



**African Bird Club**

Working for birds and conservation in Africa

Planet  
Birdsong



**African Bird Club Conservation Award 2024\_CA14**  
**Planet Birdsong Foundation Bird Sound Recording in Rwanda Using**  
**Citizen Science Methods - Final Report.**



1. A student uses a phone and a Parachirp parabolic reflector microphone to collect audio data. Photo: Roger Irakoze.
2. The phone screen interface shows a clear audio waveform.

## Takeaway Points

1. The project sought to demonstrate that citizen science in Rwanda works as an effective tool for avian audio data collection. It has worked and can produce a volume of data and metadata from multiple areas, providing good quality audio recording for use in conservation science and monitoring.
2. For success as a sustainable method, it requires good proactive management and encouragement. International initiation and donations can play a part, but for a sustainable and productive system, local proactive management is necessary.
3. Resources for management, training, equipment and fieldwork are essential, whether at an academic scientist level or at a deeper citizen science level, to engage with non-scientific citizens from rural communities, through schools, colleges and clubs.

4. The “Western” citizen science model of enthusiastic volunteers giving of their time and money is not realistic.
5. The conservation benefits likely to accrue depend on strong National governance, good National environmental policies and a system that motivates participation and delivery of acquired skills into many economic sectors. This circular benefit is found in Rwanda, but may only be found to a greater or lesser extent in other countries. If less available at government level, strong and inclusive academic and NGO structures, backed up by international support, can promote in-country activity and policy shifts.

## Abstract

### 1.Data Collection Results

1.1 The African Bird Club Conservation Award Project Year 2024 - 2025 collected 808 audio samples, compared with 234 in 2023 and 284 in 2024 from Planet Birdsong recordists prior to the start of the project. Included are calls, sub-songs, duets and juveniles as well as the recognised male songs. 808 samples represents 88% of all samples uploaded to eBird from Rwanda during the project period (1/09/24 to 31/08/25). This includes 27 Albertine Rift Endemic and near endemic samples from 11 species. Ebird Resources for Rwanda show that the total audio samples collected in all years from all sources is 2032 (Up to October 2025).

1.2 The samples collected by Planet Bird song-trained recordists include multiple common birds and a notable number of scarcer species such as:

Albertine Rift Endemics: Black-faced Apalis (*Apalis personata*), Rwenzori Apalis (*Oreolais ruwenzorii*), Kungwe Apalis (*Apalis argentea*), Blue-headed Sunbird (*Cyornitra verticalis*), Stulmann’s Sunbird (*Cinnyris stuhlmanni*), Regal Sunbird (*Cinnyris regia*), Dusky Crimsonwing (*Cryptospiza jacksoni*), Archer’s Robin Chat (*Dessonoris archeri*), Red-collared (mountain) Babbler (*Kupeornis rufocinctus*), Grauer’s Swamp warbler (*Bradypterus graueri*), Rwenzori Turaco (*Gallirex johnstoni*).

1.3 Scarce in Rwanda or localised species such as: Verraux’s Eagle Owl (*Bubo lacteus*), Great Blue Turaco (*Corythaeola cristata*), Rufous-throated Wryneck (*Jynx ruficollis*), Red-throated (Peter’s) Twinspot (*Hypargos niveoguttatus*), Red-tufted (malachite) Sunbird (*Nectarinia johnstoni dartmouthi*), Rwenzori Hill Babbler (*Sylvia atriceps*), Yellow-bellied Wattleeye (*Platysteira concreta graueri*), Papyrus Gonolek (*Laniarius mufumbiri*), Trilling Cisticola (*Cisticola woosnami*).

1.4 All are very under audio-recorded species in international audio data sets.

## 2. Conservation Impacts

### 2.1 The data collected

2.1.1 The data collected adds audio evidence to scientists working in biodiversity conservation across Rwanda and East Africa. The skills have been applied in direct surveying work and in encouraging scientists, who have primarily relied on visual observations, to explore the scope of audio research and is contributing to training AI systems that may then be used in remote monitoring, currently in its infancy in Rwanda. The project has highlighted locations with a relative abundance and a good range of birds, bringing these to the attention of professional ecologists in Rwanda.

2.1.2 The remnant lowland forests recovery programme is an example, with contributions at Busaga Forest, recently designated as an Important Birding Area and Pharmakina Forest in the South West, Rusizi District, brought to the attention of the management of the Western Province Remnant Forests Recovery Project, being led by the Rwandan Government. On-going audio work at Rugezi Marshes, a RAMSAR site, have greatly assisted in establishing the presence of scarce bird species. The data contributes to evidence in support of International grant applications.

## **2.2 Bioacoustic audio skills**

The skills learned contribute to the capabilities of the recordists as bird tour guides. In a country which depends heavily on tourism as a source of foreign exchange, excellent guiding skills add to the reputation and earning capacity of this sector. In turn revenue is available to fund an active conservation programme by Government and NGOs. In the wider economy, more citizens skilled and impassioned by nature and the environment are entering economic sectors such as agriculture, forestry, urban planning, flood control, community administration and education, all with benefits for a strong and widely held attitude towards environment, habitats and biodiversity conservation.

