Filovirus Early Warning and Detection Training in Liberia

Location: UL-PIRE Africa Center, Graduate Education Building, University of Liberia
Training Lead: Dr. Joseph Akoi BORE, CRAM Guinea
Dates: 13 – 15 October 2025

The three-day intensive training on the "One Health Approach to Early Warning and Detection of Marburg Virus & Other Filoviruses in West Africa (Phase 2: Liberia Component)" was successfully held from October 13 to 15, 2025, at the UL-PIRE Office in Monrovia. The program successfully equipped seven dedicated participants with critical skills for integrated disease surveillance. Coordinated by the Liberia Marburg Study Team's Project Coordinator (PC) and Principal Investigator (PI), Dr. Stephen B. Kennedy, and led by Dr. Joseph Akoi BORE Chief executive officer of CRAM Guinea. The training event met its primary goal which is to solidify a vital south-south collaborative network for disease prevention. Logistical support, including transportation and feeding for all participants throughout the three days, was provided to ensure the focus remained entirely on the intensive practical and technical agenda. The program emphasized the critical interplay between human, animal, and environmental factors in filovirus transmission.

The training was heavily focused on the practical deployment and operation of multiple specialized devices essential for integrated surveillance. Those devices include (i) The audio moth to record bat calls, (ii) the Garmin GPS to collect geographical positions and (iii) Watches with incorporated GPS tracking system to monitor hunter patterns relative to landscape in the study zone. Dr. Bore's case study from Guinea provided the why, highlighting the need for multi-pronged data collection—including human serology, wildlife sampling, and geospatial tracking—to identify MARV hot spots. The practical sessions of the training covered the setup of smartphones/tablets for field data entry using Cobo-collect forms and details on the Standard Operating Procedures (SOPs) for consistent data acquisition.

The training centrepiece of practical skill acquisition was dedicated entirely to device operation during field deployment. Participants were able to master the complex protocols for the main surveillance tools:

• Audio Moths (AMs): Participants learned the step-by-step installation protocol, including moving the switch to the 'CUSTOM' position, activating the AM via a phone application, ensuring proper fixation at a height of approximately 2m and above, and taking a corresponding GPS point with the Garmin device. This acoustic surveillance is crucial for monitoring bat calls and activity patterns.

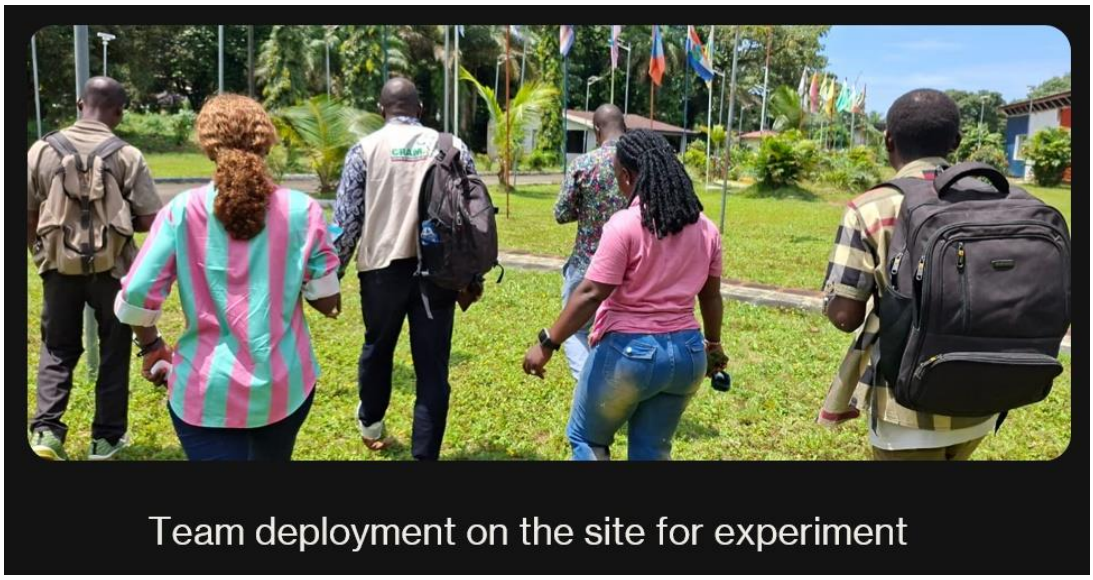
• Garmin GPSMAP 64SX: Trainees practiced the protocol for GPS Tracking with the Garmin, learning to precisely mark locations of AM deployment, bat roosts, and human/animal interaction points by using the 'MARK' function and entering specific identifiers (AM or Watch code, study number).

