

**REPORT OF THE BAT TRAINING WORKSHOP HELD AT OMO BIOSPHERE
RESERVE, OGUN STATE NIGERIA, AUGUST, 2019**



TRAINING ON BASIC TECHNIQUES TO BAT CAPTURE FOR STUDIES

The training took place at the Forestry Research Institute of Nigeria field office from 12-18th of August 2019 at the Omo Biosphere Reserve. the main workshop.



Summary of Bat Training Workshop at the Omo Biosphere Reserve, Southwest, Nigeria

There is need to build capacity in terms of bat research in Nigeria. This was identified as one of the major gaps to studying bat species ecology and conservation in the country. In order to overcome some of these challenges, a major focus of the objectives for this project sponsored by Rufford Small Grant is to organize a training workshop. The aim of the training workshop was to train on the basic techniques to carrying a successful bat study at least the initial outing with a focus on mist netting, harp trap set up, use of bat detectors and the success of each sampling techniques either used alone or combined; bat species identification using basic field keys and some aspects of conservation outreach.

Full Report

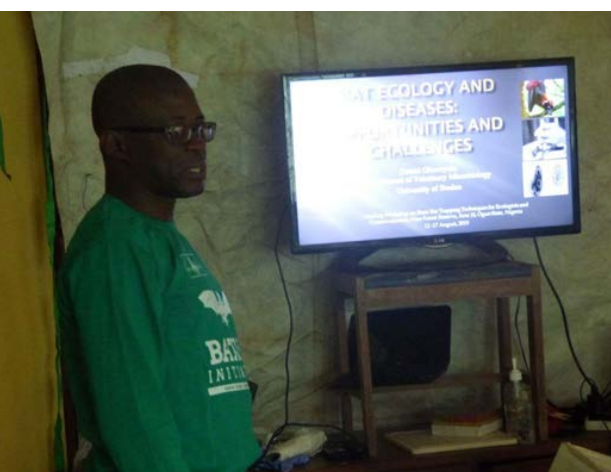
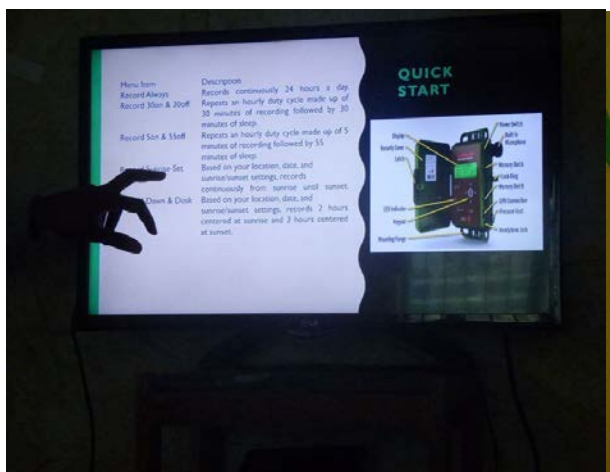
Selection of participants included post graduate students, undergraduate students whose interest are in the study of bat ecology and conservation, rangers and conservation education workers, from across some Universities in the southwest region (University of Ibadan, Federal University of Akure, Bowen University and Elizade University), researchers from Forestry Research Institute of Nigeria, J4 Plantation workers as well as rangers and conservation educators from Nigerian Conservation Foundation. Lectures were given on themes of the workshop from Bat ecology and conservation; why it is necessary to study or monitor bat populations; molecular studies to understanding the evolution and divergence is the phylogeny of bat species;

introduction to GIS as an important tool to understand land use changes and creation of map that represents data been collected as well as disease associated to bats and what to be done to address emerging and remerging zoonotic diseases. The focus of training was to train participants on the basic techniques to bat capturing with highlights on mist netting, harp trap set up, introduction to the use of bat detector, introduction to GIS and its application, genetic studies on bats as well as study in relation to bat and diseases. Field trainings were a focus to the training. Out of the six days of the training workshop, four days were dedicated to trainings on mist net, harp trap set up, bat detector set and recording of calls and how to build a call library and keys to bat identification especially the very difficult insectivorous bats. Participants were taught on how to handle and identify bat species using the palatal ridges (for fruit bats) and the different nose leaf structure for the Hipposideridae and Rhinolophus species. It was also explained that the shape of the connecting process can be used to identify members Rhinolophidae. The aging of bat species was demonstrated using the ossification of the elbow joints by flashing a source of light through the reverse side of the arm of the bat.

