Bioacoustic Data Collection Protocol

Adapted from fieldwork protocols developed by the Koa team for the 2025 Experiential Introduction to AI and Biodiversity course, in collaboration with NEON, ABC Center, and Imageomics.

Pre-deployment Preparation

- Format SD cards in camera traps before deployment
- Label SD cards and camera traps with unique IDs
- Charge batteries and pack spares
- Access Jotform for data entry: Bioacoustic Data Form, with a paper backup

Field Protocol Overview

Equipment per deployment: - AudioMoth bioacoustic sensors with paired SD cards - GPS unit - Zip ties for mounting to fence posts and trees - Field notebook and pencil

Site Setup

Site Selection

- Place AudioMoths to capture diverse acoustic environments
- Mount at eye-level (approximately 5 feet) on fence posts or trees using zip ties
- Ensure microphone points away from prevailing wind direction
- Avoid areas with excessive mechanical noise (roads, equipment)
- Select sites to mount AudioMoths in same location as camera traps.

AudioMoth Configuration

- Set recording schedule based on target species activity patterns
- Configure portion of monitors to sample rate to record 5 minutes every hour, on the hour.
- Configure portion of monitors to record 1 hour in the morning and 1 hour in the evening.
- Test recording function before final deployment
- Record deployment details in Jotform and field notebook, and back up CSV to OSC.

AudioMoth SD Card Replacement

At each AudioMoth location: 1. Locate AudioMoth using GPS coordinates 2. Turn device off using switch 3. Remove SD card and record: - AudioMoth serial number - SD card ID - Date and time removed - Battery voltage (if display

available) 4. Insert fresh SD card 5. Turn device on and verify recording status (LED indicators) 6. Record new SD card ID and deployment time

AudioMoths Checklist - Check for water damage in housing - Verify microphone is unobstructed - Test battery level - Ensure secure mounting

Troubleshooting AudioMoth Issues:

- No recordings: Verify battery, SD card, recording schedule
- Poor audio quality: Check microphone obstruction, gain settings
- Shortened recording periods: Monitor battery drain, temperature effects

Data Transfer & Storage

1. **Immediate Processing:**
   - Transfer SD card data to secure storage upon return from field
   - Verify file integrity and completeness
   - Update metadata spreadsheets
   - Format SD cards for next deployment
2. **Data Backup:**
   - Maintain multiple copies of all data
   - Follow institutional data management protocols
   - Regular backup verification
3. **Quality Control:**
   - Review sample of images/recordings for equipment function
   - Note any issues with specific cameras or AudioMoths
   - Schedule maintenance as needed

This protocol should be reviewed and updated based on site-specific conditions and research objectives at The Wilds.