Metadata Fields, Descriptions, and Accepted Entries

Survey Type

Table1. Required and recommended metadata fields for the North American Bat Monitoring Program (NABat) stationary acoustic files.

GUANO Field	Required or Recommended	Description/Instruction
NABat|Grid Cell GRTS ID*	Required*	GRTS ID number of the NABat grid cell where the survey was conducted. This is also the NABat sampling priority of the grid cell based on the GRTS master sample, for example, lower GRTS ID = higher NABat sampling priority.
NABat|Site Name	Required	A user-defined name for the specific location (or point) where a detector was deployed within a single grid cell. Being consistent with site names from year to year allows for easier sorting and interpretation of the data. For example, if four stationary detectors were deployed, each within a 5 km × 5 km quadrant in the same 10 km × 10 km grid cell, Site Names used to describe the four deployment locations could be 'GRTS_ID_NW', 'GRTS_ID_NE', 'GRTS_ID_SW,' and 'GRTS_ID_SE.' Alternatively, Site Names can be based on a nearby town name, habitat type, property name, and so forth.
NABat|Latitude *	Recommended*	Latitude (WGS) of the stationary point where detector was deployed
NABat|Longitude*	Recommended*	Longitude (WGS) of the stationary point where detector was deployed
NABat|Activation start time	Required	Time when detector was activated to start recording. Note that this may be different than deployment start time (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58)
NABat|Activation end time	Required	Time when detector was deactivated. Note that this may be different than deployment end time (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58).
NABat|Detector type	Recommended	Restricted categorical field. Accepted entries: BINARY ACOUSTIC AR125 | BINARY ACOUSTIC AR125-FG | BINARY ACOUSTIC AR180 | BINARY ACOUSTIC AcroBat | BINARY ACOUSTIC iFR-IV | BINARY ACOUSTIC iFR-V | PETTERSSON D1000x | PETTERSSON D240x | PETTERSSON D500x | PETTERSSON M500 | TITLEY AnaBat Express | TITLEY AnaBat SD1 | TITLEY AnaBat SD2 | TITLEY AnaBat Swift | TITLEY AnaBat Walkabout | WILDLIFE ACOUSTICS EM-Touch | WILDLIFE ACOUSTICS EM-Touch2 | WILDLIFE ACOUSTICS EM-TouchPRO | WILDLIFE ACOUSTICS EM3/EM3+ | WILDLIFE ACOUSTICS SM MICRO | WILDLIFE ACOUSTICS SM2 | WILDLIFE ACOUSTICS SM2Bat+ | WILDLIFE ACOUSTICS SM2Bat-192 | WILDLIFE ACOUSTICS SM3Bat | WILDLIFE ACOUSTICS SM4BAT | WILDLIFE ACOUSTICS SM4BAT-FS | WILDLIFE ACOUSTICS SM4BAT-ZC | WILDLIFE ACOUSTICS SMMINI-BAT | WILDLIFE ACOUSTICS SMZC
NABat|Detector Serial Number	Recommended	Serial number of detector/recording device
NABat|Microphone type	Recommended	Restricted categorical field. Accepted entries: Pettersson D500x | Pettersson M500 | TITLEY AnaBat Swift | Wildlife Acoustics SM3-U1 | Wildlife Acoustics SMM-U1 | Wildlife Acoustics SMM-U2 | Wildlife Acoustics SMX-U1 | Wildlife Acoustics SMX-US | Wildlife Acoustics SMX-UT | generic Directional | generic Internal | generic Omni-directional
NABat|Microphone Serial Number	Recommended	Serial number of microphone device
NABat|Microphone orientation	Recommended	Direction the microphone was pointed. Restricted categorical field. Accepted entries: e | n | ne | nw | s | se | sw | w
NABat|Microphone height	Recommended	Height (m) of microphone above ground
NABat|Distance to clutter	Recommended	Distance (m) between microphone and nearest clutter (for example: vegetation, buildings, or other structure)
NABat|Type of clutter	Recommended	Nearest clutter type. Restricted categorical field. Accepted entries: Building | Other | Rock | Vegetation | Water
NABat|Percent clutter	Recommended	Percent of clutter surrounding microphone
NABat|Distance to water	Recommended	Distance (m) between microphone and nearest water
NABat|Water type	Recommended	Broad type of nearest water
NABat|Habitat type	Recommended	Broad habitat type surrounding microphone. Restricted categorical field. Accepted entries: agriculture | barren land | forest-conifer | forest-deciduous | forested wetland | grassland | shrubland | urban | water | wetland
NABat|Land unit code	Recommended	A user-defined 4-letter abbreviation describing your study area, region, park, state, or land unit. For example: if the survey is conducted in a park or refuge, use park or refuge codes (for example: YELL for Yellowstone National Park). If the survey is not carried out in a park or refuge, the user creates a 4-letter abbreviation for Land Unit Code based on the region or larger surrounding area (for example: SOCA for South Carolina, 3LMA

