seen under ridge beam. Recent origin. No clear entry points seen but possibly gaps in tiles/slates near tower.	Bats leave via gaps between slates and possibly around tower. Limited dawn activity around main ridge.	Common pipistrelle activity in village.
Timahoe Library	Long history of use by bats. Brown long-eared and smaller bat droppings scattered around inside church. No obvious signs on exterior.	Common Pipistrelle bats recorded flying along northern side of church at dusk. Leisler's bats seen emerging from round tower nearby. Brown long-eared/Natterer's bats seen socialising in flight in church interior. At dawn, Natterer's bats seen entering church on NW corner and Pipistrelle bats at SW corner. Brown Long-eared bats seen entering roost via gap between slates near eastern end of ridge.	Leisler's, Common Pipistrelle, Brown long-eared and Natterer's bats all commuting in area.
Borris-in-Ossory Library	Building exterior examined but no evidence of bats. Interior roof space not accessible. No evidence of bats and building not deemed to be very suitable.	Not surveyed.	Not surveyed.

Location	Evidence for Roosts	Dusk/Dawn Surveys	Bat Activity in area
Mountmellick Library	Building exterior examined but no evidence of bats. Interior roof space not accessible. No evidence of bats. Gaps around building soffits possibly of use but unlikely.	Not surveyed.	Not surveyed.
Mountrath Library	Building exterior examined but no evidence of bats. Interior roof space not accessible. No evidence of bats and building not deemed to be very suitable due recent date and nature of construction.	Not surveyed.	Not surveyed.
Portlaoise Library	Building exterior examined but no evidence of bats. Interior roof space not accessible. No evidence of bats and building not deemed to be very suitable due recent date and nature of construction.	Not surveyed.	Not surveyed.
Portarlington Library	Building exterior examined but no evidence of bats. Interior roof space not accessible. No evidence of bats and building not deemed to be very suitable due recent date and nature of construction.	Not surveyed.	Not surveyed.
Rathdowney Library	Building exterior examined but no evidence of bats. Interior roof space not accessible. No evidence of bats and building not deemed to be very suitable due to nature of construction. Manager reported finding bat roosting in 2007 for short period of time.	Not surveyed.	Not surveyed.
Ballylinan Library	Exterior and interior surveyed. Roof space full of cobwebs and no evidence of bats.	Not surveyed.	Not surveyed.
People's Park and River Triogue Park, Portlaoise.	Excellent bat habitat including semi-mature trees, river and standing water, hedgerows and open grassland.	Common Pipistrelles and Daubenton's Bats over water.	Common Pipistrelles and Daubenton's Bats.
People's Park, Portarlington.	Open grassland with mature trees. River Barrow adjacent to Park and known Daubenton's and Natterer's bat roosts in bridges nearby.	Small number of Common Pipistrelles foraging around trees.	Common Pipistrelle only.

Location	Evidence for Roosts	Dusk/Dawn Surveys	Bat Activity in area
Playground, Heritage House, Abbeyleix.	Small trees and shrubs with small area of grassland. Heritage House is possible bat roost nearby.	None recorded.	Common pipistrelle along road immediately to the west of the park.
Ballinakill Outdoor Swimming Pool	Grassland located outside of site. Several concrete/metal buildings examined but no evidence of bats recorded.	Common pipistrelle and Myotis spp, possibly Daubenton's bat, recorded at dusk only. No activity at dawn.	Myotis spp possibly roosting in nearby churches?
Kyletalesha Civic Amenity Site	Few roosting opportunities in area due to modern, disturbed nature of site.	Leisler's bats recorded shortly after dusk suggesting a roost within 1km.	Little activity overall.
Park and Playground, Mountrath.	Amenity grassland, scattered trees and a small stand of trees dominated by immature birch. The north-south flowing Mountrath River (known locally as the White Horse River) bisects the park.	Leisler's, Common pipistrelle and Daubenton's bats feeding within Park.	Common pipistrelle bat noted to south of park.

