ACOUSTIC SURVEYS FOR BATS COURSE

Sample Agenda – Exact Times/Lecture/Demonstrations/Field Trips Vary According to Venue
*Included Meals: **8am=Light Breakfast** (unless otherwise noted), **12pm=Lunch & Break, 5pm=Dinner** (on your own)*

DAY 1: INTRODUCTION TO BAT DETECTOR TECHNOLOGY, MANUFACTURERS, MODELS, MICROPHONES AND DEPLOYMENT METHODS

12:00pm—Registration and Course Materials Distribution
1:00pm—Welcome, Staff/Student Introductions, Workshop Format, Goals and Objectives
1:30—Lecture/Discussion: Overview of Available Detectors and Their Appropriate Use

- Types of Acoustic Data Usually Collected
- Pros, Cons and Must-knows Regarding Zero-crossing vs. Full-spectrum
- Microphone Placement and Weatherproofing Issues

2:30—Lecture/Demonstration: Detector Siting and Placement Tips

- Discuss Siting and Placement Schemes, Deployment Gear, Meta-data Collection, and Documentation
- Tips and Tricks for Gear Removal and Storage
- View and Service Long-term, On-site, Passive Detector

Dinner (on your own)

6:00-8:30 Walkabout and Active Recording

- Modern Active Recording Tools: Anabat Walkabout, EchoMeter Touch, SonoBat LIVE, Spect'r III, Bat Recorder
- Walkabout 2-mile round trip beginning and ending at workshop venue

9:00-10:00—Lecture/Demonstration: Use SonoBat and KaPRO to View Bat Calls Collected During Walkabout

- SonoBat and KaPRO Very Basic Operations, and ensuing geek session

DAY 2: SOFTWARE FOR VIEWING FULL-SPECTRUM ECHOLOCATION CALLS, POST-PROCESSING DATA, & ANALYZING RESULTS

8:00am—Guided Demonstration: Post-processing Detector Data

- Organizing Acoustic Files Directory Structure, Archiving Data and Associated Files, Post-processing Workflow
- Attributing Acoustic Files: Using the SonoBat DataWizard to Optimize Data Organization
- Rename Files, Copy, Embed Text-header Information, Customize GUANO, Scrub Noise, and Prepare to Auto-classify

9:30pm—Lecture/Discussion: Comparing Software Programs for Auto-Classifying Bat Echolocation Calls

- Software Program Features and Capabilities
- Classifier Accuracy and Precision and Implications for Acoustic Survey Results

10:30pm—Lecture/Demonstration: Use SonoBat to Generate Auto-ID Classifications for Acoustic Surveys

- SonoBat Very Basic Operations
- Demonstration of the SonoBatch Control Panel & settings

Lunch (included)

1:00pm— Lecture/Demonstration: Use KaleidoscopePRO to Classify & Generate File-level & MLE Outputs

- Deleting/Moving SonoBat Scrubbed Files and Batching Remainder for KaPRO
- Viewing the KaPRO Outputs, Assigning Significance to File-level Classifications
- Understanding the MLE Values and their Significance

2:00—Lecture/Discussion: Review of Echolocation Call Characteristics for Local/Regional/Expected Bat Species

- Separating Bats into Acoustic Guilds using Fc Metrics, Call Shape Types, and Qualitative Analysis
- Recognizing Call Plasticity, Vocal Repertoires, and When NOT to Make the Call
- Identifying Multiple Bats in a Recording, Echoes, Harmonics, Social Calls, and Directives

3:30—Demonstration: Preparing Gear for Evening Survey

Dinner (on your own)

6:30-9:00 Field Trip- Passive and Active Recording at Local Natural Area

- Deploy passive detectors for later retrieval
- Active Monitoring and Spot-lighting Bats, Identifying Bats on the Wing while Recording

9:00-11:00 Optional Geek Session - Post Processing data/manual vetting call files upon return from fieldwork

DAY 3: ASSIGNING CONFIDENCE TO AUTO-ID OUTPUTS AND MANUAL VETTING

8:30—1-on-1 Post Processing Data Offloading Assistance
9:00—Lecture/Demonstration: View Example Files, Sample Files, & other Typical Passive Recordings