		for Three Lakes Wildlife Management Area). Note that multiple sites (Site Names) can exist within the same land unit code.
NABat|Contact information	Recommended	Contact information for person/entity that recorded the file
NABat|Weatherproofing	Recommended	Indicate whether weather proofing was used on microphone (TRUE | FALSE)
NABat|Unusual occurrences	Recommended	Indicate whether unusual occurrences took place during the recording session that may impact the interpretation of results for example; power to detector may have been low; time not adjusted for daylight savings time; recording was interrupted due to dead batteries; filled data card; microphone or cable damage; schedule programming error; late deployment; deployment varies due to non-standard microphone mounting; incorrect detector settings; and so forth.
NABat|Nightly Low Temperature	Recommended	The nightly low temperature (C)
NABat|Nightly High Temperature	Recommended	The nightly high temperature (C)
NABat|Nightly Low Relative Humidity	Recommended	The nightly low Relative Humidity (%)
NABat|Nightly High Relative Humidity	Recommended	The nightly low Relative Humidity (%)
NABat|Nightly Low Weather Event	Recommended	Notes on a light significant weather event (e.g. Light Snow)
NABat|Nightly High Weather Event	Recommended	Notes on a heavy significant weather event (e.g. Heavy Rain)
NABat|Nightly Low Wind Speed	Recommended	The nightly low Wind Speed (km/h)
NABat|Nightly High Wind Speed	Recommended	The nightly high Wind Speed (km/h)
NABat|Nightly Low Cloud Cover	Recommended	The nightly low Cloud Cover (%)
NABat|Nightly High Cloud Cover	Recommended	The nightly high Cloud Cover (%)
NABat|Audio Recording Name	Required	Name of the audio file (.wav/.zc)
NABat|Audio Recording Time	Recommended	Timestamp (e.g. 2018-05-19T21:04:35.800)
Species Auto ID	Recommended	Restricted categorical field (single entry per row). If multiple species were present and counted, each species should be listed in a separate row. Accepted entries: 25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA | HiLo
Species Manual ID	Recommended	25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA | HiLo

NABat|Software type	Required	The type of software used for file processing, auto ID, and vetting. Restricted categorical field. Accepted entries: AnaLook | Anabat Insight 2.x | AnalookW | BCID 2.5c | BCID 2.7d | BCID 2.8b | Bioacoustics 0.2.5 | EchoClass 3.1 | Kaleidoscope 3.x | Kaleidoscope 4.0.0 | Kaleidoscope 4.3.x | Kaleidoscope 4.5.0 | Kaleidoscope 4.5.4 | Kaleidoscope 4.5.5 | Kaleidoscope 4.5.x | Kaleidoscope 4.x | Kaleidoscope 5.0.x | Kaleidoscope 5.1.x | Kaleidoscope 5.2.x | Kaleidoscope 5.3.x | Kaleidoscope x | No Auto ID | Sonobat 3.x | Sonobat 4.2 | Sonobat 4.x | Sonobat x
NABat|Species List	Required	Name of the species list created or selected in your NABat project homepage. The species list should include all species considered in the auto and manual ID process. Users with specific knowledge of local species assemblages and projects that cover large areas may use multiple species lists based on the location of the deployment. Species list can be created using the 'Species List' tab from users' project homepage.

* Either GRID Cell GRTS ID OR Latitude/Longitude are required. If Lat/Long are provided and GRTS Cell is unspecified, NABat will auto-assign the appropriate cell.

Table 2. Required and recommended metadata fields for the North American Bat Monitoring Program (NABat) mobile acoustic transect acoustic files.