Confirmed Bats Roosts:

- Courthouse, Borris-in-Ossory
- Courthouse, Stradbally
- Timahoe Library
- Clonaslee Library

BAT DIVERSITY IN CO LAOIS

Table 4.3 below summarises the status of species recorded in Co Laois and in the context of their national distribution.

Table 4.3: Summary of Bat Species recorded in Co Laois.

Bat species	National Status	Status Co Laois	Locations Recorded	Roosting Status
Common Pipistrelle (*Pipistrellus pipistrellus*)	Widespread across whole country in both rural and urban areas.	Recorded frequently in surveys and possibly uses Courthouses as roosts.	Mountmellick Courthouse, Stradbally Courthouse (though not thought to be roosting there); Timahoe Library.	Roosting in Timahoe Library.
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	Widespread across whole country in both rural and urban areas.	Present in high numbers. The commonest species recorded.	Borris-in-Ossory Courthouse.	Borris-in-Ossory Courthouse.
Nathusius' Pipistrelle (*Pipistrellus nathusii*)	Limited knowledge of distribution. Only confirmed breeding roost is in N. Ireland.	Not recorded.	Not recorded.	Not recorded.
Brown long eared bat (*Plecotus auritus*)	Widespread across whole country in rural and particularly wooded areas.	Present, likely to be in moderate numbers.	Mountmellick Courthouse, Timahoe Library.	Mountmellick Courthouse, Timahoe Library, Clonaslee Library.
Leisler's Bat (*Nyctalus leislerii*)	Widespread across whole country, particularly in Leinster. Irish population is high in comparison to limited distribution in mainland Europe and UK.	Present, likely to be in moderate numbers.	Timahoe Library.	Timahoe round tower (Not LCC property).
Natterer's Bat (*Myotis nattereri*)	Recorded across the country in mainly rural areas.	Restricted to certain areas in small numbers.	Timahoe Library	Timahoe Library.
Daubenton's Bat (*Myotis daubentoni*)	Widespread across whole country primarily in areas associated with lakes, ponds or rivers.	Small numbers present.	Mountrath and Portlaoise Parks. Likely to occur within Portarlington.	Not recorded.

Bat species	National Status	Status Co Laois	Locations Recorded	Roosting Status
Brandt's Bat (*Myotis brandtii*)	Limited records in Ireland, mainly in rural areas in Cos Kerry, Clare, Cavan.	? Possibly present but difficult to distinguish by bat detector so is often treated as 'Brandt's/Whiskered'. Very low numbers recorded.	Not recorded.	Not recorded.
Whiskered Bat (*Myotis mystacinus*)	As Brandt's Bat.	As Brandt's Bat.	Stradbally Library	Stradbally Library
Lesser horseshoe bat (*Rhinolophus hipposideros*)	Western seaboard counties including Cork, Kerry, Limerick, Clare, and Galway.	Not present.	Not recorded.	Not recorded.

5. CONCLUSIONS OF SURVEYS

BATS USING LAOIS COUNTY COUNCIL PROPERTY

Roost Status

Bat roosts vary in size, use and therefore importance. The law does not make any distinction between the numbers of roosts or their location. A single pipistrelle bat in a hibernation roost is as equally 'protected' as a roost of several hundred Lesser horseshoe bats.

However, when determining how to practically manage and protect these roosts, a simple series of criteria can be used to determine how important a roost is. In 2003 the Heritage Council Bat Panel agreed the following 'rule of thumb' for describing what is a "significant" roost (unpublished):

Table 5.1: Guide to Significance of Roosts

Bat Species	**Nature of Roost**	**Significance**
Lesser Horseshoe	>50 winter roost	Very significant
	>100 summer roost	Very significant
	If present -	Significant
Whiskered	>10	Very significant
	If present -	Significant
Natterer's	>10	Very significant
	If present -	Significant
Daubenton's	maternity roost *	Very significant
Leisler's	maternity roost *	Very significant
Common Pipistrelle	maternity roost*	Significant
Soprano Pipistrelle	maternity roost *	Significant
Brown Long-eared	maternity roost *	Significant
Nathusius' Pipistrelle	Undetermined	

* This judgement is now debatable as mating and hibernation roosts are deemed to be as important as breeding sites.