During the training, it was emphasized that community participation is essential in any successful bat conservation and ecology research. We took out time to address issues that affect the conservation of bat species and possible ways at solving or overcoming some of these issues; solution such as awareness, participatory approach; involving the key stakeholders in the planning of conservation intervention so as to address the specific needs of the communities involved. It was stressed that Omo Biosphere Reserve is a special case in term of getting results from the efforts of conservation. This is so because many of the agricultural communities and logging activities found within the Omo Biosphere Reserve are illegal camps. Many of the settlers have claimed that the State Government are been paid some stipulated amount of money to lease out plots of land to carry out agricultural activities and logging activities. The challenge right now is that these communities are expanding and engaging in other illegal activities such as complete clearing of buffer areas, logging of well matured indigenous tree species for timber; with many times the felling affecting many other surrounding tree species due to felling impacts. We then try to see a possible way forward, since the reserve is biosphere reserve, there has to be a balance in meeting both the needs of the key stakeholders (the biodiversity and man). Possible studies were suggested ranging from ecological to socioeconomic/livelihood options to land use impacts, utilization for medicinal purposes and all in an effort to solve the issue of biodiversity loss within the reserve.



Left: Dr Crosby giving an opening speech for the purpose of the training workshop and expectations at the end of the training. Right: Dr Taiye Adeyanju giving lecture on the basic use of the bat detector using the SM4FS bat.



Left: Dr Taiye Adeyanju giving lecture on the basic use of the bat detector using the SM4FS bat. Right: Professor Oluwayelu giving an overview on bat ecology and diseases: opportunities and challenges.



Mist Net Set Up

Quality time was given to training on mist net setups, as participants were divided into three groups. Each team was given three sets of mist nets and then allowed to set up mist nets after the initial demonstration by the team facilitators. Separated at a distance of about 150m, each team was assigned mist nest and poles to set up mist nets for each night during which checking was taught as well as extraction from the net/handling. It was ensured that all participants handled bat as well as extract from the nets. Points were changed each night to maximize efforts and well as perfect set up skills. Each team observed their nets at fifteen minutes interval from 7pm till 10pm. There were three groups and each group was taught how to extract bats from nets with an initial identification to family level. It was emphasized that for clarity in habitat utilization, it is important to note what pocket of the net the bat was trapped. As this can sometimes tell the feeding guild the individual might belong. Four nights was dedicated to mist nets out of the five nights of trapping.

Demonstrating Mist net setup demonstration with Dr Taiye Adeyanju, Dr Crossby Omotoriogun, Temidayo Adeyanju and the participants.





On field site set of mist nets demonstration of ground and mid canopy levels using 3.m poles with Dr Taiye Adeyanju the participants; Setting the mist nets on three 3.5m poles stalk together to get be able to get to mid canopy level.



Team going for net checks and (Team 1 and 3) waiting for net checks.



Observing the big hole chewed up by an insectivorous bat species. An indication for high insectivorous activities.



Left: One of the participants extracting the Franquet Epaulet fruit bat *Epomops franquetii* from the mist. Right: Team two waiting for net checks and getting more information from Adeyanju Temidayo (PI).



Bat trapped in the fourth pocket (Long-tongued Fruit bat *Megaloglossus woermanni*)
 Setting two 18m mist nets to achieve canopy netting with Dr Crosby Omotoriogun.



Demonstrating the extracting a bat from the net to participants.



Setting out to demonstrate how to pull down and pack up the mist nets.





Showing the first step of cleaning up or dressing up the mist net to remove debris, insects and birds that could have been trapped.



The next step is to close the net, tie the strings together and the fold up into the cotton bags.





Harp Trap set up.

On the day three of the training, participants were shown how to set up harp trap. This was demonstrated using harp trap fabricated from the region following standard measurement for a three compartment harp trap. The participants though expressed concern on the flexibility of the harp trap set up and it was clarify that it usually used to compliment for efforts using mist nets and most times effective for cave bats as well as species that are commuting along streams and small rivers. After the set-up demonstration, the participants were allowed to set it up and then we placed the trap close to an identified roost of an insectivorous bat.



