

## Inland Waterways News

### Bats and Irish Waterways

*Dr Niamh Roche*

Mention the word **Bat** to most people and you are bound to get a negative reaction. Images of bloodsucking, vampirish mice-with-wings getting caught in your hair pop into mind. Like them or loathe them, however, bats are an integral component of most natural habitats the world over. In fact, there are over 950 species of bat around the world — so nearly one quarter of all mammal species are bats.

Of course, the first thing that any budding bat-lover is likely to find out is the extent of mythology surrounding these creatures: the common term **flying rodents**, for example, is a mistruth. Bats are mammals, like us, rodents, cats and dogs, but they are not related to mice and are, in fact, assigned to their own group, the Chiroptera, which literally means hand-wing. That is an apt description because a close-up view reveals the arm bones, wrist and long fingers with webs of skin in between that form a bat's wing. With this nifty adaptation, bats are the only mammals that can undergo true powered, or flapping, flight.

One of their most fascinating adaptations is the ability to fly at night — they come out of their roosts about ten minutes to half an hour after sundown — relying not on eyesight but on sound. They use very high-pitched squeaking sounds and listen for the quiet echoes that bounce off objects in their surroundings. They use this sonar-type system, known as echo location, to find their way around at night and also to hunt. Many bats are predators, but thankfully the three rare species of vampire bat are found in South and Central America so, in Ireland, bats are not interested in blood. All of our nine bat species are insect-eaters; they are most active in summer, because that is when there are most insects around.

#### Roosts

Around April or May, female bats gather together in a maternity roost where each one gives birth to a single baby in late June or early July. Roosting bats do not chew on insulation or wiring and they do not bring in nesting material; they just hang up. A maternity roost may be in a tree crevice, in an attic of a dwelling house or in gaps between stonework in an old ruin: there is no end of possible sites for bats, but certain species have quite specific requirements for the type of roost they can use. The long-eared bat, for example, nearly always chooses an old building that has lots of roof space, preferably close to woodland: old demesne Church of Ireland churches are often favoured. Other species may prefer ruined buildings or bridges for



**Long eared bat (*Plecotus auritus*)**  
courtesy of Conor Kelleher

their roost, or even modern bungalows with plenty of insulation. Anything from 10 to 1000 female bats may be present in a maternity roost. The numbers depend on which species it is, and what the surrounding habitat is like for hunting insects. Plentiful insects can support a larger roost.

Bat babies are born with no fur. They are large at birth, up to one third the weight of their mothers, which is significant considering that the females continue to fly and catch insects right up to the birth. A mother recognises its baby by its smell and distinctive twittering calls. This is no mean feat in a roost with over a hundred bats — or in warmer countries where cave roosts can contain over a million bats! The babies start to grow their fur within the first week and are suckled by their mothers for four to six weeks. They usually practise flight in and around the roost and also have to learn to echo-locate before they become totally independent of their mother.

Once the young are weaned, mothers usually leave the maternity roost and seek breeding males. The youngsters usually stay at the maternity roost and can be at risk if the weather turns bad because they have insufficient experience in foraging and too little fat stored to last a long spell of cold or wet weather.

## **Mating**

In the meantime, females and males get together at mating roosts from late August through to October. Good weather in late summer and early Autumn is crucial to young and female bats because they must build up enough fatty tissue to see them through a long winter with little to eat. But males, having had it easy the whole summer long with no youngster to feed, now put all their energy into courting females. Each male finds himself a comfortable roost and spends his evenings flying up and down outside, singing to attract females and chasing away other males who stray into the territory.

## **Hibernation**

When the weather turns cold, usually some time in October, bats move to a suitable hibernation site: a cave or old disused cellar, a tree crevice or even a wall cavity. In fact, we really do not know where most Irish bats go in winter. In Britain and on the Continent lots of bat species can be found in caves in winter, but here caves are almost solely used by the lesser horseshoe bat: it is very rare in Britain and Europe but Ireland holds one of its largest populations, mainly in Counties Clare and Kerry.

Hibernation means that bats can get through a long winter with little food. The bat's body systems enter **powersave mode**: heartbeat slows down to a few beats per minute. Breathing slows to an absolute minimum; blood leaves the wings and other extremities and is only pumped to the vital organs. The body temperature of the bat also drops, usually to the same as ambient temperature, which may be 8° or 9° or even lower. Little energy is used up since the bat is not trying to keep itself warm.

Every so often, particularly if there is a warm spell, bats wake up and perhaps even fly outdoors a little. The overall length of time spent in hibernation depends totally on the weather, but it usually ends when the weather improves in late March or April and the cycle begins again.

## **Bat species**

Of the nine species in Ireland, some are considered woodland foragers, which prefer to feed on insects found in woodland. Their body shape and wing size are adapted to slow, hovering flight and they usually prefer not to put themselves in danger of being preyed upon by owls by flying out in the open. Lesser horseshoe bats and long-eared bats are good examples of woodland feeders.

However, most of the other Irish species are often found in and around water in the summertime. The larval stage of many invertebrates takes place under water so, with a consistent supply of emerging insects, bats can be sure of plenty to eat.

The two most common species of bat in Ireland are the common pipistrelle and the soprano pipistrelle. These are so similar that bat workers thought they were the same until about three years ago, when it was realised that they had slightly different coloration, were making different echo location sounds and never roosted together. Further studies of their genetic makeup confirmed that the two were separate species. They are both small, weighing only 5 or 6 grammes, but look much bigger in flight with a wingspan of 18-20cm.