- Recognizing Ambiguity among Species and Guilds: Knowing when NOT to Make the Call
- The Question and Relevance of Reporting on Ambiguous Recordings; Recognizing Non-bat Recordings

DAY 3: ASSIGNING CONFIDENCE TO AUTO-ID OUTPUTS AND MANUAL VETTING *(CONTINUED . . .)*

10:00—Guided Demo: Manually Vetting File-level Results from KaPRO, & SonoBat
- Viewing Recordings in SonoBat and KaPRO and Sorting Spreadsheet Outputs
- Create File-level Concurrence Reports; Combining Results at the Site-level for Occupancy Information

Lunch (included)

1:00—Lecture/Demonstration: Using Excel to Interpret and Report on Acoustic and Capture Survey Results
- Spreadsheet Formatting Tips: Inserting Helpful Columns to Aid in Data Analysis and Reporting
- Common Excel Formulae for Populating New Columns and Performing Calculations on Data, Pivot Table Designs

2:00— Lecture/Discussion: Considerations for Mobile Transects
- Theory Behind Mobile Transects, Protocols for Conducting Transects, Check-list for a Successful Transect, Caveats
- Post-processing Transect Data and Visualizing Mobile Transects
- Case Study: Demonstrating Myotisoft Transect with Sample Files

3:30—Demonstration: Preparing Gear for Evening Survey; Passive Detectors and Mobile Rigs

Dinner (on your own)

6:30-9:00 Field Trip: Passive Recording and Mobile Transects
- Deploy Passive Detectors near Transect Start/Stop Location
- Conduct Transect and Collect Passive Detectors

9:00-11:00 Optional Geek Session - Post Processing data/manual vetting call files upon return from fieldwork

DAY 4: INCLUDING MOBILE TRANSECTS IN YOUR ACOUSTIC SURVEY AND MANUAL VETTING IMPLICATIONS

8:30—1-on-1 Post Processing Data Offloading Assistance

9:00—Guided Demo: Mobile Transect Data Workflow
- Prepare Mobile Transect Data for Post-processing
- Visualizing Mobile Transects using Myotisoft Transect

1:00—Student Exercise: Viewing and Identifying Sample Files, Manual ID Practice
- Students Receive Collections of Recordings and Use their Preferred Viewer(s) to Make Manual ID Decisions
- Students Summarize Results in Vetting Table; Annotating Decisions for Later Discussion

Lunch (included)

1:30 —Lecture/Demonstration: Acoustic Potpourri
- How Much Is Enough? Species Accumulation; Methods to Make Voucher Calls;
- Why Acoustic ID Might Not Work (Venn diagrams)

4:30pm—Student Exercise: Viewing and Identifying Sample Files, Manual ID Practice
- Students Present Manual ID Decisions on Sample Files, with Rationales for Decisions
- Instructors Review Student Decisions in Classroom Round-robin Exercise

Dinner (on your own)

6:30-9:00 OPTION 1: Field Trips – Active Recording using SonoBat LIVE

6:30-9:00 OPTION 2: Classroom Work – Long Term Detector Data Analyisis, Vet Results, Prepare Report, Design Survey Plans

9:00-11:00 Optional Geek Session - Post Processing data/manual vetting call files upon return from fieldwork

DAY 5: SUMMING IT ALL UP

8:30—1-on-1 Post Processing Data Offloading Assistance

9:00—Student Exercise: Summarizing Long-term Acoustic Data and Writing Survey Reports
- Why Auto-classifiers Can Fail and How To Spot Failure; Some Known Hardware and Software Pitfalls To Avoid
- Case Studies of Difficulties Interpreting Professional Acoustic Surveys and Generating Reports

10:00am—Lecture/Discussion: Hardware, Software, & Data Interpretation – Issues of Special Concern
- Why Auto-classifiers Can Fail and How To Spot It
- Some Known Hardware and Software Pitfalls To Avoid
- Case Studies of Difficulties Interpreting Professional Acoustic Surveys and Generating Reports

11:00am—Workshop Wrap-up and Closure: Thank you, Evaluations, Good-bye
- Distribution of Lecture Resources Identified at the Workshop
- Instructors Available for Additional Responses to Student Questions, Problems, and Lingering Issues