GUANO Field	Required or Recommended	Description/Instruction
NABat|Grid Cell GRTS ID*	Required*	GRTS ID number of the NABat grid cell where the survey was conducted. This is also the NABat sampling priority of the grid cell based on the GRTS master sample, for example, lower GRTS ID = higher NABat sampling priority.
NABat|Site Name	Required	A user-defined name for the specific mobile transect route within a single grid cell. Site Name should remain consistent across all surveys of the same route (e.g., separate surveys within a season, separate surveys across years). Consistent route names from year to year allows for easier sorting and interpretation of the data. If stationary point surveys were conducted within the same grid, the corresponding stationary point name, with an additional identifier like 'DT' (mobile driving transect), would be appropriate (e.g. SWDT, NEDT, etc.)
NABat|Activation start time	Required	Time when detector was activated to start recording. Note that this may be different than deployment start time (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58)
NABat|Activation end time	Required	Time when detector was deactivated. Note that this may be different than deployment end time (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58).
NABat|Detector type	Recommended	Restricted categorical field. Accepted entries: BINARY ACOUSTIC AR125 | BINARY ACOUSTIC AR125-FG | BINARY ACOUSTIC AR180 | BINARY ACOUSTIC AcroBat | BINARY ACOUSTIC iFR-IV | BINARY ACOUSTIC iFR-V | PETTERSSON D1000x | PETTERSSON D240x | PETTERSSON D500x | PETTERSSON M500 | TITLEY AnaBat Express | TITLEY AnaBat SD1 | TITLEY AnaBat SD2 | TITLEY AnaBat Swift | TITLEY AnaBat Walkabout | WILDLIFE ACOUSTICS EM-Touch | WILDLIFE ACOUSTICS EM-Touch2 | WILDLIFE ACOUSTICS EM-TouchPRO | WILDLIFE ACOUSTICS EM3/EM3+ | WILDLIFE ACOUSTICS SM MICRO | WILDLIFE ACOUSTICS SM2 | WILDLIFE ACOUSTICS SM2Bat+ | WILDLIFE ACOUSTICS SM2Bat-192 | WILDLIFE ACOUSTICS SM3Bat | WILDLIFE ACOUSTICS SM4BAT | WILDLIFE ACOUSTICS SM4BAT-FS | WILDLIFE ACOUSTICS SM4BAT-ZC | WILDLIFE ACOUSTICS SMMINI-BAT | WILDLIFE ACOUSTICS SMZC
NABat|Detector Serial Number	Recommended	Serial number of detector/recording device
NABat|Microphone type	Recommended	Restricted categorical field. Accepted entries: Pettersson D500x | Pettersson M500 | TITLEY AnaBat Swift | Wildlife Acoustics SM3-U1 | Wildlife Acoustics SMM-U1 | Wildlife Acoustics SMM-U2 | Wildlife Acoustics SMX-U1 | Wildlife Acoustics SMX-US | Wildlife Acoustics SMX-UT | generic Directional | generic Internal | generic Omni-directional
NABat|Microphone Serial Number	Recommended	Serial number of microphone device
NABat|Microphone placement	Recommended	Where the microphone was mounted during the mobile transect
NABat|Contact information	Recommended	Contact information for person/entity that recorded the file
NABat|Comments	Recommended	Indicate whether unusual occurrences took place during the recording session that may impact the interpretation of results for example, power to detector may have been low, time not adjusted for daylight savings time, recording was interrupted due to dead batteries, filled data card, microphone or cable damage, schedule programming error, late deployment, deployment varies due to non-standard microphone mounting, incorrect detector settings, and so forth.
NABat|Nightly Low Temperature	Recommended	The nightly low temperature (C)
NABat|Nightly High Temperature	Recommended	The nightly high temperature (C)
NABat|Nightly Low Relative Humidity	Recommended	The nightly low Relative Humidity (%)
NABat|Nightly High Relative Humidity	Recommended	The nightly low Relative Humidity (%)
NABat|Nightly Low Weather Event	Recommended	Notes on a light significant weather event (e.g. Light Snow)
NABat|Nightly High Weather Event	Recommended	Notes on a heavy significant weather event (e.g. Heavy Rain)
NABat|Nightly Low Wind Speed	Recommended	The nightly low Wind Speed (km/h)
NABat|Nightly High Wind Speed	Recommended	The nightly high Wind Speed (km/h)
NABat|Nightly Low Cloud Cover	Recommended	The nightly low Cloud Cover (%)
NABat|Nightly High Cloud Cover	Recommended	The nightly high Cloud Cover (%)

