

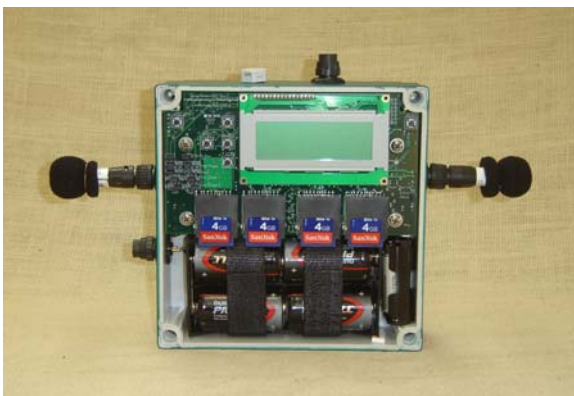
The Song Meter SM2+ from Wildlife Acoustics is a compact and affordable digital sound recorder specifically designed for the automated recording of wildlife vocalizations. It is robust and weatherproof, suited to long term and unattended deployment in harsh outdoor environments.

Two base versions are offered- this document is specific to the *SM2+ Terrestrial Acoustic Package*, suitable for recording birds, insects and frogs, as well as fish and other underwater fauna.

*SM2+BAT Terrestrial Ultrasonic Package* can monitor the ultrasonic calls of bats and insects in addition to these taxa. For information on the SM2+BAT please refer to a separate information document from the Faunatech website.



The **SM2+ Terrestrial Acoustic Package** is optimized for monitoring birds, frogs, and other terrestrial wildlife vocalizing in the 2 to 48,000 Hz audio frequency range. Recordings are continuous, ensuring important events are not missed. SM2+ is equipped with two removable weatherproof and highly sensitive omni-directional SMX-II microphones.



Sampling rate can be adjusted to suit the animal group under investigation - lower frequency calls can be recorded at lower sampling rates, hence reducing storage demands and increasing deployment times. Eight sampling rates are available on the SM2+, ranging from 4 through 96 kHz, in either mono or stereo. The user also has the option to adjust gain settings or enable a number of band pass filters to further increase efficiency and quality of data collection. For example, background traffic or wind noise can be filtered out, revealing otherwise undetectable bird song.

The Song Meter is very power-efficient. With just 4 D-size batteries, SM2+ can record for up to 230 hours on a programmed schedule spread over several months at a time. Even longer deployments are also possible with an external battery. A small solar panel will keep this in a perpetual full state of charge.

Storage capacity is also exceptional. Using 4 x 128 SDXC memory cards, typical scenarios are over 1400 hours of recording at 48 kHz (max recordable frequency 24kHz) for high pitched birds, or well over 4000 hours at 16 kHz (max recordable frequency 8kHz) - a sampling rate suitable for amphibians. Enabling compression can effectively nearly double this storage potential.

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SMX-NFC microphone for overflying birds

The SM2+ is shipped with a pair of audio frequency SMX-II broadband microphones. These are practical and robust. Firstly they are weatherproof, an important characteristic of any field device. Secondly they are omni-directional, thus enabling a vastly increased sampling volume while reducing the biasing of data. Finally, the microphones can be attached either directly to the SM2+ housing, or each mic can be run on extension cables 100 metres distant. This allows effective comparative monitoring of adjacent habitats or other landscape features. Optional microphones include the SMX-NFC Night Flight Call weatherproof microphone. This mic is designed especially for recording calls from over-flying birds,

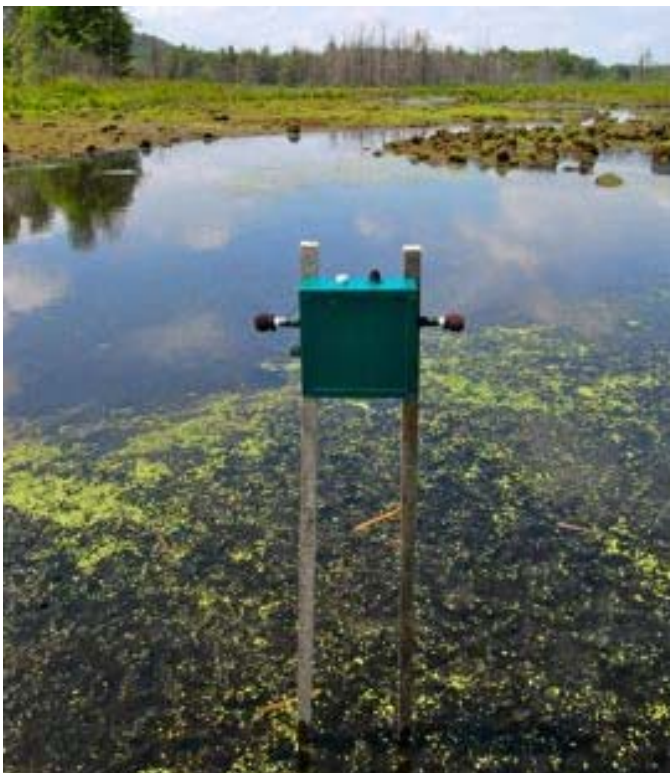
amplifying sounds above the microphone while attenuating sounds from below, such as insects and amphibians. For amphibian work, fish studies or other under water tasks, the submersible HTI-96-MIN hydrophone can be employed. Note that the left and right channels can be fitted with different microphones and can be programmed to record at either the same or different times, and with different gain and sampling settings.

Files can be recorded in standard uncompressed .WAV format, or using lossy or lossless compression in .WAC format. The WAC format also supports triggers that can be set to only record when certain acoustic events occur.

SM2+ includes a powerful and flexible program scheduling capability. Record protocols can be very quick and simple, through to complex conditional and looped record schedules. Programming is set via the free PC based *Configuration Utility*, then copied to any number of SM2+s via SD card. Alternatively programming can be done directly on the SM2+ in the field. The system can automatically adjust record schedules relative to sunrise and sunset times as these change through the year.



HTI-96-MIN Hydrophone



Song Meter features a built in internal temperature sensor, while an optional sensor probe enables logging of external temperature. An optional GPS logs location, as well as enables accurate time synchronization between multiple Song Meters. This in turn allows triangulation of a sound source by measuring the relative time-of-arrival of a sound wave across multiple microphones.

### SONG SCOPE

Song Scope software allows a visual representation, or spectrogram of your recordings. Through Song Scope the researcher has the potential to develop "Recognizers" or specific vocalization patterns related to a species of interest, using powerful patented classification algorithms.

This process can be applied to automatically scan through thousands of hours of audio recordings to find the most likely occurrences of these patterns of interest. The results can then be quickly reviewed and confirmed.