Left: Harp trap set up after training in the assembling and ready for trapping.



Happy faces of participants after the rigorous training and tasks to set up the harp trap.



Attaching the collecting bag to the harp.



Demonstration on fixing the bag



Demonstration on stringing when challenges arise with cut strings on the field



Left: Stringing exercises of the harp trap. Right: Demonstration on how to string the harp using fish line.





Participants assembling the harp trap.







Training in the use of Bat detector

There was a presentation by Dr Taiye Adeyanju on the need and use of a bat detector. An overview of the different bat detectors was given with emphasis on the importance as a complementary survey method alongside mist nets. It was explained that the bat detector can be used to determine insectivorous bat activities within different land use areas and used to build a call library for subsequent studies without having to trap bats. The limitations of the detector were explained with a major limitation being purchasing the software for analysis and having the right expertise. It was explained that the use of

bat detector to monitor bat activities is relatively a new area of specialization in Nigeria even for West Africa and this will be good challenge to take up I subsequent studies. After the presentation, participants were shown how to set up a typical bat detector using the SM4 FS Bat Detector donated to project by Ideawild. The general settings on the detector were shown to the participants, the different mode settings and how to set it up in proximity to the mist net points. We could not demonstrate the analysis as the software for analysis was not available, but we showed how to use to build a call library.



Participants been taught how to use the SM4FS Bat Detector on a sampling night during the training workshop.



Left: Placing the bat detector on a tree about 1.3 m from the ground close. Right: Participants been allowed to handle the bat detector in turns during the night sampling

Monitoring of Bat Roosts

The training also involved a detailed session where the participants were trained on how to monitor an identified bat roost especially for bat species using abandoned buildings, tree and other man-made structures. The presentation in this session was

focused on Bat Ecology and Roost Monitoring. Some major highlights were the basic things to do during monitoring which are,

1. Identify the roost,
2. Mark the GPS coordinates
3. Identify the tree species occupied by the colony.
4. Note the number of branches used by individuals
5. How many clusters on the branch segmenting it into Big, medium and small.

A practical monitoring was done at the sawmill of the reserve that is managed by the Ogun State Forestry commission; the mill is not functioning, so the female population of the Hammer head Fruit bat have been roosting using the structures available for many years. We assume that possibly the tree species that were available for roosting was replaced by the building so the bats decide to switch roost structure to the best available and suitable





Photo showing the roost of the female Hammer head Fruit bat *Hypnognathus monsterus*.



Participants been taught on how to monitor and count a bat roost using an abandoned building.



Inspecting the fecal dropping from the Hammer head fruit bat for possible signs of seeds with suggestion on studies involving zoonotic diseases/pathogens.

GIS Training Session: Introduction to GIS Application

To have effective bat study especially in line with monitoring, movement ecology, feeding ecology, roost fidelity etc., it is important to have a good knowledge of GIS so as to be able to effectively mark points and follow movements patterns. During the training, we took out time to train participants on the rudiments of GIS application. It was recognized before the training that this aspect of ecology is lacking in many of the students and even field rangers as well as those working with government organizations involved with biodiversity conservation. Ukeme Yellow, Dr. Taiye Adeyanju, Dr. Crosby Omotoriogun all took out time to take all the participants through the use of the GPS from marking of points, naming the points, taking coordinates and other importance features on the GPS application. There was a through exposure to making of maps. All participants were asked to come with laptops, this was used to train on how to import information from the GPS to the laptop. QGIS was used to train participants on how to make maps. It was emphasized that it is important to note landscape feature during bat surveys as this will assist with major landmarks

during surveys. It was a participatory session as everyone was wide awake even till late in the night through to early hours of the morning. We were able to cover the main aim for the GIS session tacked GIS 101: Introduction to GIS Application and we hope for a follow subsequently. Participants were able to use the GPS to take points where after was transferred to the laptop to practice with the QGIS

The GIS training Class



Left: Ukeme Yellow, a team member of the project and Batlife Initiative took out time to train all participants on the components of GIS. Right: Participants listen with keen interest.