NABat|Audio Recording Name	Required	Name of the audio file (.wav/.zc)
NABat|Audio Recording Time	Recommended	Timestamp (e.g. 2018-05-19T21:04:35.800)
Latitude	Recommended*	Latitude in WGS84 decimal degrees.
Longitude	Recommended*	Longitude in WGS84 decimal degrees.
Species Auto ID	Recommended	Restricted categorical field (single entry per row). If multiple species were present and counted, each species should be listed in a separate row. Accepted entries: 25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA | HiLo
Species Manual ID	Recommended	Restricted categorical field (single entry per row). If multiple species were present and counted, each species should be listed in a separate row. Accepted entries: 25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA | HiLo
NABat|Software type	Required	The type of software used for file processing, auto ID, and vetting. Restricted categorical field. Accepted entries: AnaLook | Anabat Insight 2.x | AnalookW | BCID 2.5c | BCID 2.7d | BCID 2.8b | Bioacoustics 0.2.5 | EchoClass 3.1 | Kaleidoscope 3.x | Kaleidoscope 4.0.0 | Kaleidoscope 4.3.x | Kaleidoscope 4.5.0 | Kaleidoscope 4.5.4 | Kaleidoscope 4.5.5 | Kaleidoscope 4.5.x | Kaleidoscope 4.x | Kaleidoscope 5.0.x | Kaleidoscope 5.1.x | Kaleidoscope 5.2.x | Kaleidoscope 5.3.x | Kaleidoscope x | No Auto ID | Sonobat 3.x | Sonobat 4.2 | Sonobat 4.x | Sonobat x
NABat|Species List	Required	Name of the species list created or selected in your NABat project homepage. The species list should include all species considered in the auto and manual ID process. Users with specific knowledge of local species assemblages and projects that cover large areas may use multiple species lists based on the location of the deployment. Species list can be created using the 'Species List' tab from users' project homepage.

* Either GRID Cell GRTS ID OR Latitude/Longitude are required. If Lat/Long are provided and GRTS Cell is unspecified, NABat will auto-assign the appropriate cell.

Table 3. Required and recommended metadata fields for the North American Bat Monitoring Program (NABat) hibernacula colony counts.

GUANO Field	Required or Recommended	Description/Instruction
GRTS Cell Id	Required*	GRTS ID number of the NABat grid cell where the survey was conducted. This is also the NABat sampling priority of the grid cell based on the GRTS master sample; for example; lower GRTS ID = higher NABat sampling priority.
Survey Start Time	Required	Time when survey started (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58).
Survey End Time	Required	Time when survey ended (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58).
Observer	Required	Name/contact info for the person who counted bats. If the multiple observer method was employed to estimate detection probability, each observer should have their own row of metadata, and each individual's count should be included, not averaged.
Internal Temperature	Recommended	Internal temperature of hibernaculum (C).
Internal Relative Humidity	Recommended	Internal relative humidity of hibernaculum (%).
Outside Temperature	Recommended	The outside temperature (C).
Outside Relative Humidity	Recommended	The outside relative humidity (%).
Outside Weather Event	Recommended	Notes on significant weather event at end (e.g. Light Snow).
Outside Wind Speed	Recommended	The outside wind Speed (km/h).
Outside Cloud Cover	Recommended	The outside cloud cover (%).
Event Comments	Recommended	Comments about this event.
Latitude	Required*	Latitude in WGS84 decimal degrees.
Longitude	Required*	Longitude in WGS84 decimal degrees.
Elevation	Recommended	Elevation (meters)
Site Name	Required**	Name of the site. For areas with clustered hibernacula, a single site name may be used for multiple hibernacula.
Site Identifier	Required**	For sites with multiple hibernacula clustered in a small area, site identifier can be used to distinguish between distinct hibernacula at a single site.
Section Identifier	Recommended	For large hibernacula, section identifier can be used to label distinct sections of a single hibernaculum. This is useful for tracking survey effort among years.
Broad Habitat Type	Recommended	Broad habitat type surrounding microphone. Accepted categorical entries: agriculture | barren land | forest-conifer | forest-deciduous | forested wetland | grassland | shrubland | urban | water | wetland
Site Type	Recommended	Restricted categorical field. Accepted entries: barn | basement | bridge | building | bunker | cave | culvert | dam | fort | mine | quarry | rock crevice | rock shelter | storm sewer | tower | tree | tunnel | well
Site Size	Recommended	Restricted categorical field. Accepted entries: large | medium | small | very large | very small
Site Number of Openings	Recommended	Number of openings/exits at the site.
Site Number of Passages	Recommended	Number of passages within the site.
Site Material	Recommended	Restricted categorical field. Accepted entries: abandoned railroad tunnel | basalt | chalk | clay | copper | dissolution cave | fracture | fracture-limestone | fracture-sinkhole | gold | gold-silver | gypsum | hard rock | hydroelectric dam spillway | hypogene | iron ore | karst processes in silurian dolomite | lava tube | limestone | limestone-gypsum | limestone-marble | limestone-mushroom farm | limestone-solution | man-made brick fort | manganese | manganese-sandstone | mica | old iron mine | sand | sandstone | sandstone fracture | sandstone rockshelter with limestone contact | sandstone-limestone contact | sandstone-sinkhole | sandstone-widened by humans | soapstone | solution
Site Use	Recommended	Restricted categorical field. Accepted entries: fall roost | hibernacula | maternity | spring roost | summer roost | winter roost
Site Protection	Recommended	For Example; gates; locks; fences.
Number Adjacent Sites	Recommended	For sites with multiple hibernacula clustered in a small area, the number of adjacent sites.
Site Water Present	Recommended	True | False
Portion of Site Surveyed	Recommended	Portion of site surveyed (%).