Taking these rules into account, several of the roosts are deemed to be 'significant'. The Whiskered bat roost at Stradbally and possibly Borris-in-Ossory as well as the Natterer's roost at Timahoe Library would be regarded to be significant. The Courthouse roosts and Timahoe are also of significance as they host more than one species of bat.

Species Diversity

The results of the surveys reflect the existing knowledge for bat diversity in the County. The surveys recorded all of the species previously known to occur in the County. It is possible that Nathusius' pipistrelle is present in the County but has been under-recorded as it can resemble other Pipistrelle species ultrasound calls.

6. Recommendations: Roost Protection & Management

It is one of the key objectives of this project to provide recommendations to Laois County Council on how the structures and locations should be managed and maintained to ensure compliance with wildlife law and maximise biodiversity in these places.

Whilst there are generic measures that should be applied to all confirmed bat roosts, each location needs tailored recommendations. The following paragraphs deal with both types of measures. These measures address a range of scenarios including proposed renovation or repair works and general working arrangements to be adopted in the vicinity of the roosts.

Generic Measures to be applied to all confirmed bat roosts

- Copy of Roost Report Form (See Appendix 1) should be held in association with plans of each structure so that the status of the structure with regard to bats is made clear.
- Should works be proposed to structures that do not have a Roost Report Form, as a minimum, a daytime assessment of the structure should be carried out. A dusk emergence and dawn survey also need to be a carried out to check for concealed roost spaces.
- Permanent Notices should be provided at any access points to the roost area, stating that the area is protected under Irish law and has restricted access. Metal plaques are available from the Heritage Council and the National Parks and Wildlife Service.
- It is not necessary to notify all staff working in the building as to the presence of bats unless they are likely to be working in the roosting area and could cause disturbance.
- **All** staff involved in design works concerned with a known bat roost should be informed that the roost is protected under law and that certain activities may cause an offence unless derogation from the legal protection is received.
- Most of the day-to-day activities in the areas examined in this study will not conflict with the bats using them. However the following types of activities may cause an offence unless mitigated:
- Types of works likely to affect bats
    - Changes to external and internal lighting arrangements such as increasing floodlighting, changes to illumination timing and installation of lights in roof spaces;
    - Replacement/Repair of barge boards, soffits, chimneys, ridge tiles and slates and other external roof features.
    - Replacement/Repair of rafters, battens, installation of roof liner, electrical and plumbing works, timber treatment, replacement of upper floor ceilings and other internal roof features.
    - Replacement/Repair of windows such as filling gaps in frames or complete replacement of windows that were previously open/broken.
- Approval from National Parks and Wildlife Service is required in all cases where works to a structure containing a bat roost is involved.
- Avoid areas where bats are roosting. E.g. bats roosting in one area of a roof may be temporarily 'sectioned off' in some circumstances to allow works to be a carried out in another section of the roof.

- Timing of works to buildings that may contain bats is the easiest way to minimise the risk of harm to bats and all works should be undertaken when there is least chance of encountering bats in the roost. The timing of works depends upon the nature of the roost as set out below:

Table 6.1: Calendar showing optimum period for bat works

Roost Type	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Hibernation Roost												
Maternity Roost (females & juveniles)												
Male summer roost												
Late summer Transition roost												
Mating Roost												

Key:

	Bats least likely to be present, best time to undertake works.
	Bats likely to be present. Works not permitted.
	Bats may be present, caution must be applied.

