

BAT ACOUSTIC DATA LOGGER PREDICTS SEASONAL CHANGES OF BAT SPECIES

DATA TAKER DT82I MONITORS ULTRASONIC BAT CALLS FOR WILDLIFE BIOLOGISTS



[Grouse Mountain Environmental Consultants](#)

deployed the dataTaker DT82i with a Wildlife Acoustics bat recorder to capture and transmit survey data. The bat recorder captures ultrasonic bat calls, which Grouse Mountain processes to determine species presence on a monthly basis. Collecting this information is recommended for two years prior to development of wind energy per the [U.S. Fish and Wildlife Land-based Wind Energy Guidelines](#). Bat acoustic data indicates presence and seasonal changes in species occurrence, which is then used to provide a prediction of the potential risk of bat fatalities resulting

from future development. The dataTaker was programmed to query the bat recorder and email the result to Grouse Mountain wildlife biologists nightly.

INSTALLATION

A key component in the system is the [Wildlife Acoustics SM4BAT](#) FS Ultrasonic Recorder. It's specifically designed to capture and record the ultrasonic "chirps" made by bats. The SM4BAT is housed in a weatherproof enclosure and in this application is externally powered to allow continuous operation for an extended period of time. In addition to recording the raw waveforms, it can collect statistics and provide a summary of the number of bat passes and bat pulses detected via an optional RS-232 serial interface.

A [dataTaker DT82I](#) data logger was used to capture and record the statics via this RS-232 interface. The built-in serial sensor port allows the logger to send a command to the SM4BAT and then parse the returned string to get the parameters of interest. While the logger has an internal rechargeable battery, a 10-watt pole-mounted solar panel with [Sunsaver charge controller](#) and 12V 10 A-hr. battery were used to provide continuous power year-round. Because this was a rather remote location, the customer wanted the ability to automatically upload data, so the data logger was connected to a Microhard LTE Cube cellular modem via Ethernet. The data logger, battery, charge controller and cell modem were packaged inside a rugged fiberglass weatherproof IP67 enclosure to allow it to be deployed very close to the SM4BAT.

USAGE

In this application, the customer was most interested in the daily statistics so the logger was programmed to read information from the SM4BAT once a day via the RS-232 port. It also read its own internal battery voltage and the voltage of the external battery to help provide data to help manage the system. This data was stored in the logger's internal memory providing a backup in case there was ever an issue with the data upload via the modem.

A key to the operation of this system was minimizing power consumption to allow continuous operation off just the solar panel. The logger was programmed to go into a sleep state whenever it was not taking a measurement or sending data. This left the modem as the other energy user. To minimize the power used by the modem, a custom schedule was written to trigger once a day to:

1. Power on the modem
2. Wait for the modem to connect and register on the cellular network
3. Upload any new data via FTP
4. Power off modem



In this way, the modem was on for less than 10 minutes a day for maximum efficiency. In the event of an unsuccessful upload, if, for example, there was insufficient cellular signal strength at the time, the data was buffered in the logger until it could successfully connect at a later date.

BENEFITS

The key benefit of this setup is that the data is sent automatically, so the customer doesn't have to visit the site. The battery voltage data allows remote diagnostics for potential issues like dirt on the solar panel. This daily check-in provides operational status of the SM4BAT recorder, which is in an area of Montana subject to harsh winter conditions. Grouse Mountain sincerely appreciated the responsive and professional tech support from CAS DataLoggers during the development and deployment of the dataTaker solution to resolve any issues while the staff was on-site.

For more information on the [dataTaker DT82i](#), or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.