Comment	Recommended	-
Percent Bats With Visible Fungus	Recommended	Bats with visible fungus (%).
Winter Year PD Presumed	Recommended	-
Winter Year WNS Presumed	Recommended	-
Last Negative Winter Year	Recommended	Last year before WNS was confirmed present at the site.
Presumed Cause of WNS	Recommended	Restricted categorical field. Accepted entries: Unknown | aberrant behavior - bats flying outside in winter | aberrant behavior - bats roosting at site entrance/abnormal locations | histopathology-confirmed WNS sample | mortality event | qPCR | visible fungus
Presumed Cause of PD	Recommended	Restricted categorical field. Accepted entries: aberrant behavior - bats flying outside in winter | aberrant behavior - bats roosting at site entrance/abnormal locations | histopathology-confirmed Pd sample | mortality event | qPCR | visible fungus
Species	Required	Restricted categorical field (single entry per row). If multiple species were present and counted, each species should be listed in a separate row. Accepted entries: 25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA | HiLo
Count	Required	Number of individuals observed.
Count Method	Recommended	Restricted categorical field. Accepted entries: count | count by photograph | visual count on site | visual estimate on site
Estimate Min	Recommended	Estimate of minimum bats observed.
Estimate Max	Recommended	Estimate of maximum bats observed.
Count Confidence	Recommended	Restricted categorical field. Accepted entries: high (66 - 100%) | low (0 - 33%) | medium (33 - 66%)
Count Dead Bat	Recommended	Number of dead bats observed.
Comments	Recommended	Comments about the survey.

* Either GRID Cell GRTS ID OR Latitude/Longitude are required. If Lat/Long are provided and GRTS Cell is unspecified, NABat will auto-assign the appropriate cell.

** Either Site Name or Site Identifier are required

Table 4. Required and recommended metadata fields for the North American Bat Monitoring Program (NABat) maternity colony counts.