## **3. Citizen Science Impacts**

### **3.1 Data collection skills**

3.1.1 The project teaches rigorous methods to mainly non-scientists. It contributes all data to global commons data sets, the Macaulay Library at Cornell University and the Rwanda Biodiversity Information System, managed by CoEB, with data from a wide range of protected and unprotected areas. The Planet Birdsong methodology is a citizen science entry-level system but the interest, awareness and especially the confidence generated is leading to bioacoustic activity at a more advanced level. It is an objective of the project to be part of a continuing programme to grow data, capacity and local competencies.

3.1.2 The results show a clear increase in the number of records achieved during the project year. The examples show a good data and audio quality, based on good and persistent training, mentoring and resourcing. This has been recognised by Cornell Lab. of Ornithology.

### **3.2 Citizen science skills**

3.2.1 A citizen science approach attracts young people and offers a method for bringing into their daily activities an interest in wildlife conservation. It is novel in Africa, but the project seeks to demonstrate that the citizen science methodology works well as a data collection tool and for the participating recordists and other interested people. It is also leading to a much wider interest in birdwatching by beginners, with attendant benefits for conservation.

3.2.2 It draws on the National cultural inclination towards self-help and mutual training, through supported fieldwork and repeated training and motivation sessions at a series of nodes around Rwanda, particularly in schools and colleges. The recordists are based in-country and have embedded skills and a passion such that they are well placed to pursue future data collection in harder to reach areas and adjacent countries such as the Democratic Republic of Congo, as security returns. The project is a key step in finding a way to sustain citizen science activity in the long term.

## **4. System Weaknesses, Learning Points and Recommendations from the Citizen Science Model**

4.1 Methodological and operational limitations have been exposed but new collaborations such as Cornell Lab of Ornithology have benefitted from the learning points, extending an opportunity to address the problems and further develop the strengths and benefits of mass data collection in Africa.

4.2 Incentivising time spent on data collection was found to be essential. Not because of a lack of interest, but because of the imperative of recordists to spend most time on daily work, or studying or family matters. The luxury of surplus time spent in recreational birding and citizen science, per the Western model, is not available to most.

4.3 The funding model concentrated on a small number of competent recordists, to maximize the returns of quality data for the budget available. The costs, whilst small for individual stipends and trip expenses, proved high per data record collected. Management, mentoring and administration of even a small group was labour intensive. In-country management is desirable but perceived cultural and social status barriers towards taking the initiative continue to impede the development of citizen science. Leadership from recognised and active local individuals and organisations is essential.

4.4 Supported recordists continued throughout the year, but with decreasing productivity as distractions increased. The fall out rate amongst the unfunded recordists was considerable, but many stayed in anticipation of gaining support and career benefits. Continued motivation and encouragement is needed. Mutual support and training was and continues to be a very positive feature, but continuous effort to build the skills of newcomers is essential.

4.5 Equipment supply, delivery and replacement of failed equipment remains a challenge. Equipment requires to be robust and accessible to ensure participation. To maximize the quality of results, the design of audio equipment to suit the conditions is essential and training must include practices to make the best use of what is available. Resourcing of citizen science needs to include the funding of good equipment for those showing commitment and productivity.

## **Contents of Main Report**

### **1. Introduction**

### **2. The Rwandan Context**

### **3. The Aims of the Project and questions posed by the African Bird Club**

#### 3.1 Objectives

#### 3.2 Key Tests

#### 3.3 How the Project will benefit the Species or Area in which it is Found

#### 3.4 Training, Skills Transfer and Education

### **4. Expenditure Summary**

### **5. Methodology**

#### 5.1 Key Elements

#### 5.2 Citizen Science Data Collection

#### 5.3 Citizen Science Personnel Organisation

#### 5.4 Data Collection Activity

#### 5.5 Data Collection Areas Visited

#### 5.6 Participant Training and Training Recipients

#### 5.7 Training Format

#### 5.8 Training Locations

### **6. African Bird Club Project Results**

#### 6.1 Data Collection Results

#### 6.2 Data and Audio Quality

#### 6.3 Some Audio Data Examples

#### 6.4 Rare Bird Search “In Pursuit of Shelley’s Crimsonwing”

### **7. African Bird Club Project Impacts**

#### 7.1 Conservation Impacts

#### 7.2 Citizen Science Impacts

#### 7.3 Impacts on Individual Citizen Scientists: Some Examples

#### 7.4 International

### **8. System Weaknesses, Learning Points and Recommendations from the Citizen Science Model**

## **9. Conclusions**

## **10. Sources and References**

## **11. Appendices**

# **Main Report**

## **1. Introduction**

1.1 Planet Birdsong Foundation's mission is to open ears to the natural sounds around, for the benefit of people and the benefit of nature. Biodiversity conservation depends on, amongst other things, the commitment and contribution of ordinary people, especially in local communities. Bird song and sound recording is a vector by which such connections can be made. Gazing with the eyes is an insight but, "staring with our ears" (Simon Barnes) opens up so much more.