• GPS Tracking Watches: A key refinement of the field work was the use of GPS Tracking Watches to map human movement patterns relative to landscape. Depending on the study time frame, watches are deployed for several days and set to collect data (geographical position) every 5 minutes. Collected data are then sent to the server by synchronizing the watches using the 'ECOTOPIA' application set on smartphone.

The training ended with the successful retrieval of data and strategic project planning and effectively closing the surveillance loop. A crucial session was dedicated to Programming the AMs with a PC, where participants learned the precise settings for sample rate, gain, sleep duration, and recording duration to maximize efficiency and data quality. The most critical final step was mastering the Audio Moth Data Transfer to Storage

protocol, which emphasized secure data flow: cutting the 'WAV' documents from the memory card, pasting them onto a connected hard drive, and ensuring only the 'CONFIG.TXT' document remained on the memory card for the next deployment. The training culminated in a Roundtable Discussion and Action Planning session.

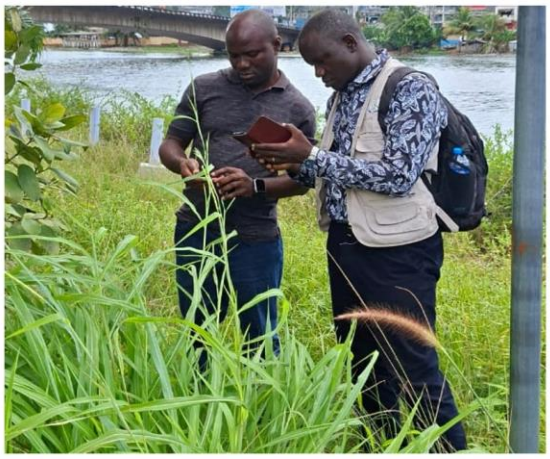
The Pacific Institute of Research and Evaluation of the University of Liberia (UL-PIRE) team is now fully prepared to deploy an integrated surveillance system designed to characterise high-risk human-animal interfaces and gather the necessary data to inform national strategies for the prevention and control of Marburg and other filoviruses in the Lofa county of the republic of Liberia.



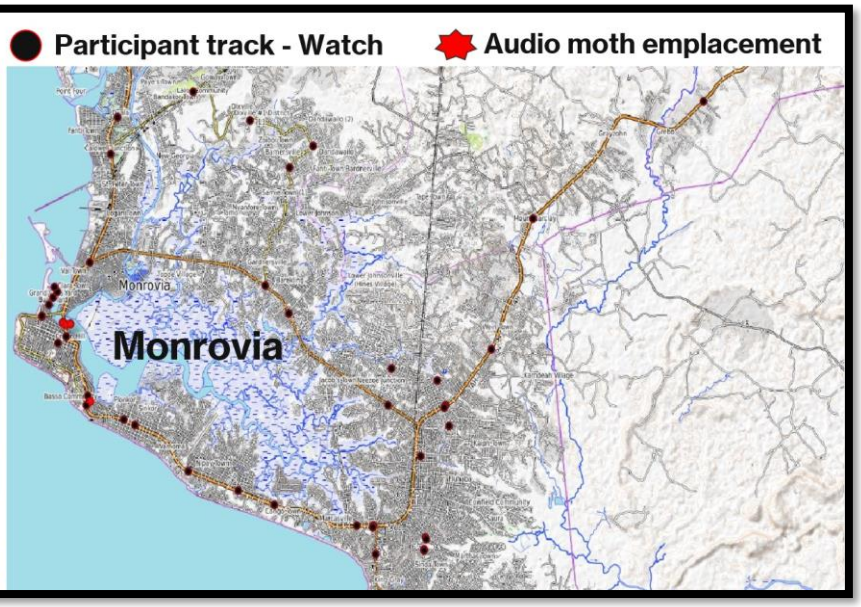
Team deployment on the site for experiment

Fixing Audio moth on the tree at >2m high

Filling the Kobo Collect survey form and tracking geospatial position with the Garmin GPS device



Collected data Analysis, mapping and Storage



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