- Where roofs require re-roofing or other significant works, there are several generic principles that should be adhered to when dealing with Architects and Engineers:
    - Where works may require replacement of timbers, old timbers should be tied to new timbers at the roof apex to allow bats to roost against old material. Experience amongst bat workers has led to the conclusion that bats prefer to roost against old timbers that often retain their scent, as opposed to fresh new timber.
    - Efforts should be made to re-use slates, timbers and ridge tiles wherever possible.
    - If the existing roof void is to be cleared then bat droppings may be collected and re-deposited in the new roof space as bats may be attracted to areas that show evidence of previous use.
    - Breathable 'Tyvek' or 'Roofshield'–type membrane should not be used as this has been shown to alter the thermal characteristics of the roof space and also can 'tuft-up' and snag bat feet and claws. The preference is for bitumen-based roof membrane.
    - Where possible, care should be taken not to alter the thermal properties of the roost space, e.g. by fitting ventilation slates, inserting new firewalls etc.
    - Proponents of all proposed works to buildings known to contain bats should ensure that the works receive design advice and are supervised by a qualified and licensed bat worker and shall be compliant with wildlife legislation;

- Where relevant, precautionary measures should be incorporated into method statements to address the unforeseen discovery of bats during works. This generally includes briefing contractors on their legal responsibilities to report bat sightings. Works should be suspended when bats are sighted until a qualified bat worker can assess the risk to other bats and carry out the necessary protective measures in agreement with the National Parks and Wildlife Service.
- Known roosts should be monitored on an annual basis as part of an ongoing biodiversity monitoring programme. Bats are important indicators of biodiversity and can usually be easily monitored.

Specific Mitigation Measures

This section describes the recommendations applying to the four confirmed bat roosts that were found in this study. Many of the recommendations can be applied to other cases of bat roosts in buildings.

Courthouse, Borris-in-Ossory

The Courthouse was surveyed in 2002 and 2008. Both surveys identified the presence of Brown long-eared bats whilst the 2002 surveys also identified the possible presence of Whiskered bats. Both of these bats like to roost against the ridge beam and between the timber and the ridge tiles or slates. The roosting area and access points are known but these may change during the year.

Guidance from the Hopkirk and Russ Report and the current studies are provided below:

- Timing of remedial work would best be carried out from November to February.
- Gaps below gutter and ridge tiles should be maintained for bat access.
- Hedgerow and fields to the south are crucial to the success of the roost. This should be retained and where possible native hedgerow and tree species should be planted.
- During the renovation of the Courthouse, the access over the door for Brown long-eared bats is unlikely to be retained as it will bring bats into close contact with the occupants of the Courthouse. Instead a similar type of dormer-style letterbox-sized access slit will be provided at the edge of the eaves to allow this species access close to the original access point.
- Roof works may require replacement of timbers, particularly those on the southern side where the trusses and ridge beams are rotten, allowing water into the building. Old, dry timbers should be tied to new timbers at the roof apex to allow bats to roost against old material. Experience amongst bat workers has led to the conclusion that bats prefer to roost against old timbers that often retain their scent, as opposed to fresh new timber.
- Efforts should be made to re-use slates, timbers and ridge tiles wherever possible.
- If the existing roof void is to be cleared then bat droppings should be collected and re-deposited in the new roof space as bats may be attracted to areas that show evidence of previous use.
- Breathable ‘Tyvek’ or ‘Roofshield’–type membrane shall not be used as this has been shown to alter the thermal characteristics of the roof space and also can ‘tuft-up’ and snag bat feet and claws. The preference is for bitumen-based roof membrane.
- Insulation should be with ‘Kingspan’ sheets rather than insulation wool. The roost does not appear to be reliant upon heat transfer from the lower storeys as the building has been unoccupied for a while and bats still

- Any floodlighting should be restricted to the northern (road) side. There is to be no illumination in other areas apart from bollard lighting below 2 metres. Generic recommendations should also apply as described earlier.

Figure 6.1: Artificial roost access slits under eaves suitable for Pipistrelle species and Whiskered bats (Bishop's Palace, Kilkenny)

Courthouse, Stradbally

The surveys suggest that a bat roost has been present for many years and that it may have been the site of a maternity colony, possibly when the building was heated. The droppings and activity suggest Whiskered bats as the main species, a relatively rare bat species that roosts largely between the ridge tile and ridge timbers (Hopkirk and Russ, 2002). The authors concluded that the roost was likely to be a summer male roost composed of a small number of bats.