1.2 Planet Birdsong started to work in Rwanda in 2018 in a collaboration with the Rwandan Centre of Excellence in Biodiversity and Natural Resource Management (CoEB), a Category 2 UNESCO Centre, hosted by University of Rwanda. We have an MOU which governs Planet Birdsong Foundation activity in Rwanda but PBF is independently funded.

## **2. Rwandan Context**

2.1 Rwanda is a land-locked country of 26,338 sq kms (10169 sq miles) set on the central African plateau, lying between around 800mmasl and 4507mmasl (the top of the highest volcano, Karisimbi). Most people live at elevations below around 2200m. It is a mountainous country interspersed with valleys, swamps and an extensive river system. It is located in the Great Lakes Region to the west side of East Africa, bounded by the Albertine Rift Valley to the West and parts of the Lake Victoria savannahs to the East. Surrounding countries are Uganda, Tanzania, Burundi and the Democratic Republic of Congo. The population is around 14 million and growing, with a median age of around 20 years. This compares with a population of around 6 million after the Genocide against the Tutsi and war of 32 years ago. There is a growing urban population, but most people are traditional small farmers, spread throughout the country.

2.2 There are moves towards modern agricultural methods and more sustainable approaches to traditional agriculture. The original forest vegetation from lowland savannah bush to high Afro-montane forest has, historically, been cleared for grazing or highly modified, apart from some important protected forests and bush, now designated as National Parks. Some small, largely intact forest remnants remain in the lower elevations. Many are modified and have deteriorated over time, but are now receiving

conservation management. Wetlands are widely cultivated and altered by human activity, but the most intact and some urban wetlands are now being restored, as their flood potential, water quality and biodiversity are being recognised. Some are being designated for intensive modern agriculture.

2.3 There are four designated National Parks, including Nyungwe Forest Park, a UNESCO World Heritage site and Volcanoes National Park, designated as a Biosphere Reserve. Others are Volcanoes National Park, mountainous forest famed for the Mountain Gorillas, Akagera National Park (savannah) and Gishwati Mkura National Park (remnant lower level forest). Rugezi swamp and the Burera Ruhondo Lakes system is the only designated Ramsar site. There are eight Important Bird Areas as designated by Birdlife International. These cover all four National Parks, the newly designated Busaga Forest (a remnant forest in northern central Rwanda), Rugezi swamp and a series of wetlands along the Nyaborongo/Akanyaru rivers. The total area of protected land is 2360 sq kms (about 9% of the total). The Rwandan Government Master Plan to 2050 aims to increase the allocation for conservation purposes to up to 37.7%, mainly through forestry replanting, restoration and wetland restoration. Human pressure on eco-systems occurs throughout the country.

### **3. The Aims of the and questions posed by The African Bird Club**

3.1 Planet Birdsong connects people with nature through bird sound listening, recording and identification. The learning continues through audio-processing, verification and submission of data and habitat metadata to open-source scientific data sets. The objectives of the project is to:

- Document under-recorded bird sounds in Rwanda,
- Embed audio recording skills locally,
- Engage people with birds and nature, to be able to record and identify bird sounds and raise interest and concern for nature amongst local rural communities conducting their daily activities.
- Make these data accessible in the user-friendly Rwanda Biodiversity Information System and to eBird at Cornell Macaulay Library and eBird for use in world bio-science and conservation.

Citizen science is at the heart of the project and youth from rural communities have already emerged as the primary participants. The project supports youth knowledge, skills development and data collection by both non-scientists and scientists.

3.2 The following pillars are key tests of the success of the project:

- Mass collection of quality acoustic data,
- Demonstrating the effectiveness of citizen science for credible data collection,
- The long term sustainability of the method through the development of skilled and impassioned locally-based individuals.

### **3.3 ABC Question: How will the proposed project benefit the species, or the area in which it is found?**

3.3.1 Birds are important indicators for ecosystem health. They are often visible but more widely audible, so audio recognition skills are vital for effective monitoring and guiding. Audio skills are neglected in favour of visuals, so the project introduces skills to academics and ordinary citizens. It brings a new and exciting dimension. It encourages visits to protected and bird rich areas, agricultural and urban areas. An examination of Xeno Canto recordings in 2014 revealed only 120 audio recordings in Rwanda and a limited number in neighbouring countries. The current Xeno Canto figure for approximately the same area is 1700 recordings of 307 relatively common species, with 63% from South West Uganda. 582 are from Rwanda, largely supplied by a small and prolific group of expats.

3.3.2 The Project thesis is that many of the published species recordings are from distant parts of species ranges, especially Kenya and Northern Tanzania. Local knowledge revealed that the clinal changes in sounds over their ranges were notable and very under-recorded. Some species are barely recorded at all.

