Guide to Acoustic Detectors Settings v1.0

October 16, 2017

By Brian Reichert, Cori Lausen, Chris Corben, Kim Livengood, Joe Szewczak, Ted Weller, Susan Loeb,

Roger Rodriguez, Eric Britzke, Tara Hohoff, Jeremy Siemers, Braden Burkholder, and Carl Herzog

NABat NORTH AMERICAN BAT MONITORING PROGRAM

Pettersson D500X

Stationary Point Surveys		D500x	comments
USER PROFILE	**SAMP. FREQ**	500	
	PRETRIG	OFF	
	REC. LEN	5	
	HP-FILTER	NO	NO' for recording in areas where low frequency species, such as EUMA and EUPE would be expected. All other instances, you could set this to YES to help in avoiding to record low frequency noise and save disk space.
	AUTOREC	YES	
	T.SENSE	MED	
RECORDING SETTINGS	**INPUT GAIN**	45	60-80: For recording bats with lower intensity calls or in more cluttered environments.
	TRIG LEV	160	120 For recording bats with lower intensity calls or in more cluttered environments.
	INTERVAL	0	

Mobile Transect Surveys		D500x	comments
USER PROFILE	**SAMP. FREQ**	500	
	PRETRIG	OFF	
	REC. LEN	5	
	HP-FILTER	NO	
	AUTOREC	YES	
	T.SENSE	MED	
RECORDING SETTINGS	**INPUT GAIN**	45	Will depend on recording conditions.
	TRIG LEV	160	
	INTERVAL	0	

Pettersson M500

Stationary Point Surveys	M500
Low Frequency Limit	*not recommended for stationary surveys*
High Frequency Limit	
Level	
Max recording time (locked)	
Recording time before trigger (locked)	
Recording time after trigger (locked)	
Minimum duration	

Mobile Transect Surveys	M500	comments
Low Frequency Limit	12,000 kHz	may need to be lower for Western states
High Frequency Limit	150,000 kHz	
Level	-18.1dB	
Max recording time (locked)	15sec	
Recording time before trigger (locked)	200ms	
Recording time after trigger (locked)	500ms	
Minimum duration	1ms	

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Titley Scientific AnaBAT SD1 & SD2

Stationary Point Surveys	AnaBAT SD1 & SD2
Audio Div	16
Data Div	8
Sensitivity Dial	tune as necessary to find the 'noise floor'
Date/Time	attach Anabat to computer to set date and time in CFCRead
Post-recording processing	download in CFCRead, set appropriate time zone; run GPS Integration Wizard in Analook to have track file and embed waypoint data into files

Mobile Transect Surveys	AnaBAT SD1 & SD2 (with attached GPS)
Audio Div	16
Data Div	8
Sensitivity Dial	tune as necessary to find the 'noise floor'; mark in some way so this can be replicated next time transect is run
Date/Time	GPS attached to Anabat (if handheld unit, then also set Time Zone)
Post-recording processing	download in CFCRead, set appropriate time zone; run GPS Integration Wizard in Analook to have track file and embed waypoint data into files

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Titley Scientific AnaBAT Swift

Stationary Point Surveys		AnaBat Swift
	Date/Time	GPS will set date, time; manually adjust time zone
TRIGGER	Sensitivity	15
	Minimum Event	1ms
	Record Window	2s
	Minimum Frequency	15kHZ if no bats lower than this, otherwise, 8kHz
	Maximum Frequency	120kHz
RECORDING	Div Ratio	8 (ZC only)
	FS/ZC	FS or ZC
	Sample Rate	320k (if using FS)
	Analog Filter on/off	On (unless audible bats are present, then Off)
	Max. File Time	15s (fixed)
	Deployment	Night Only (which records 30 min before sunset to 30 min after sunrise)

Mobile Transect Surveys		AnaBat Swift (with directional mic)
	Date/Time	GPS will set date, time; manually adjust time zone
TRIGGER	Sensitivity	15
	Minimum Event	1ms
	Record Window	2s
	Minimum Frequency	15kHZ if no bats lower than this, otherwise, 8kHz
	Maximum Frequency	120kHz
RECORDING	Div Ratio	8 (ZC only)
	FS/ZC	FS or ZC
	Sample Rate	320k (if using FS)
	Analog Filter on/off	On (unless audible bats are present, then Off)
	Max. File Time	15s (fixed)
	Deployment (other)	Transect Mode 'on'