They tend to fly erratically. Often seen at around head height, they sometimes fly along the water's edge or along hedgerows lining a canal towpath, for example. They swoop and dive a lot, so they can be hard to keep an eye on unless they are seen in silhouette against the sky. Some work in Britain has shown that common pipistrelles tend to forage mostly in woodland while sopranos are found in and around water more often. In Ireland, comparable studies have not been done but both can certainly be found foraging along the Grand Canal, even close to Dublin's city centre. If you see a bat flying around the water's edge (not skimming close to the water's surface) it is most likely to be one of these species, simply because they are so common compared to the others.

In contrast to the pipistrelles, the Leisler's bat is our largest species. Weighing about 15g, this species has a wingspan of roughly 30cm. It flies high and fast and is not as concerned about potential predators so it even flies early in the evening when the sun has just gone down and when swifts and swallows can still be seen. In fact, it can sometimes be confused with a swift because of its long narrow wings, but a closer look should reveal the unmistakable bat shape to the wings' edges. The Leisler's is another species that is rare in Britain and Europe but here it is one of our most common bats. It can be found right in the city and out in the countryside. It tends to fly a lot over water or parkland, but much higher up (up to 30m or more) than the other species; that makes it easy to identify.

### **The water bat**

While most of our species fly and forage over water some of the time, the Daubenton's bat almost exclusively forages over water: in fact it is sometimes known as the **water bat**. It is a medium-sized bat with a wingspan of 25cm, weighing about 10–12 grammes. It emerges late in the evening, up to 50 minutes after sundown, and flies along hedgerows or treelines down to the water. Once there, it flies fast but low down over the surface and uses its finely tuned echo location calls to detect insects sitting on the surface. Every so often it skims the water's surface, grasping an insect with its slightly oversized feet. Dietary studies have shown that it occasionally eats small fish, which it may catch by mistake.



**Figure 1 Daubenton's bat  
(*Myotis daubentonii*)  
courtesy of Conor Kelleher**

With many bats found foraging in and around water, it is no surprise then that some of them roost close by. A bridge is probably as close as you can get. A recent study of bridges in Counties Leitrim and Sligo showed that 38% of bridges surveyed contained roosting bats. Bridge roosts are notoriously difficult to find, unless there is the telltale sign of bat droppings on rocks or a ledge underneath. Most bats using the bridges were Daubenton's bats. Another common species found using bridges was the Natterer's bat. This is a similar species to Daubenton's bat but is generally found foraging more around woodland than over water.

Occasional pipistrelle and long-eared bats were also found. Bats roost under bridges by tucking themselves right into the crevices between stones or bricks. While most of these crevices reach a depth of no more than 30cm, sometimes they can be over a metre long.

Of course, with the current spate of road widening projects and road upgrades, there is a real threat to bat roosts in many counties. Surveys for bats, although more common than in the past, are still not carried out often enough. Many bats have probably been entombed when concrete has been pumped into bridge structures under pressure (pressure grouting) to fill cracks and crevices. Unfortunately, threats to bat populations do not stop there. Many landscape changes and new farming practices, eg hedgerow removal and wetland drainage, have not helped insect or bat populations. If you take into account countrywide habitat loss and combine that with a bat's slow reproductive rate, its vulnerability when roosting close to humans (and in large groups) and a high fatality rate during long winters, you can probably understand why conservation workers are keen to protect them.

The EU Habitats Directive, which has been incorporated into Irish legislation, requires that all Irish species are strictly protected and that the Lesser Horseshoe Bat has special areas of conservation designated around its important roost sites.

### Getting information

To find out more about Irish bats, log on to one of the Irish bat groups' websites:

[www.geocities.com/dublinbat](http://www.geocities.com/dublinbat) (website of the Bat Conservation Group, Dublin)

[www.freespace.com/edu/corkbatgroup](http://www.freespace.com/edu/corkbatgroup) (Cork County Bat Group)

[www.batdetective.com](http://www.batdetective.com) (Northern Ireland Bat Group)

or Bat Conservation International, for the US point of view at [www.batcon.org](http://www.batcon.org)

If your local primary school is interested in having a visit from a bat expert, contact the INTO Professional Development Unit in Parnell Square, Dublin for details of the Heritage in Schools scheme.

If you have a query about a bat roost near you, get in touch with the appropriate authorities. In RoI, contact your local Dúchas Conservation Ranger (head office: 01-6473000). In NI, the Department of the Environment's Environment and Heritage Service is responsible.

### Bat facts

All of the nine species of bat found in Ireland are insect eaters; they do **not** drink blood.

Bats do **not** get caught in people's hair!

Bats are **not** blind. All bats can see. However, bats usually use sound — echo location — to find their prey and their way around in the dark.

Bats are **not** mice with wings. They belong to a different group of mammals, the Chiroptera.

Bats are **not** pests. When roosting in an attic, they do not chew wiring: they just hang up. And they only have one baby every year, so they do not reproduce like mice.

Bats are important species in the Irish landscape. They are night-time insectivores and can eat enormous amounts of insects, some of which are pests. A single pipistrelle can eat over 3,000 midge-sized insects in one night!

Bats need friends. There is evidence that populations throughout Europe are declining rapidly. All Irish bat species are protected under the **Wildlife Act 1976** and the **European Habitats Directive**.



## **The author**

*Dr Niamh Roche is a freelance Environmental Consultant with a speciality in bats. She carried out postgraduate studies on bats in woodland in central England while at the University of Warwick. She has also worked for the Vincent Wildlife Trust on lesser horseshoe bats in Co Limerick and completed two Heritage Council funded bat studies, one on Bats in Churches and another on Bats in Dublin's City Centre. Most of her current bat work is concerned with Environmental Impact Assessments of proposed developments and she visits primary schools under the INTO's Heritage in Schools scheme.*