3.3.3 Recordings in a variety of birding apps have increased since; eBird now has a Rwanda "Region". The project seeks to address local sound recording data shortages and to build local capacity, skills and knowledge of bird sounds. The project aims to significantly contribute to a wider eco-system of activity in birding, sharing of information and a contribution to monitoring and habitat conservation across Rwanda. The Plant Birdsong programme is part of a broader strategy by CoEB to generate good Rwandan ornithology, engage communities and improve the data collection rate. Increasing the ability to identify and monitor birds across the country, dove-tailed with penetration into communities through citizen science, are critical for effective bird conservation and monitoring. The ABC project aims to enable and enhance these benefits and the broad capacity for biodiversity conservation actions amongst more locally based Africans, and across a range of career paths.

### **3.4 ABC Question: How will the proposed project contribute to training, skills transfer and education?**

3.4.1 Training and skills transfer with on-going support are at the core of the project. At any one time around 20 individuals are active but many more have been trained. Time and resources amongst the participants and limited face-to-face support are challenges. The Project seeks to embed skills and reinforce on-going local activity.

3.4.2 The project includes a strong educational element: participants are learning how to identify birds, how to use low-tech recording devices, prepare audio files and rigorously label them with metadata. These skills importantly lead to a cohort of birders who are working to accurately document birds and bird sounds, effectively contributing to monitoring and conservation efforts, and preparing them for an active role.

## 4. Expenditure Summary

4.1 The inputs, expenditure and outputs are detailed in **Appendix 1: African Bird Club Planet Birdsong Rwanda Accounts and Performance Metrics Project Period 2024 - 2025**.

4.2 Expenditure was 5938.00 GBP in total. In summary, the project was funded by 3000GBP African Bird Club Conservation Grant, topped up with 2938GBP in donations to Planet Birdsong Foundation. The Budget was set at 6000 GBP in total. Expenditure was entirely in Rwanda, but disbursed from the UK. It covered the costs of five Key Recordists and a range of additional costs such as the additional Nyungwe Forest Expedition “ In Pursuit of Shelley’s Crimsonwing”, ad hoc group and collaboration meetings, club training, equipment, filmmaking costs and ad hoc non-funded recordists.

4.3 The total direct in-country costs of data collection amounted to £5250, producing an average of £6.50 per record uploaded to eBird.

4.4 The totals did not cover the travel costs to Rwanda or personal expenses of the UK Project Manager or management costs in the UK. These were external to the Project budget.

## 5. Methodology

5.1 Citizen science that is useful to the scientific community requires two key elements:

1. A system of accurate data collection, processing and submission to competent and recognised data sets, such that there is user confidence in the methodology and participants,
2. A system to build and maintain the capabilities of the personnel involved, backed by good, consistent organisation, training and resources sufficient to encourage regular and committed participation.

A key objective of the ABC PBS Project is to demonstrate that both elements can be trained for, met, maintained and delivered over time in an African setting. The project identifies both successes and shortcomings.

### 5.2 Citizen science data collection

5.2.1 The system should be straightforward, standardised and consistent, so that ordinary non-scientists can readily be trained.

5.2.2 In 2021 Planet Birdsong adopted the Cornell eBird system for citizen scientist bird sound recording using a phone. To the phone was added an inexpensive but accurate parabolic reflector “Parachirp”, designed and supplied by Time and Space Learning, in the UK. Equipment needs to be readily available and shared.

Around 20 Parachirps are currently in use in Rwanda. During the project, existing equipment was supplemented and replaced as necessary using ABC Grant funds. The Key Recordists were all issued with a Parachirp, plus replacement and improved microphones as necessary, fieldguides and other ancillaries.

5.2.3 Accurate bird sound identification is essential. Participants build a good knowledge of visual and audio bird identification over time. The supported Key Recordists already had good identification skills and the motivation to teach others. Mutual learning is essential, but the project also includes three expert Rwandan birders to act as verifiers. These are Gael Van de Weghe, writer, photographer and naturalist, Claver Ntoyinkima, Head Guide African Parks at Nyungwe Forest NP and Claudien Nsabagasani, Birding Tour Operator. The former eBird Reviewer for the Region, James Hogg, continues to assist with identification queries.

5.2.4 All data is uploaded to eBird lists or spontaneous single species lists, as appropriate. Data is also sent to the Rwanda Biodiversity Information System, a repository for all Rwandan native taxa at CoEB, in accordance with our MOU agreement and meeting Rwandan sustainable development objectives. Planet Birdsong is independent and not contracted to any data organisation, so arrangements with other data bodies are possible.

### **5.3 Citizen science personnel organisation**

5.3.1 The funded participants were five competent and active recordists based in Musanze in the North, Lake Kivu in the west and at the Integrated Polytechnic Regional College (IPRC) Kitabi at Rusizi in the South West. The College offers an active and established Bird Club. They had all received a Planet Birdsong CoEB Certificate of Completion of the Training, issued on judging competences, activity and willingness to train others. The number of supported Key Recordists was defined by the resources available and a realistic budget.