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Titley Scientific AnaBAT Express

Stationary Point Surveys	AnaBat Express
Recording Format (Fixed)	Zero-crossing
Recording Modes	Night Only (which records 30 min before sunset to 30 min after sunrise)
Date/Time	Attach Express to computer and open ToolBox; adjust time zone of detector
	GPS will set date and time

Mobile Transect Surveys	AnaBat Express (with directional mic)
Recording Format (Fixed)	Zero-crossing
Recording Modes	Night Only
	Transect Mode
Date/Time	Attach Express to computer and open ToolBox; adjust time zone of detector
	GPS will set date and time

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Titley Scientific AnaBAT Walkabout

Stationary Point Surveys		AnaBat Walkabout
CAPTURE	Trigger	ZC
	Trigger Min Freq	8 or 16kHz
	Trigger Max Freq	120kHZ
	ZC Div Ratio	8 (ZC only)
	ZC Sensitivity	15-18 (or just below the 'self-triggering' level - lower is better if using external mic rather than built-in mic)
	Crest Factor Threshold	8-10 (but this threshold is not actually being used. Trigger setting should always say ZC)
	Manual Record Length	n/a
	Max File Length	15s
	Record Wave File	(check box)
	Record Anabat File	(check box)
	Deployment	Auto Record Mode (turn off screen and volume if being left for more than a few minutes); internal battery will need recharged daily, and it should be tested to ensure the battery can record for a full night

Mobile Transect Surveys		AnaBat Walkabout (with directional, external mic)
CAPTURE	Trigger	ZC
	Trigger Min Freq	8 or 16kHz
	Trigger Max Freq	120kHZ
	ZC Div Ratio	8 (ZC only)
	ZC Sensitivity	15 (or just below the 'self-triggering' level) - take note of number for repeatability
	Crest Factor Threshold	8-10 (but this threshold is not actually being used. Trigger setting should always say ZC)
	Manual Record Length	n/a
	Max File Length	15s
	Record Wave File	(check box)
	Record Anabat File	(check box)
	Deployment	Auto Record Mode

![NABat North American Bat Monitoring Program logo]

Wildlife Acoustics Echo Meter Touch 1 & Echo Meter Touch 2 Pro

Stationary Point Surveys		EMTouch-1	EMTouch-2 Pro
		not recommended for Stationary Point Surveys	*not recommended for Stationary Point Surveys*
ADVANCED SETTINGS			

Mobile Transect Surveys		EMTouch-1 (with customized device to make it hemispherical in detection volume)	EMTouch-2 Pro	Comments
ADVANCED SETTINGS	Audio Division Ratio	personal choice	personal choice	
	Nightly Seesions Mode	ON	ON	
	Save Noise Files?	OFF	OFF	
	Real-Time Auto ID	ON or OFF	ON or OFF	
	Sensitivity	BALANCED	BALANCED	or OFF as this is personal preference
	Trigger Sensitivity	MEDIUM	MEDIUM	
	Trigger Window	2 SEC	2 SEC	
	Max Trigger Length	15 SEC	15 SEC	
	Gain	MEDIUM or HIGH	MEDIUM or HIGH	
	Sample Rate	256kHz	256kHz	
	Post recording	further auto-ID is recommended (e.g. KaleidoscopePro)	further auto-ID is recommended (e.g. KaleidoscopePro)	

