The sun has descended past the rooftops and there is a definite coolness to the air. Hot chocolate in hand, I park myself on a garden chair outside and eagerly await the show. Sure enough, it is not long before I can see them. Tiny black forms flit across the sky above my head, darting back and forth with determination. One drops down low, skimming the top of the fence before careening upwards, adeptly avoiding the side of the house, before looping back round to show off these acrobatics once again. My evening entertainment is being provided by a pair of bats. Oblivious insects rise into the air only to be snapped up moments later by a pair of tiny jaws. Sadly, it is not too long before my mug has run dry and the sun has all but disappeared. Hopefully there will be an encore tomorrow.

A year in the life of a bat is a fine balancing act of regulating energy expenditure and catching enough food to support this strategy. The year starts with hibernation; the cold days of January are spent in a state of torpor where the bats have a reduced metabolic rate. This means that the internal processes of the bat are so reduced that the bat expends barely any energy and appears to be in an extremely deep sleep. As the outside temperature starts to rise the bats can wake from this torpor for short periods to go and hunt before returning to this state as the temperature drops again. Fortunately, even with this periodic re-warming and energetic parts of the day, the bats still use less overall energy than if they had spent the winter awake and still catching food.

Taxidermied Pipistrelle (unknown sub-species) from the North Herts Museum collection. It is currently featured in the Night and Day display in the Discovering North Herts gallery. Picture courtesy of North Herts Museum.

Come April, the weather is warm enough to allow the bats to come out of hibernation and start re-feeding, hibernating for long periods is hungry work. May is when things really start to heat up. This is when, on warm evenings, you may be able to see them flitting around treetops and over water sources as dusk starts to fall. Water sources and treetops are common hunting locations for bats as this is where there are likely to find their prey, insects. As insect nymphs mature and start to emerge out of their watery homes, bats will come skimming across the water surface and snatch them up before they have chance to move out into the wider world. Similarly, moths will try and hide in foliage at the tops of trees and so bats use their powerful echolocation skills to spy those sneaky creatures before they can make it to safety. Echolocation is technique used by bats to ‘see’ their prey in the dark. The call out in a series of chirps and whistle and use their large ears to listen for the

sounds bouncing back off solid surfaces. Once they have registered the sound of a flying insect, they increase the rate of these calls to get increasingly accurate information on the precise location of the insect as they home in and ready themselves for their strike. When bats hunt on the wing this is called 'aerial hawking' whereas when capturing stationary prey, this is known as 'gleaning'. Different species use different techniques; Pipistrelles catch and eat on the wing, but Brown Long-eared bats land and eat their snack whilst on a stable perch.

After a couple of months re-feeding, females seek out new roost sites and form maternity colonies. June comes around and the females ensconce themselves in their nursery sites, where they give birth. Typically, they will have a single pup, but in rare occasions twins can be born. As mammals, bats produce milk and the tiny new-borns cuddle into their mothers, clinging on with great determination whilst they suckle. It is not long, sometimes even around 3 weeks, before the young are testing out their wings and getting ready to fly under their own steam. By August, most young bats are ready to leave their mothers and can go out and catch insects for themselves.

Late summer arrives and the females and males are ready to move into mating colonies. Male bats use special calls, different to the ones they use for echolocation, in an attempt to attract females. It is important that they show off just how suitable as a mate they are. It is at this time that the bats are also aiming to build up their fat stores ready for the upcoming winter and hibernation. Pipistrelles can eat up to 3,000 gnats in a single night, an amazing feat considering they can comfortably fit inside a matchbox and weigh less than a sheet of A4 paper.

And so, the nights are drawing in, the days are getting colder and so the bats once again return to a state of torpor. These periods of sleep get longer and longer as we move into winter with most bats disappearing from our gardens once again in November.

Getting to know which bat species are in your garden can be a fun way to spend a warm evening. There are twelve bat species that a reported to be found in North Hertfordshire (see Table). The most common bats species seen in North Hertfordshire are the Common and Soprano Pipistrelle. Pipistrelles can be identified by their rapid darting flight, and frequent presence in our back gardens. However, to get a definite idea of the species, a bat detector is a vital piece of equipment. These machines record the sound frequency that is being produced by the bats as they echolocate. Armed with one of these and a good key you can put a name to the night time visitors swooping about in the trees.

NAME	LATIN NAME	LOCAL SCARCITY	PREFERRED HABITAT
Common Pipistrelle	*Pipistrellus pipistrellus*	Occasionally common	Wide range
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Occasionally common	Riverbanks, semi-natural woodland or tree lines
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Considered scarce	Over large water bodies
Brown Long-eared	*Plecotus auritus*	Relatively frequent	Open woodland
Daubenton's	*Myotis daubentonii*	Relatively frequent	Near still water
Natterer's	*Myotis nattereri*	Relatively scarce	Open woodland; water with dense vegetation
Whiskered	*Myotis mystacinus*	Assumed to be rare*	Open habitats; often near flowing water
Brandt's	*Myotis brandtii*	Assumed to be rare*	Woodland and hedgerows; often near water
Serotine	*Eptesicus serotinus*	Scarce	Open habitats and rivers or lakes
Leisler's	*Nyctalus leisleri*	Scarce	Open habitats and rivers or lakes
Noctule	*Nyctalus noctula*	Relatively scarce	Open habitats and rivers or lakes
Barbastelle	*Barbastella barbastellus*	Rare	Limited to a few wooded river valleys

Table: a list of the bat species found in North Hertfordshire. Displayed with a scale of most common (green) to scarcest (red). * = not enough data on species to give specific comment on local scarcity.

It is important to note that bats are best viewed from a distance. All bats are protected by law in the UK and throughout most of Europe, so if you do find one in distress on the ground then it is important to not approach them but to seek advice from the Bat Conservation Trust. Alternatively, there are many local bat charities that are also ready and willing to give advice on any bat queries you may have. These are also many excellent places to go if you fancy doing a late evening bat walk or find other bat related activities. But most importantly, don't be afraid! These tiny creatures are fascinating in how they move and survive, and it is a marvel to sit back and watch their aerial acrobatics as the sun goes down.

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