5.3.2 The method was chosen as the most effective way of achieving a significant number of accurate data returns in a manageable way. Others were encouraged and motivated by this supported approach and actively recorded sounds and carried out mutual training. They were led by a designated Lead Recordist responsible for providing local support, encouraging training and representing PBS at local meetings aimed at promoting the project.

5.3.3 The five supported Key Recordists received a small monthly stipend and data money to encourage regular participation. They could also apply for expenses for travel,

sustenance and accommodation (all at a low cost level - bike motos, buses, camping and low cost accommodation), to travel to either designated sites, other good birding areas or to explore under-birded areas. Costed proposals were submitted just in advance of a trip and payments were approved, disbursed and accounted for by the Project Manager, from the UK.

5.3.4 The results from these arrangements are documented in the attached **Account of Planet Birdsong Rwanda Performance Metrics 2024 - 2025** (Appendix 1). The methodology was successful, but had limitations, which should be addressed in future citizen science programmes (See Recommendations and Conclusions).

## **5.4 Data Collection Activity**

5.4.1 Day visits and two and three day visits allowed access to Protected and Designated areas such as NP, IBAs, Reserves and unprotected areas with good habitat worth exploring e.g. remnant forest and maturing plantation forest, swamp areas known to be degraded by human activity but recognised as having recovery potential through management and ordinary farm areas, rarely birded. The spread across Rwanda was imbalanced due to the home bases of Recordists and locations of the nodes, but both protected and unprotected areas were covered. Some more distant expeditions were included. The locations for data collection were determined by the Recordists themselves, in line with typical citizen science methods.

## **5.5 Data collection areas visited multiple times**

1. Protected Areas such 3 of the 4 National Parks ( Nyungwe Forest, Volcanoes, Gishwati-Mukura) and their fringes.
2. Buhanga Ecopark, near Musanze and its fringes. Various parts of the Nyungwe National Park Buffer Zone, largely eucalyptus and conifer plantation with more mixed valley bottoms, and the adjacent NP fringes were often visited due to their proximity to the IPRC Kitabi Bird Club at Rusizi.
3. Akagera National Park was less visited for logistical reasons, but its fringe areas of dry traditional farm land and scrub were productive.
4. Ramsar Sites: Lakes Ruhondo and Burera, Rugezi Marsh.
5. Important Birding Areas such as the above mentioned National Parks, Rugezi Marsh and the Akanyaru and Nyabarongo Wetlands.
6. A wide range of disturbed and less disturbed habitats, both within a day of Recordists homes and on short expeditions.

7. Remnant lowland forests such as Pharmakina along Lake Kivu, Busaga Forest near Muhanga and ISAR (Institute of Agricultural Research) Bamboo Forest in central Rwanda.
8. Wetlands around Kigali such as Umusambi Village, Nyandungu Ecopark, Masaka wetlands and Nyarutarama Lake have received good coverage and a growing bird abundance has been noted, including by project Recordists.
9. Some of the wetlands around the country that are already receiving conservation efforts towards restoration, particularly in Kigali, Rugezi swamp and Lake Ruhondo.
10. Undesignated areas such as Lakes Karago and Bihinga (collectively known as the Northern Lakes) and some of the less known wetlands around the country, such as Kiguhu swamp outside Musanze were visited several times in different seasons. They were productive and have prompted a closer interest in their future restoration.
11. Extensive searches along the scrubby shore line of parts of Lake Kivu and down the Rusizi River adjacent to Burundi and DRC have produced good results from little birded areas, extending knowledge of patches of good bird habitat amongst a highly altered traditional farming landscape.
12. Some patches of riverine wetland along the main Nyaborongo river were checked, but the river is highly disturbed and polluted in places and were less productive than predicted. The larger wetlands along the Nyaborongo river further South were visited as part of a research project, by invitation to the PBS Lead Recordist.
13. The vast wetlands of Bugasera in the South East (a IBA and potential Ramsar site), were visited but received insufficient cover due to their inaccessibility to the Recordists.

## **5.6 Participant Training and Training Recipients**

5.6.1 One test of the utility of a citizen science method are the arrangements in place to train participants in bird identification and field craft skills, as well as the technical skills of recording. A test of the training strategy was an integral part of the ABC PBS project.

5.6.2 Since 2018, when citizen science training in audio recording and field skills was first offered to anyone who wished to try it, around 250 individuals have received field training from the Rwanda Project Manager and many more through clubs. The vast majority who have continued to a competent level, or who have joined since, are younger students of the natural sciences or tour guides in training. There are around 20

active recordists at any one time, most at different stages of training. Twenty Recordists have received a CoEB PBS Certificate of Completion of Training. Recipients are nominated by the recordists. This signifies a level of competence and activity notable to their peers and to the PBS Rwanda Project Manager. This reinforces confidence in the mutual training that has emerged during the last two years and motivates new entrants to the project. More senior students and practitioners volunteer services both for their own and their junior's benefit.