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Wildlife Acoustics SM2BAT+

Stationary Point Surveys

		SM2BAT+
On board settings (switches or jumpers)	Bias	on or off
	HPF	1 kHz
	Gain (fill in Left or Right depending on channel selected for mic attachment)	0 (near roost, or close to bats) or 12 (general foraging) if using U1 mic. If using SMX-US old mic, then 36 and 48 respectively.
Sample rate		192,000 or 384,000
Channels		left or right, whichever channel mic will be attached to (ZC requires left microphone-channel)
Compression		Wav, or ZC
Advanced settings	Dig HPF Left	fill in line that corresponds to microphone-channel being used; 16kHz if no bats in area produce below this, otherwise 8kHz
	Dig HPF Right	
	Dig LPF Left	n/a
	Dig LPF Right	n/a
	Trg Lvl Left	fill in line that corresponds to microphone-channel being used; 12 - 18 dB depending on level of ambient noise
	Trg Lvl Right	
	Trg Win Left	fill in line that corresponds to microphone-channel being used; 2 s
	Trg Win Right	
	Trg Max Length	15 s
	Div Ratio	n/a (for earphone listening only)
Program/Schedule	Do - Until Loops	1 AT SSET-00:30:00
		2 RECORD 01:00:00
		3 GOTO LINE 02 00X
		4 UNTSRIS+00:30:00
		5 GOTO LINE 01 00X
		if recording ZC, use the following to force recalculation of noise floor:
		1 AT SSET-00:30:00
		2 RECORD 01:00:00
		3 PAUSE 00:02:00
		4 GOTO LINE 02 00X
		5 UNTSRIS+00:30:00
		6 GOTO LINE 01 00X
	Records 30 minutes before sunset, all night, and then stops 30 min after sunrise.	

Mobile Transect Surveys

		SM2BAT+ (with handheld GPS synchronized; and directional horn on mic)
On board settings (switches or jumpers)	Bias	on or off
	HPF	1 kHz
	Gain (fill in Left or Right depending on channel selected for mic attachment)	0 (near roost, or close to bats) or 12 (general foraging) if using U1 mic. If using SMX-US old mic, then 36 and 48 respectively.
Sample rate		192,000 or 384,000
Channels		left or right, whichever channel mic will be attached to
Compression		Wac0
Advanced settings	Dig HPF Left	fill in line that corresponds to microphone-channel being used; 16kHz if no bats in area produce below this, otherwise 8kHz
	Dig HPF Right	
	Dig LPF Left	n/a
	Dig LPF Right	n/a
	Trg Lvl Left	fill in line that corresponds to microphone-channel being used; 12 - 18 dB depending on level of ambient noise
	Trg Lvl Right	
	Trg Win Left	fill in line that corresponds to microphone-channel used; 2 s
	Trg Win Right	
	Trg Max Length	1.5 - 2 hours (length of driving transectanticipated)
	Div Ratio	16 or personal preference (for listening with earphones only)
	Force Record	When ready to drive, force record pushing up and down arrow at the same time. Take caution that detector does not lose power at any point during the driving transect, as wac file will corrupt
	Post-recording processing	convert wac to wav in Kaleidscope. Use 3rd party sofware such as Myotisoft Transect to create track log from GPS and;embed GPS waypoints into filenames

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Wildlife Acoustrics SM3BAT

Stationary Point Surveys		SM3BAT
SETTINGS	**Sunrise/Sunset**	sunset/sunrise
	Location	set location manually or via GPS plug-in
	Time/Date	set date/time using GPS or manually (always manually adjust time zone)
	Power Volt cut-off	n/a for short duration deployment with internal batteries
	Channel Sensitivity	n/a
PROGRAM (choose Builtin program 'Sunset to Sunrise ZC' for both FS & ZC, then choose 'EDIT' to set a few required fields)	**HPF**	16kHZ if not bats produce lower than this, otherwise, 1kHz
	Gain	0dB = if bats approach close; 12dB general foraging
	FS	WAV, channel (0) or (1) depending on which channel you attach mic to Sample Rate(256000)
	ZC (optional)	channel (0) or (1) depending on which channel you attach mic to DivRatio (8)
	FRQMIN	8kHZ if in area with audible bats; 16kHz otherwise
	FRQMAX	OFF
	DMIN (noise scrubber)	1.5ms
	DMAX (noise scrubber)	50ms
	TRGLVL	12-18dB
	TRGWIN	2s
	TRGMAX	15s
	NAP	not enabled
Built in Programs		Achieve the above settings by choosing "Sunset to Sunrise ZC" and modifying as described above, and then below: REPEAT AT SSET - 00:30:00 REPEAT RECORD 01:00:00 UNTSRIS + 00:30:00 UNTCOUNT INF Records 30 minutes before sunset, all night, and then stops 30 min after sunrise.