GUANO Field	Required or Recommended	Description/Instruction
GRTS Cell Id	Required*	GRTS ID number of the NABat grid cell where the survey was conducted. This is also the NABat sampling priority of the grid cell based on the GRTS master sample; for example; lower GRTS ID = higher NABat sampling priority.
Survey Start Time	Required	Time when survey started (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58).
Survey End Time	Required	Time when survey ended (e.g. 12/25/2018 | 12/25/2018 10:00 PM | 12/25/2018 20:00:00 | 12/25/2018 08:00:00 AM | 2018-12-25T20:50:58).
Observer	Required	Name/contact info for the person who counted bats. If the multiple observer method was employed to estimate detection probability, each observer should have their own row of metadata, and each individual's count should be included, not averaged.
Internal Temperature	Recommended	Internal temperature of hibernaculum (C).
Internal Relative Humidity	Recommended	Internal relative humidity of hibernaculum (%).
Outside Temperature	Recommended	The outside temperature (C).
Outside Relative Humidity	Recommended	The outside relative humidity (%).
Outside Weather Event	Recommended	Notes on significant weather event at end (e.g. Light Snow).
Outside Wind Speed	Recommended	The outside wind Speed (km/h).
Outside Cloud Cover	Recommended	The outside cloud cover (%).
Event Comments	Recommended	Comments about this event.
Latitude	Required*	Latitude in WGS84 decimal degrees.
Longitude	Required*	Longitude in WGS84 decimal degrees.
Elevation	Recommended	Elevation (meters)
Site Name	Required**	Name of the site. For areas with clustered hibernacula, a single site name may be used for multiple hibernacula.
Site Identifier	Required**	For sites with multiple hibernacula clustered in a small area, site identifier can be used to distinguish between distinct hibernacula at a single site.
Section Identifier	Recommended	For large hibernacula, section identifier can be used to label distinct sections of a single hibernaculum. This is useful for tracking survey effort among years.
Broad Habitat Type	Recommended	Broad habitat type surrounding microphone. Accepted categorical entries: agriculture | barren land | forest-conifer | forest-deciduous | forested wetland | grassland | shrubland | urban | water | wetland
Site Type	Recommended	Restricted categorical field. Accepted entries: barn | basement | bridge | building | bunker | cave | culvert | dam | fort | mine | quarry | rock crevice | rock shelter | storm sewer | tower | tree | tunnel | well
Site Size	Recommended	Restricted categorical field. Accepted entries: large | medium | small | very large | very small
Site Number of Openings	Recommended	Number of openings/exits at the site.
Site Number of Passages	Recommended	Number of passages within the site.
Site Material	Recommended	Restricted categorical field. Accepted entries: abandoned railroad tunnel | basalt | chalk | clay | copper | dissolution cave | fracture | fracture-limestone | fracture-sinkhole | gold | gold-silver | gypsum | hard rock | hydroelectric dam spillway | hypogene | iron ore | karst processes in silurian dolomite | lava tube | limestone | limestone-gypsum | limestone-marble | limestone-mushroom farm | limestone-solution | man-made brick fort | manganese | manganese-sandstone | mica | old iron mine | sand | sandstone | sandstone fracture | sandstone rockshelter with limestone contact | sandstone-limestone contact | sandstone-sinkhole | sandstone-widened by humans | soapstone | solution
Site Use	Recommended	Restricted categorical field. Accepted entries: fall roost | hibernacula | maternity | spring roost | summer roost | winter roost
Site Protection	Recommended	For Example; gates; locks; fences.
Number Adjacent Sites	Recommended	For sites with multiple hibernacula clustered in a small area, the number of adjacent sites.
Site Water Present	Recommended	True | False
Portion of Site Surveyed	Recommended	Portion of site surveyed (%).

Comment	Recommended	-
Percent Bats With Visible Fungus	Recommended	Bats with visible fungus (%).
Winter Year PD Presumed	Recommended	-
Winter Year WNS Presumed	Recommended	-
Last Negative Winter Year	Recommended	Last year before WNS was confirmed present at the site.
Presumed Cause of WNS	Recommended	Restricted categorical field. Accepted entries: Unknown | aberrant behavior - bats flying outside in winter | aberrant behavior - bats roosting at site entrance/abnormal locations | histopathology-confirmed WNS sample | mortality event | qPCR | visible fungus
Presumed Cause of PD	Recommended	Restricted categorical field. Accepted entries: aberrant behavior - bats flying outside in winter | aberrant behavior - bats roosting at site entrance/abnormal locations | histopathology-confirmed Pd sample | mortality event | qPCR | visible fungus
Species	Required	Restricted categorical field (single entry per row). If multiple species were present and counted, each species should be listed in a separate row. Accepted entries: 25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA | HiLo
Count	Required	Number of individuals observed.
Count Method	Required	Restricted categorical field. Accepted entries: count | count by photograph | visual count on site | visual estimate on site
Estimate Min	Recommended	Estimate of minimum bats observed.
Estimate Max	Recommended	Estimate of maximum bats observed.
Count Confidence	Recommended	Restricted categorical field. Accepted entries: high (66 - 100%) | low (0 - 33%) | medium (33 - 66%)
Count Dead Bat	Recommended	Number of dead bats observed.
Comments	Recommended	Comments about the survey.

* Either GRID Cell GRTS ID OR Latitude/Longitude are required. If Lat/Long are provided and GRTS Cell is unspecified, NABat will auto-assign the appropriate cell.

** Either Site Name or Site Identifier are required

Table 5. Required and recommended metadata fields for the North American Bat Monitoring Program (NABat) emergence counts.