5.6.3 It has become apparent that this group of younger students and practitioners is more amenable to training, the time needed to develop skills and time availability in face of the imperative to give top priority to paid work, evident amongst more established bird guides. University academics tend to have clear study specialisms and ornithology remains to be developed as a specialism for all but a very few practitioners. Younger participants are particularly drawn to the technical aspects and computer use. Some talented young women recordists have emerged, only to be diverted by other priorities and job offers. The training is most effective amongst those who have a good secondary education level, such that citizen science skills can dovetail into an existing skill set and education level.

## **5.7 Training Format**

5.7.1 The training comprises three main elements:

1. Training in field craft, bird identification, visually and by sound, awareness of different habitat types, the use of phones and Parachirp parabolas for audio recording;
2. Training in use of eBird listing and the collection of and field labelling of audio files with all relevant metadata;
3. Training in audio digital processing on a PC, to Cornell eBird specifications, preparation of files for upload to Ebird lists and the Rwanda Biodiversity Information System, spontaneous single sample eBird entries, data filing and sharing protocols.

5.7.2 In 2021, the Cornell eBird training text was adapted for an African audience and converted into a series of Google training slides that amounted to a step by step series of instructions, starting with reasons for participating, equipment, field craft and recording, audio data processing on a PC to maximize quality, up loading and submission systems. The training slides are freely available on line and can be tutored slide by slide. They are also used for mutual classroom training by the Bird Clubs. The slides have been central to the launch and maintenance of the citizen science system. This system is regularly re-published to clubs and groups. Sections have been upgraded and updated in the light of experience, often at the suggestion of the recordists. Also central is detailed tutoring, face to face in the field and computer lab. This was provided by the Rwanda Project Manager and, as confidence has grown, by the experienced recordists.

5.7.3 Training of students during the ABC Project year was delivered by face to face contact with the Recordists and a 5 week visit to Rwanda by the Project Manager, in February.

Critical has been the use of a dedicated Whatsapp group via which the Project Manager and all participants can exchange remotely and throughout the year, information, discuss identifications, post specific training slides and review audio files and metadata labelling. It is key to maintaining interest, a sense of inclusion, building knowledge and skills and the enthusiasm for feeling part of a meaningful activity.

## **5.8 Training Locations**

5.8.1 Targeted training drew heavily on the activities of existing Bird Clubs and committed individuals who play an active part. PBS has developed seven hubs (now known as nodes) of activity.

1. The Musanze Rugezi Ornithology Centre ROC node is a collective of bird guides and rising ornithologists, some of whom record regularly. They also provide training and open field days to newer birders.
2. This, amongst other things, has prompted the establishment of the UR Birds and Conservation Club, based at the UR CAVM near Musanze. This is evolving into a node in its own right. The PBS activities have provided inspiration and training to our collaborators at the Rugezi Ornithology Centre, who are involved in atlasing and swamp surveying work and in the Musanze area as a whole. Musanze is close to Volcanoes National Park and a high level of tourism activity, as well as a number of wetland areas, so it is important to the birding infrastructure in Rwanda.
3. The Kivu Academy Bird Club is based at Kivu Hills Academy, a technical school in the West at Boneza, on lake Kivu in Rutsiro District. The well established PBS connection to the school through the Project Lead Recordist was much enhanced by the ABC project activity. It produced two of the Key Recordists.



Early training at Kivu Hills Academy Bird Club, with Lead Recordist Remy Mbonigaba has produced some of the best acoustic citizen science and Key Recordists, Joachim Harerimana and Pierre Izabayo.

4. The established collaboration with the IPRC Kitabi Bird Club has generated three of the Key Recordists who participated during the year, plus many of the additional recordists and well placed conservationists working in the public and NGO sectors. The mutual training ethic is strongly embodied in the college. The IPRC Kitabi is a key node in the Project.
5. The relatively new Kigali PBS node is based at the Nyandungu Ecopark, a Government sponsored recovered wetland area within the city, now developing as a country park and native habitats, with a growing bird list. Well trained birders and recordists, some with a background at IPRC Kitabi, have formed the Kigali Bird Club for young birders in the city, based at Nyandungu. They offer training in recording to their peers and potentially, to visitors.



Head Guide Kuradusenge Sylvere, Prof. Beth Kaplin, University of Rwanda, Hilary MacBean and Key Recordist Pacifique Byiringiro create a new PBS node and open the way for a base for the Kigali Bird Club at Nyandungu Ecopark, Kigali. February 2025.

6. A further two nodes at Akagera National Park and Nyungwe Forest National Parks are led by good birders who are an integral part of their communities, both with a good knowledge of sound. They are centred on the Community Freelance Tour Guides organisations. It is likely that the pressure to be available for daily guiding work, as well as birding equipment, has limited their activity.

