



Notes for separating species on the NBMP Field Survey

Noctule, serotine, and Leisler's bat*

* recorded only on the Northern Ireland Field Survey, but all volunteers need to be aware of this species.

These bats are larger than pipistrelles and use echolocation calls that generally peak below 30 kHz. Begin with your heterodyne bat detector tuned to **25 kHz** when listening for these species. When you think you hear one of these species, **tune the detector** up and down to locate the peak frequency (tuning where the sound from the detector is at its **deepest pitch**).

Distribution and environment

Noctules are found throughout **most of the UK** apart from northern Scotland. **Serotines** are largely restricted to **southern England** and parts of **Wales**. Noctule typically flies in open environments away from clutter. Serotine is an edge habitat species, usually found flying beside treelines or hedgerows. **Leisler's bat** is **common in Northern Ireland**, where noctules are not thought to occur. Leisler's bat is **thought to be rare in the rest of the UK**, but is **widespread** and appears to be **locally common** in some areas, so it is worth considering when listening for bigger bats.

Separating noctules and Leisler's bats from serotines

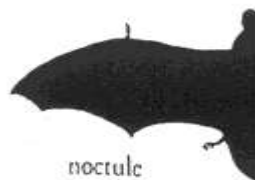
Noctule: Very loud call, slow, mainly regular repetition rate but more erratic when the bat dives. When flying in open spaces, sound described as 'chip-chop' when heard on a detector tuned at 25 kHz. The lower 'chop' calls sound deepest when tuning below 21 kHz on a bat detector with little sound heard above 30 kHz (apart from harmonics). Noctules fly fast and high up in straight lines, making steep dives to catch their prey.

Leisler's bat: Similar to noctule but lower 'chop' calls sound deepest above 24 kHz. If 'chop' calls sound deepest between 21 and 24 kHz then it could be noctule or Leisler's bat. Smaller than noctule and tends to fly lower.

Serotine: Medium loud call with irregular rap-like rhythm. Repetition rate slightly faster than noctules. Deepest sound heard when tuned around 27 kHz (described as 'tock') but calls can be detected up to 50 kHz, though will sound 'tinnier' at higher tunings. Does not make 'chip-chop' sound. Serotines are more manoeuvrable at slower speeds close to vegetation.

In **cluttered environments**, noctules and Leisler's bats may drop the lower 'chop' calls and just emit faster 'chip' calls. In such situations it can be difficult to tell them apart from serotines. Make sure you note the environment that you are in when attempting to distinguish the species and try to observe some visual clues such as flight pattern and wing shape.

Visual Clues



- Noctule has long narrow wings
- Flies high with steep dives
- Open habitats



- Leisler's bat similar to noctule, but smaller
- Tends to fly lower with shallower swoops



- Serotine has very broad wings
- Fluttery flight not as high
- Edge habitats and open

Echolocation call characteristics

Species	Number of pulses per second	Sounds like	Peak frequency (kHz)	Rhythm
noctule	4	Chip-chop	21 or below	Mostly regular/ steady beat
Leisler's bat	5	Chip-chop	24+	Mostly regular/steady beat
serotine	5	Tick	25-29	Irregular/"funky"

Pipistrelle species

When listening for pipistrelles at 50 kHz, once you pick up a bat, it helps to rotate the tuning dial between about 40 and 60 kHz to find the peak frequency. If it is difficult to find the deepest note because the sound does not change in pitch as you tune up and down, you may be listening to one of the *Myotis* species, such as Daubenton's bat or Natterer's bat, or a pipistrelle in a more enclosed environment when its calls become faster and shorter.

Echolocation call characteristics

Species	Number of pulses per second	Sounds like	Peak frequency (kHz)	Rhythm
common pipistrelle	approx. 10	Wet, slappy sound	42-48	irregular
soprano pipistrelle	approx. 10	Wet, slappy sound	>52	irregular
pipistrelle unsure	approx. 10	Wet, slappy sound	49-51	irregular
*Nathusius' pipistrelle	approx. 8	Wet, slappy sound	<40	more regular than other pipistrelles

*not recorded on the Field Survey, but volunteers can note if they think this species is heard.

Visual Clues



- small bats that fly fast with lots of twists and turns
- typically fly at around twice the height of an average adult, but often flit higher and lower
- tend to fly in 'edge' habitats with a little cover, but not too densely vegetated

Important anomalies

- **Sonic Echo:** Some heterodyne detectors have a 'sonic echo' which means that, when they are tuned around 25 kHz and pipistrelles are echolocating loudly close to the detector, pipistrelle sounds can also be heard at this frequency. This sound can potentially be confused with noctule/Leisler's bat/serotine. The faster call repetition rate of pipistrelles can be used to distinguish this sound from big bat calls, but always tune up to around 50 kHz to check for the presence of pipistrelles when sounds are heard at 25 kHz.
- **Harmonics:** When bats make loud calls you may also hear harmonics on the detector. For example, if a noctule produces a loud sound at 20 kHz, you may also hear the same sound at 40 kHz – this is a harmonic. Thus there is potential for confusion with pipistrelles. The slow repetition rate should identify it as a noctule but you should also tune the detector down to check your species identification. Harmonics are always produced at exact multiples of the fundamental call frequency and this can be used as a method of checking - if you hear a sound at 20, 40 and 60 kHz, it is likely to be a noctule call with harmonics.
- **Social calls:** Bats use social calls for communication. These are typically emitted within the same frequency range as noctule, Leisler's bat and serotine echolocation calls. Therefore there is scope for confusion when social calls are heard. Social calls sound a bit different to echolocation calls in that they are more sporadic, typically consisting of short bursts of noise with periods of silence. They do not tend to have the continuous and distinctively rhythmic patterns of echolocation calls.

Online resources

UK Bats (with recordings of their calls): www.bats.org.uk/about-bats/what-are-bats/uk-bats

NBMP Field Survey page: www.bats.org.uk/pages/field_survey.html

Bat detector species ID quiz: www.bats.org.uk/pages/bat_detector_quiz.html