Learning the function on the GIS coordinated by UKeme Yellow (GIS expert on the team).



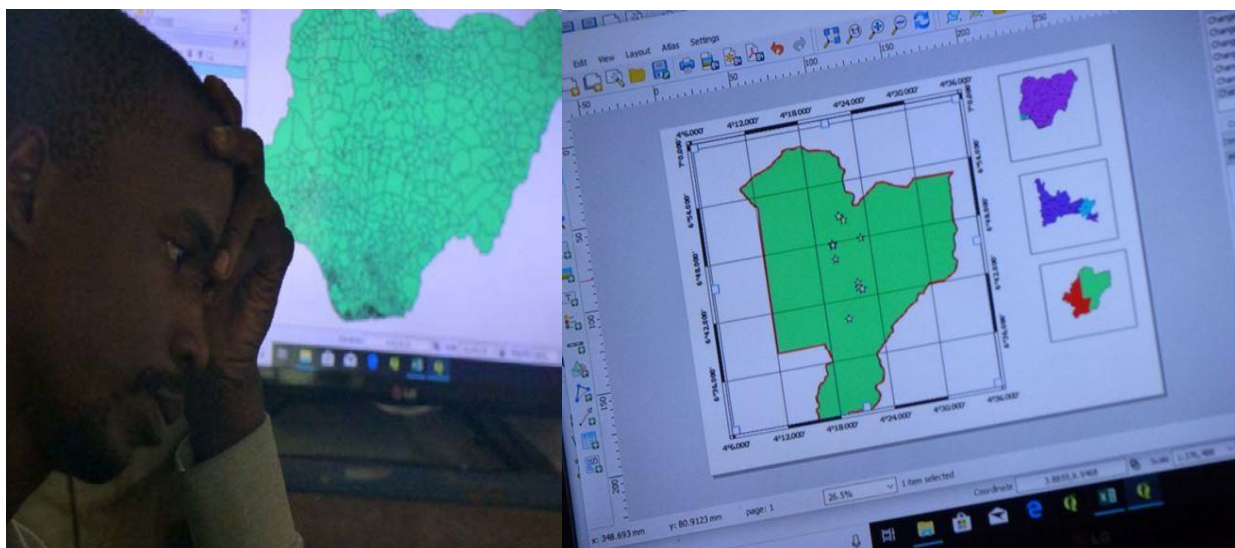
More explanation about the use of the GIS.

Practical Session on the use of GPS in marking points



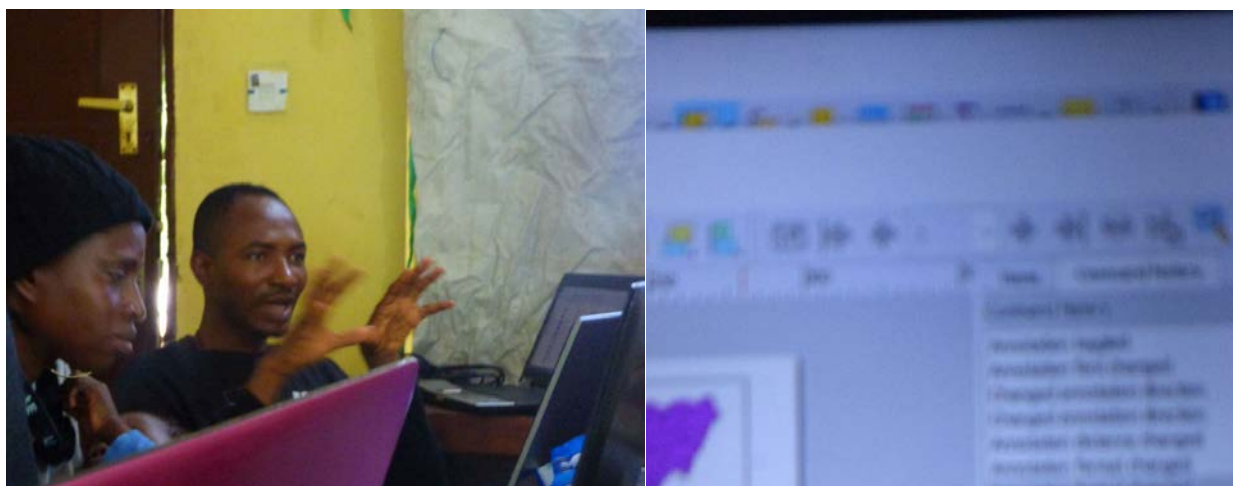


Importing the points into the laptops, practical session for map production; everyone engrossed in the task.