- Any roof works should preferably be done from mid- October to March as a precaution against gravid female bats moving into the roof and to prevent disruption of potential male harems in the roof area that will occur earlier. Spraying with remedial timber treatments should best be carried out in mid-winter, December to February inclusive.

- Light works such as exploratory investigative work to wall plates using only hand tools such as lump hammer and bolster chisel is used (no powered hammer tools) should be possible until the end of August after which disturbance of a harem may be a risk (Hopkirk and Russ, 2002).

- No lighting of the interior or exterior of the roof void or roof should be used between sunset and sunrise and floodlighting of the building should preferably be entirely removed. Clarification of roost entry points may be required if floodlighting is further required.

- Breathable 'Tyvek' or 'Roofshield'–type membrane shall not be used as this has been shown to alter the thermal characteristics of the roof space and also can 'tuft-up' and snag bat feet and claws. The preference is for bitumen-based roof membrane.

- It is recommended that due to the rarity of this species, the roof space temperature be monitored prior to and following works. There is a tendency for modern roof renovations to make roof spaces cooler and more insulated from the floors below. Bats prefer warm dry roof spaces and small heaters may be required to maintain temperatures in some cases. Advice from a bat worker should be consulted on this matter.

- Generic recommendations should also apply as described earlier.

Library, Timahoe

This building is a converted Church of Ireland church that is now used as a Library. The interior of the church is open to the roof although the inside of the pitched roof is lined with timber panels. Importantly (for bats) there are some gaps in these panels that lead to the roof void. The exterior of the church is in good condition with no obvious crevices or gaps allowing bats entry to the roof void.

The surveys revealed that after dusk, Brown long-eared bats and Natterer's bats are entering the church via gaps in the panels and between panels and the wall and then flying into the church. They do this for socialising purposes and possibly to feed on prey within the church. They then re-enter the roof void and leave the church via external gaps between the wall and the roof under the eaves and between two slates below the ridge of the church on the south side.

There is a clear conflict between the use of the church interior as library and the use of the same space at night by bats. Whilst bats will not be flying within the church during daytime, there is a minor problem of bat droppings and the occasional dead Pipistrelle bat being found in the church. Droppings are found scattered around the church and require removal on a daily basis. During September 2008 the roosting location seemed to move from the eastern end of the nave to the south west corner as an accumulation of droppings was found under the gap in the timber panels.

Unfortunately there are few options for mitigation to prevent droppings reaching the Library area. Putting in a false ceiling above the Library would solve the problem but could lead to changes in the temperature in the roof and make it unsuitable as a roost. It is also unlikely to be acceptable due to the architectural attraction of the building. Since the droppings themselves dry out quickly and pose little health and safety risk to the staff or public, it will be better to educate those visiting the building. Simple measures such as covering shelves with dust sheets are more successful than trying to influence bat behaviour. Therefore the following measures should be applied:

- Equip staff with cloth dust sheets to put over shelves at the end of each day. In the morning the sheets can be shaken outside on the grass. Other droppings may be hovered or swept up. A hand-held electric hoover may be an alternative to the dust sheets.
- Handwipes or Handwash gel can be provided for customer and staff use.
- An information board can be provided to inform children and adults on the bats and a bat night can be organised each year to watch bats emerge from the roost.
- Numbers of bats using this roost should be counted each year as it is an important local roost for three bat species.
- Generic recommendations should also apply as described earlier.

Library, Clonaslee

Bat usage of this building appears to be relatively recent. Small numbers (2-5) of Brown Long-eared bats are known to roost in the roof above the nave. Their entry point is still unconfirmed as it was difficult to track the small numbers of bats. There are several small gaps between slates visible from the inside of the roof void that could be used by bats. The number of droppings and their appearance would suggest that bats have only been present since the insulation was put down and therefore 2008 was their first year of occupation since these works were carried out. It is possible that bats were present before the insulation was put down but this cannot be confirmed.