GUANO Field	Required or Recommended	Description/Instruction
GRTS Cell Id	Required*	GRTS ID number of the NABat grid cell where the survey was conducted. This is also the NABat sampling priority of the grid cell based on the GRTS master sample; for example; lower GRTS ID = higher NABat sampling priority.
Location Name	Required	A user-defined name of the specific location (or point) where the data collection occurred.
Latitude	Required*	Latitude in WGS84 decimal degrees.
Longitude	Required*	Longitude in WGS84 decimal degrees.
Survey Start Time	Required	Time when survey started.
Survey End Time	Required	Time when survey ended.
Observer	Required	Name/contact of the person who conducted the count. If the multiple observer method was employed to estimate detection probability, each observer should have their own row of metadata, and each individual's count should be included, not averaged.
Exit Identifier	Recommended	Unique identifier for the exit counted, if multiple exits exist (e.g., North wall).
Roost Location Method	Recommended	How the roost was located. Restricted categorical field. Accepted entries: historical document | information from public or biologist | other | radio telemetry | unknown | visual habitat survey
Broad Habitat Type	Recommended	Broad habitat type surrounding roost. Restricted categorical field. Accepted entries: agriculture | barren land | forest-conifer | forest-deciduous | forested wetland | grassland | shrubland | urban | water | wetland
Roost Type	Recommended	The type of roost structure from which bats are emerging. Restricted categorical field. Accepted entries: artificial roost bark mimic | artificial roost bat box | artificial roost bat bunker | artificial roost bat condo | artificial roost other | artificial roost unknown | bridge cavity | bridge crevice | bridge expansion joints | bridge other | bridge under bridge | bridge unknown | building attic | building basement | building chimney | building deck | building eaves | building interior | building other | building porch | building roof | building shingles | building under siding | building unknown | cave horizontal entrance | cave multiple entrances | cave other | cave unknown | cave vertical entrance | cliff cavity | cliff horizontal crevice | cliff other | cliff unknown | cliff vertical crevice | culvert horizontal opening | culvert other | culvert unknown | culvert vertical opening | mine collapsed entrance | mine gated adit | mine gated vertical shaft | mine open adit | mine open vertical shaft | mine other | mine unknown | other artificial structure dam | other artificial structure utility pole | rock feature boulder field | rock feature isolated boulder | rock feature other | rock feature rocky outcrop | rock feature talus slope | rock feature unknown | tree basal hollow | tree branch | tree cavity | tree crevice | tree downed woody debris | tree exfoliating bark | tree foliage | tree on trunk | tree other | tree roots | tree unknown
Roosting Location	Recommended	Where in the roost the bats are located.
Roost Exit Points	Recommended	The number of exits from which bats emerged.
Seasonal Use	Recommended	Seasonal use of the roost. Restricted categorical field. Accepted entries: fall roost | hibernacula | maternity | multi-season | spring roost | summer roost | unknown | winter roost
Maternity Stage	Recommended	Restricted categorical field. Accepted entries: pre-volant | post-volant
Aspect of Emergence	Recommended	Cardinal direction the exit point faces. Restricted categorical field. Accepted entries: east | multiple | north | northeast | northwest | south | southeast | southwest | unknown | west
Vegetation Obstruction	Recommended	Is vegetation obstructing the roost exit. Restricted categorical field. Accepted entries: TRUE | FALSE
Emergence Point Height	Recommended	Height of the primary exit point from the ground (m).
Emergence Opening Width	Recommended	Width of the primary exit point (cm).
Emergence Opening Height	Recommended	Height of the primary exit point (cm).
Structure Height	Recommended	Height of the structure the roost is located in (m).
Structure Width	Recommended	Width of the structure the roost is located in (m).
Building Occupancy	Recommended	For buildings, indicate whether it is occupied (by humans). Restricted categorical field. Accepted entries: TRUE | FALSE
Building Type	Recommended	For buildings, indicate the type. Restricted categorical field. Accepted entries: barn | cabin | commercial building | house | shed | silo

