

## SonoBat 4 - UK review

SonoBat creator Joe Szewczak recently released an updated version of his bat call analysis software called SonoBat 4. The good news is this version now comes with a UK classifier containing 30,000 verified calls from UK species recorded in the UK and Ireland. This means it is no longer reliant on iBatsID, a separate classification tool which uses ensembles of artificial neural networks to classify recordings (<http://ibatsid.eu-west-1.elasticbeanstalk.com/>), and can now provide an all in one viewing, analysis and auto-ID experience.

The first thing to be aware of, is that to fully understand SonoBat 4 you will need to give yourself plenty of time to figure out the software and learn how the separate utilities programmes work. And if you're use to other sound analysis software such as Insight, BatSound or Kaleidoscope it won't have the same feel or look. However, it does come with a few other options that you may find useful.

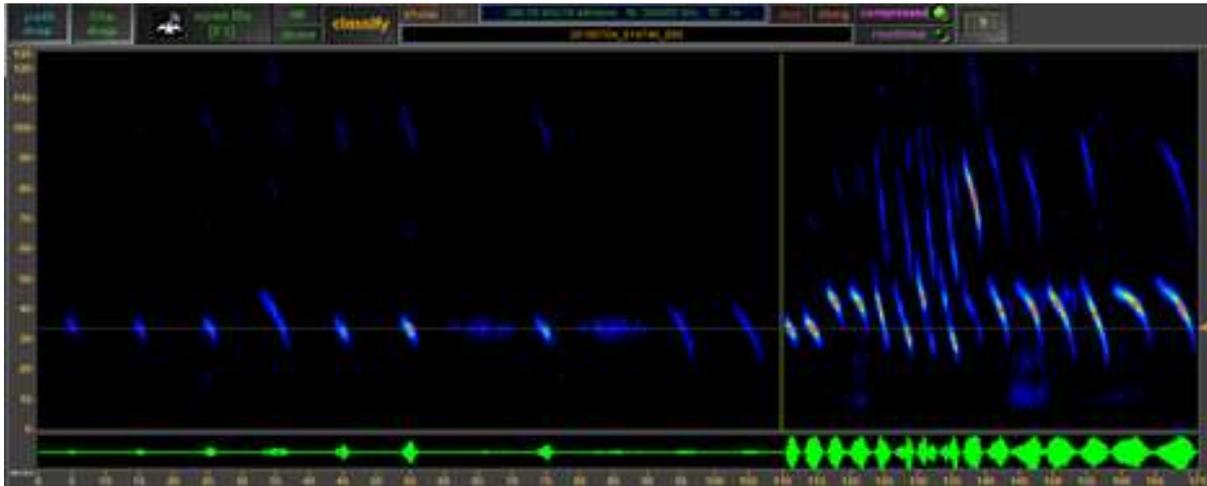
You can choose to classify each WAV file individually by dragging the file into the main sonogram window and selecting classify, or batch classify your recordings using SonoBatch. Conveniently a link to this programme can be found on the main sonogram window. Both options are straightforward enough to follow and there are plenty of instructions and documents provided to help you find your way around.

When batch classifying, like other Auto-ID software SonoBat 4 struggles to detect and identify weaker bat calls, or calls that are masked by background noise, clutter and interference. If there is any uncertainty it will provide suggested species classifications instead of accepted species classifications. Therefore, the placement of the detector needs thinking about if you're going to use SonoBat 4, to improve the quality of the recordings. Any call that the software is unable to identify to species level but is recognised as a bat call is classified as a HiF or LoF call (when bat calls are separated into high and low frequency acoustic clades) and the output files/vetting table has a column titled ~ Spp where suggested species classifications can be found. These calls will need to be manually checked to confirm the suggested classification.

To allow you to do this SonoBat 4 comes with a Vetting Table (SonoVet) where you can view your batch classification results, manually vet the dataset and generate a report. Be aware, to use this spreadsheet you will need to ensure that the files are first embedded with the SonoBat metadata (so will need to be batch classified or processed through the SonoBatch Attributer), so make sure you use a copy of your recordings and keep the original files safe, otherwise you may not be able to run the data through another auto-ID software. The Vetting Table is designed to be adaptable allowing you to rearrange, add your manual classifications, confirm suggested classifications, correct misclassifications, add or remove columns, save changes to the file metadata and view the sonogram of each file by clicking on the file name. Useful for data verification but can result in extra work in order to get your dataset into shape.

The sonograms are clear and easy to view. The verified calls in the classifier gives a higher degree of confidence with calls for *Myotis* species, which is a big plus.

Another addition to the software is the reference view. You can compare your recordings to a call library of UK species calls and this in itself is a very useful and important tool when manually checking calls.



Reference view on SonoBat 4 (combined reference call sequence from library on right hand side of screen)

Overall the SonoBat 4 software is a useful call analysis tool, with a good UK classifier. With its clear sonograms and decent UK classifier, I have started to use SonoBat 4 to confirm classifications and check calls against the reference library. However, the quality of the recordings and the amount of clutter/noise can affect the number of accepted species classifications and may require more time to manually confirm the suggested classifications.

For more information on Sonobat 4 go to <https://sonobat.com/>.

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