## 6. African Bird Club Project Results

### 6.1 Audio Data Collection Results

6.1.1 The audio data collection results are given at **Appendix 1: African Bird Club Planet Birdsong Rwanda Accounts and Performance Metrics Project Period 2024 - 2025**. The results demonstrate a clear step-up in sound data collection. In summary, Planet Birdsong recordists during the project period collected 808 audio samples, compared with 234 in 2023 and 284 in 2024, prior to the start of the project. Included are calls, sub-songs, duets and juveniles, as well as the recognised male songs. 808 samples represents 88% of all samples uploaded to eBird from Rwanda during the project period (1/09/24 to 31/08/25). This includes 27 Albertine Rift Endemic and near endemic samples from 11 species.

Ebird Resources for Rwanda show that the total audio samples collected in all years is 2032 (Up to October 2025). This total includes historic data donated to Macaulay Library at Cornell University and the activity of a small number of prolific expats.

6.1.2 A total of 124 field days were spent by the Key Recordists, with an unrecorded but significant number of days spent by other Planet Birdsong Recordists. The data collection effort is a substantial improvement on previous years. Results are not tabulated by area due to resource and logistical limitations. Data are encapsulated within the Macaulay Library eBird data and the Rwanda Biodiversity Information System (RBIS).

6.1.3 The data has benefits for informing remote scientific monitoring, AI audio media training and for the more common species, tourism aids such as Merlin. AI tools are increasingly known by visiting birders and general tourists, so having apps such as Merlin working is likely to have an impact on the attractiveness of a country as a destination and the economic benefits accrued, even when excellent guides are available.

## **6.2 Data and audio quality**

The credibility and value of citizen science for producing scientifically useable data depends on:

**6.2.1 The accuracy of identifications.** The project demonstrated that with mutual support from colleagues and the backing of expert verifiers, useful data can be produced. As recordists gain experience their contributions to identification challenges amongst peers increases. A problem has arisen with the over-enthusiasm of young birders keen to make an impression with scarcer bird identifications and species numbers seen. Continuous online training and helpful inputs from alert verifiers and the eBird Reviewer emphasizes the importance of observation and accepting a challenge. Rwandans are taught professionalism in their general training and accepting and acting on an identification challenge is the mark of professionalism, not poor birding. This was a key learning point highlighted and addressed by the project.

**6.2.2 The quality of audio data.** Broad-based citizen science by its nature relies on accessible, inexpensive equipment. Training in making the very best use of what is available is key, so phone settings, field technique, good apps, and rigorous field labelling of results is essential to uplift casual recording to a higher quality result. Training includes Audio Digital Processing of data to a standard set by eBird for phone recording. This greatly improves the result. Users also benefit from familiarity with spectrograms and reading the visual trace of bird sounds, often with the result that a photo memory aids future field identification. Often, additional bird species samples can be extracted from the sample. For example, Merlin field recordings can be upgraded to data suitable for the Birdnet, Birds of the World standard. The process in itself is also very attractive to young techie birders and can enthuse them in birding and recording. On-going instruction and identification support is given through social media and specifically, the dedicated Planet Birdsong Whatsapp Group.

6.2.3 The Recordists are equipped with techniques to report on any scarce, rare, or species of conservation concern or flagship species found during methodical searches or spontaneously, during the course of their work.

6.2.4 The project has demonstrated very well that quality results can be achieved and sustained. This is recognised by the Cornell Lab of Ornithology eBird staff who wish to scale up the method across Africa, through the Big Year of African Sound (BOAS) 2026.

6.2.5 Problems remain with access to equipment including fieldguides, binoculars, parabolic reflectors, adequate phones, and PC's for processing. The project has provided some equipment and there is a high propensity to share gear amongst participating bird clubs, so resources can go a long way.

### 6.3 Some Audio Data Examples

6.3.1 These examples highlight some interesting species recordings and areas identified as productive.

Note 1: illustrative photos were not produced by the audio recordists but selected from African Bird Club and Rwanda Development Board resources (Gael van de Weghe). They are credited and authorised (where possible).

Note 2: The metadata labels are a standardised system developed for field application when using a phone. Recordists are trained to label all recordings whilst at the site, in the field. They are uploaded to RBIS and eBird. The audio is in a separate Google document to allow for interactive listening.

#### 6.3.2 Appendix 2 and the links below connect to interactive audio examples.

It is recommended that a headset or headphones are used to listen to the audio links.

<https://docs.google.com/presentation/d/1OhJXIVURK-SZj5wMnK7c4ZbjgzG7mreFsRMnHaOsxQ0/edit?usp=sharing>

#### 6.3.3 Mbonigaba Jean de Dieu (Remy), Planet Birdsong Lead Recordist, Yellow-bellied wattle eye (*Platysteira concreta graueri*)

During the Project year Remy Mbonigaba explored bird abundance and presence in a number of less-birded locations. Here is an example of his finding a Yellow-bellied Wattle-eye (*Platysteira concreta graueri*) in Busaga remnant forest, Amayaga, north Muhanga District (recently recognised as an IBA following survey work by Nature Rwanda, Birdlife International partner). This species is more associated with pristine native forest in Nyungwe Forest N.P.