Tree Species	Recommended	For roosts located in trees, indicate the species (scientific name).
Tree Decay	Recommended	For roosts located in trees, indicate the decay stage. Restricted categorical field. Accepted entries: NA | other | stage 1: live | stage 2: declining | stage 3: dead | stage 4: loose bark | stage 5: clean | stage 6: broken | stage 7: decomposed | stage 8: down material | stage 9: stump | unknown
Diameter Breast Height	Recommended	Diameter of tree at breast height (cm).
Guano Amount	Recommended	Restricted categorical field. Accepted entries: abundant | large mounds | none | scattered
Species	Required	Restricted categorical field (single entry per row). If multiple species were present and counted, each species should be listed in a separate row. Accepted entries: 25k | 40k | 40kMyo | ANPA | ANPAEPFU | ANTPAL | ARJA | ARTJAM | BRACAV | BRCA | CHME | CHOMEX | CORA | CORRAF | CORTO | COTO | COTOVI | DIEC | DIPECA | EPFU | EPFULABO | EPFULANO | EPFUMYLU | EPTFUS | EUDMAC | EUFL | EUMA | EUMFLO | EUMPER | EUMUND | EUPE | EUUN | HiF | HighF | IDIPHY | IDPH | LABL | LABLPAHE | LABO | LABOLASE | LABOMYLU | LABONYHU | LABOPESU | LACI | LACILANO | LACITABR | LAEG | LAIN | LAMI | LANO | LANOTABR | LASBLO | LASBOR | LASCIN | LASE | LASEGA | LASINT | LASMIN | LASNOC | LASSEM | LASXAN | LAXA | LEMY | LENI | LEPNIV | LEPYER | LESP | LEYE | LUSO | LoF | LowF | MACA | MACCAL | MOLMOL | MOME | MOMO | MORMEG | MYAR | MYAU | MYCA | MYCAMYCI | MYCAMYYU | MYCI | MYCIMYVO | MYEV | MYEVMYTH | MYGR | MYKE | MYLE | MYLU | MYLUMYCI | MYLUMYSE | MYLUMYVO | MYOAUR | MYOAUS | MYOC | MYOCAL | MYOCIL | MYOEVO | MYOGRI | MYOKEE | MYOLEI | MYOLUC | MYOOCC | MYOSEP | MYOSOD | MYOTHY | MYOVEL | MYOVOL | MYOYUM | MYSE | MYSO | MYTH | MYVE | MYVO | MYYU | NOCLEP | NOISE | NOLE | NOTBAT | NYCFEM | NYCHUM | NYCMAC | NYFE | NYHU | NYMA | NYSP | NoID | PAHE | PARHES | PERSUB | PESU | STERUF | STRU | TABR | TADBRA
Identification Method	Recommended	Method used to identify the species. Restricted categorical field. Accepted entries: acoustics | capture | genetics | visual
Count Species In	Recommended	Number of bats observed entering the roost.
Count Species Out	Required	Number of bats observed exiting the roost.
Estimate Min	Recommended	Lowest estimate of the number of bats observed exiting the roost.
Estimate Max	Recommended	Highest estimate of the number of bats observed exiting the roost.
Bats In Roost	Recommended	The number of bats observed in the roost (if doing an in-roost, non-emergence, count).
Count Confidence	Recommended	Restricted categorical field. Accepted entries: high (66 - 100%) | low (0 - 33%) | medium (33 - 66%)
Observation Method	Recommended	Restricted categorical field. Accepted entries: cavity inspection scope | night vision camera | night vision device | night vision device and bat detector | other | thermal camera and bat detector | thermal device | thermal device and bat detector | unaided visual | unknown | visual and bat detector
Distance From Roost	Recommended	Distance of observer from the roost (m).
Reason Survey Ended	Recommended	Restricted categorical field. Accepted entries: 15 min after last bat | bats finished emerging | low visibility | unknown
Survey Event Comments	Recommended	Observer comments on the event.
Starting Temperature	Recommended	Starting temperature (C).
Ending Temperature	Recommended	Ending temperature (C).
Starting Relative Humidity	Recommended	Relative humidity (%) at start of survey.
Ending Relative Humidity	Recommended	Relative humidity (%) at end of survey.
Starting Cloud Cover	Recommended	Cloud cover (%) at start of survey.
Ending Cloud Cover	Required*	Cloud cover (%) at end of survey.
Starting Wind Speed	Required*	Wind speed (km/h) at start of survey.
Ending Wind Speed	Recommended	Wind speed (km/h) at end of survey.
Starting Weather Event	Recommended	Significant weather event at start of survey (e.g. thunderstorm, rain, etc.)
Ending Weather Event	Recommended	Significant weather event at end of survey (e.g. thunderstorm, rain, etc.)

* Either GRID Cell GRTS ID OR Latitude/Longitude are required. If Lat/Long are provided and GRTS Cell is unspecified, NABat will auto-assign the appropriate cel