Mobile Transect Surveys		SM3BAT (with GPS attached; and direcdtional horn on mic)
SETTINGS	**Sunrise/Sunset**	sunrise/sunset
	Location	set location via GPS plug-in
	Time/Date	set date/time using GPS or manually (always manually adjust time zone)
	Power Volt cut-off	n/a for short duration deployment with internal batteries
	Channel Sensitivity	n/a
PROGRAM (choose Builtin program 'Sunset to Sunrise ZC' for both FS & ZC, then choose 'EDIT' to set a few required fields)	**HPF**	16kHZ if not bats produce lower than this, otherwise, 1kHz
	Gain	12dB
	FS	WAC, channel (0) or (1) depending on which channel you attach mic to Sample Rate (256000)
	ZC	OFF
	FRQMIN	8kHZ if in area with audible bats; 16kHz otherwise
	FRQMAX	OFF
	DMIN (noise scrubber)	1.5ms
	DMAX (noise scrubber)	50ms
	TRGLVL	12-18dB
	TRGWIN	2s
	TRGMAX	15s
	NAP	not enabled
Built In Programs		24 hours keep GPS plugged into detector for entire driving transect
Post-recording processing		convert wac to wav and extract GPS in Kaleidscope

Wildlife Acoustics SM4BAT

Stationary Point Surveys			SM4BAT-FS	SM4BAT-ZC
SETTINGS	AUDIO	Gain	0 = if bats approach close; 12 general foraging	n/a
		16k High Filter	on' (if no bats in area produce below 16kHz)	n/a
		Sample Rate	256	n/a
		Min Duration (noise scrubber)	1.5ms	1.5ms
		Max Duration (noise scrubber)	50ms	50ms
		Min Trigger frequency	16kHz if no bats in area produce below 16kHz), otherwise, 8kHz	16kHz if no bats in area produce below 16kHz), otherwise, 8kHz
		Trigger level	12dB	n/a
		Trigger window	2s	2s
		Max Length	15s	15s
	Date/Time		set date/time using GPS or manually (always manually adjust time zone)	set date/time using GPS or manually (always manually adjust time zone)
	Location		set location manually or via GPS plug-in	set location manually or via GPS plug-in
	Sunrise/Set type		leave at sunset/sunrise	leave at sunset/sunrise
	Delay start		n/a	n/a
	LED indicator		usually best to turn off to avoid attracting unwanted attention from people/wildlife	usually best to turn off to avoid attracting unwanted attention from people/wildlife
	Advanced		generally n/a for short term deployment	generally n/a for short term deployment
Program/Schedule	Time Blocks (load sunset to sunrise built-in program and modify)		START:	set -00:30
			DUTY:	always
			END:	rise +00:30
			Records 30 minutes before sunset, all night, and then stops 30 min after sunrise.	

Mobile Transect Surveys			SM4BAT-FS (with handheld GPS synchronized; and directional horn on mic)	SM4BAT-ZC
SETTINGS	AUDIO	Gain	0 = if bats approach close; 12 general foraging	*not recommended for Mobile Transect Surveys*
		16k High Filter	on (if no bats in area produce below 16kHZ)	
		Sample Rate	256	
		Min Duration (noise scrubber)	1.5ms	
		Max Duration (noise scrubber)	50ms	
		Min Trigger frequency	16kHz	
		Trigger level	12dB	
		Trigger window	2s	
		Max Length	15s	
	Date/Time		set date/time	
	Location		set location manually or via GPS plug-in, but ensure handheld GPS and detector are set as close as possible to the same exact time	
	Sunrise/Set type		sunrise/sunset	
	Delay start		n/a	
	LED indicator		n/a	
	Advanced		n/a	
Program/Schedule	Time Blocks		load 24 Hours program	
	Post recording		Use 3rd party sofware such as Myotisoft Transect to create track log from GPS and;embed GPS waypoints into filenames	