Working through the night on GIS during the workshop.



Meeting with the Project Manager, Ogun State Forestry Commission/ Omo Biosphere Reserve

It was a privilege for the participants and Batlife team to meet with the Project manager from the Ogun State Forestry commission in the person of Mr. Adebosin is a core forest manger and expert who has been working in Omo Biosphere Reserve for more than thirty years. He described the communal life and the harmony that exited with the resources and people within the reserve until recently when there is a crave for more land space to carry out agricultural practices, demand and illegal felling of indigenous trees due to high pricing as well as illegal hunting activities within the reserve areas of the reserve. He explained that the activities within the reserve in recent past have impacted the resources in negative way. Mr. Adebosin was very delighted to know of the activities of Batlife Initiative and the efforts to documents the bat species within the reserve and also to educate the residents about the importance of the forest to their livelihood. He stressed the gap that he observe in the knowledge and perception of bat species especially within the southwest region. He commended the initial efforts of the Batlife team and encouraged that the efforts be intensified as this will speak volume not

only for the bats but also for other members of the forest ecosystem. He promised continual support for the Batlife team and subsequent research that will still be carried after this phase of the project. He also pledges support to plantation areas where our activity in future might stretch. He showed concern for the attitudes that many locals show towards the conservation of natural resources and encouraged we continue to advocate for friendly activities with nature. He was glad that schools are and will be visited where he mentioned that those are the real target groups as attitudes can be easily changed in the children as compared to adults.

He emphasized that many of the agricultural settlements are illegal except for three (Gerald, Etemi and Isokun) who have legal permit for settlement, but others are illegal but have claimed that the State government collect certain incentives or money as rents to allow for their agricultural communities. With the expanding and encroaching of these communities, they are now been forced to make a decision with the government to evict many of these communities though this is quite challenging. The reason for this is because many of the cocoa plantations are jointly owned by policy makers and legislative members hence making enforcement some sorts of a challenge. He encourages that researchers should endeavor to send their finding to the government as many of them have no clue what many if these activities are resulting into.

He emphasizes the forest business in term of timber sales but stressed that the area J4 and some parts of J3 are planted with Gmelina, Teak, and Pine for the purpose of pulp wood. The buffer (Elephant Camp) as well as the Strict Nature Reserve are meant to be protected and conserved with collaborations from Nigerian Conservation Foundation and Forestry Research Institute of Nigeria; and collaborations from independent researchers. He encouraged a research station of the Batlife within the reserve and it was promised that this will be considered. With many mentions of importance of bats in his talks he concluded that bats must not go into extinction

Some Photos from the Visit





Chats with the Project Manager of the Omo Biosphere Reserve /J4 area under the State Forestry Commission, Ogun State.



Batlife walk by participants within the Omo Biosphere Reserve

The workshop training ended with a mini dinner and presentation of certificate of participation to all the participants. A vote of thanks was given by one of the participants on behalf of the other. They all appreciated the Rufford Small Grants for giving the opportunity to attend the training workshop. The participants also mentioned efforts towards bat conservation by applying for grants and carrying out a collaborative research with Batlife Initiative.





The male participants with facilitators and female participants with Adeyanju Temidayo (Temi), principal investigator

Facilitators: Dr Adeyanju Taiye (Ornithology and Wildlife Conservation Unit, Department of Wildlife and Ecotourism Management, University of Ibadan; Professor Oluwayelu (Veterinary Microbiology, University of Ibadan); Adeyanju Temidayo (Principal investigator); Dr. Omotoriogun Crosby (Department of Biotechnology, Elizade University, Ilara Mokin, Ondo State) with the future ecologists and conservationists (Jewel and Sapphire)



Participants relaxing and preparing for goodbyes till another training workshop hopefully supported by Rufford Grants.