Should any further works be proposed to the roof then the following safeguards and measures should be addressed:

- Repeat dusk and dawn survey to confirm entry points and numbers of bats.
- Ensure entry points, roosting locations and the nature of the roof void remain unchanged.
- The timing of works should take place in mid winter i.e. January and February as this species can still be in summer roosts until December.
- Generic principles as listed earlier should apply.

RECOMMENDATIONS REGARDING PARK MANAGEMENT TO ENCOURAGE BAT USE.

The surveys of the County's public parks indicated use by bats in the vast majority of cases with Common Pipistrelle being most frequently recorded. However, some Parks such as Portlaoise People's Park showed greater diversity as a direct result of the habitats present.

Bats use areas for feeding, socialising and getting from one place to another. Laois's Parks fulfil all of these needs by supplying food in the form of insects and cover for commuting and socialising. However, some Parks are better than others.

Greatest diversity of habitats was found in Parks such as Portlaoise and Mountrath where freshwater and terrestrial (particularly wooded areas) occur side by side. Daubenton's bats are often associated with water more than other bats but all bats benefit from having freshwater habitats present in their locality. As a general rule, any habitat management techniques or landscaping plans that lead to enhanced insect numbers and diversity will benefit bats.

Generic principles that can be applied to all Parks include:

- Avoid lighting of tree lines, water bodies and perimeter hedgerows as most bats will tend to avoid strongly-lit areas;
- Include night-scented plants in landscaping plans. A list is provided below:
    - Honeysuckle *Lonicera periclymenum*
    - Tobacco plant - *Nicotiana affinis*
    - Night-scented stock - *Matthiola bicornis*
    - Bladder campion - *Silene vulgaris*
    - Night scented catchfly - *Silene noctiflora*
    - Evening primrose - *Oenothera biennis*
- Avoid isolation of waterbodies and woodland from other connecting habitats. Ponds, lakes rivers and streams should not be entirely detached from hedgerows and taller types of planting. Woodland and hedgerows leading up to waterbodies will result in enhanced insect life and hence bat activity as well as refuge.
- Avoid unnecessary use of pesticides.
- For waterbodies:

    - Retain natural form and natural range of vegetations e.g. reedbeds and other soft edges to ponds.
    - Vary depth of waterbodies.
    - Retain overhanging trees and encourage shelter from winds using planting.
- Maintain variation in grassed areas e.g. vary cutting times across areas to create mosaic of short and long grass.
- Encourage wildflowers by employing spring and autumn cutting periods.
- Avoid cutting trees and felling old trees unless safety reasons are paramount.

(adapted from JNCC, 2001)

RECOMMENDATIONS TO LAOIS COUNTY COUNCIL

The management of buildings in the Council's ownership is a continuous process that is necessary to preserve its their fabric and in many cases to preserve historic culture associated with older buildings. Maintaining buildings whilst allowing protected fauna and flora to persist is the objective of sustainable property management.

Bats and humans can, and do, live alongside each other without ever causing adverse impacts to either party so long as the needs of both are taken into account. Legal protection of bats has been necessary due to the continuous loss of habitat and roosts sites around the country but need not be seen as a constraint upon development. By adopting certain practices with in-house staff and raising their awareness of bats in buildings, unnecessary delays to building works and accidental harm to bats can be avoided.

- All LCC staff concerned with building fabric and Parks Department staff should be provided with focused information on Bats and the Law, Bat Roost Maintenance and Protection of Roosts;
- Staff responsible for management of public open space to be given training on how to deal with Bat roosts in Trees. Such training should include identification of bat roosts, legal protection of bats and roosts, dealing with emergency felling and tree surgery and mitigating loss of roost.
- Creation of new roost opportunities. Many Parks and building offer opportunities to erect bat boxes, to integrate new roost spaces into sheds, outbuildings etc.

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