His experience (edited):

“Have been communicating with James Hogg (eBird reviewer for Rwanda) and Elie Sinayutse of the Nature Rwanda about the 30/12/2024 Busaga Forest trip’s checklist with a new recording of \*Yellow-bellied Wattle-eye\*. James wanted to check the id as he knew that the forest is much disturbed. He had been there 8-10 years ago and

eBird was flagging this bird as rare in the Region. Fortunately, I had a well processed and labeled audio recording. I sent him the audio file (and described the location). I told him that I and our PBS verifier (Claver Ntoyinkima, Head Guide in Nyungwe Forest NP) had a deep conversation on this id and he confirmed Yellow-bellied Wattle-eye.”

The audio provided the evidence required and is only the second audio record in eBird Audio Media in East Africa, outside Kenya.



Yellow-bellied wattle-eye. Credit: Paul Van Giersbergen,

African Bird Club Image Data Base.

Audio standardised metadata label: *Yellow-bellied Wattle-eye song 12m FIN*  
*291224-091847-1.8008, 29.7163 2151m Busaga Forest Mountain Illadopsis song*  
*Northern Puffback call*  
Ebird checklist S207060306 Media ML629127865

[https://docs.google.com/presentation/d/115yljuTo9tsURSLuDKHhs8jOdMGtwZcL1hdZ\\_yMtArl/edit?usp=sharing](https://docs.google.com/presentation/d/115yljuTo9tsURSLuDKHhs8jOdMGtwZcL1hdZ_yMtArl/edit?usp=sharing)

#### **6.3.4 Remy Mbonigaba, Pacifique Byiringiro, Dan Maniraghua and Joseph Lionceau, Grauer’s Swamp Warbler (*Bradypterus graueri*) and Highland Rush Warbler (*Bradypterus centralis*)**

Remy Mbonigaba and other recordists did some excellent work opening up interest in birding at the wetlands at Lakes Bihinga and Karago (The Northern Lakes). This work continues, particularly by the University of Rwanda Birds and Conservation Club, started at the College of Agriculture and Veterinary Medicine (CAVM) campus at Busogo and trained by Remy and members of the Rugezi Ornithology Centre (Pacifique, Byiringiro, Joseph Lionceau, Dan Maniraghua), in active collaboration with Planet Birdsong and stemming directly from our ABC Project activity.

Highland Rush Warbler (*Bradypterus centralis*) is the most regularly seen bradypterus warbler in the swampy wet fields around the lake margins, but Remy demonstrated through the use of audio recordings that there was a population of Grauer’s Swamp Warbler (*Bradypterus graueri*), a species previously thought to be limited to higher elevations and Nyungwe, Volcanoes, Gishwati and Akagera NPs and Rugezi swamp. Joseph Lionceau and colleagues at ROC used audio recording to demonstrate the current population at Rugezi swamp. Defined as an ARE by Birdlife International, the

species may be better defined as a near ARE and has a distribution across a wider area and at lower elevations than previously defined. Note: Gael van de Weghe (Birds in Rwanda, an Atlas and Handbook) notes a wider distribution before 2015, to include Bugasera and other eastern locations. Claudien Nsababagani noted this wider distribution in 2007 (Anon) and in 2021, with an observation at Kabarore Swamp, Gatsibo in Eastern Province. Audio activity has confirmed two current populations at Northern Lakes and Rugezi swamp, both with good tourism potential.



1. Grauer's Swamp Warbler. Credit: Rwanda Development Board, Gael Van de Weghe
2. Highland Rush Warbler. Credit: Augusto Faustino, African Bird Club Image Data Base.

Audio standardised metadata label: Remy Mbonigaba, *Grauer's Swamp Warbler Song*  
7m FIN 20240901-092519 1.6181, 29.5239 2280m Bihinga Swamp, Northern Lakes  
Ebird checklist S193530304 Media: ML623796207

Audio standardised metadata label: Pacifique Byiringiro, Highland Rush Warbler song  
15m FIN 20250817 102557 -1.6278577, 29.5073864 Karago Lake 2270mmsl  
Ebird checklist No. S267783743 Media: ML640815744

[https://docs.google.com/presentation/d/1\\_G6Sy9GKfKpZt1DczWuwutys77vP5gQMLELY3T3LUzY/edit?usp=sharing](https://docs.google.com/presentation/d/1_G6Sy9GKfKpZt1DczWuwutys77vP5gQMLELY3T3LUzY/edit?usp=sharing)

### **6.3.5 Pacifique Byiringiro, Red-tufted (malachite) Sunbird (*Nectarinia johnstoni dartmouthi*)**

On 30th August 2024 Pacifique Byiringiro, whilst doing a ranger internship (and now a professional wildlife guide), made a spontaneous phone recording of Red-tufted (malachite) Sunbird (*Nectarinia johnstoni dartmouthi*) at a high altitude in the lobelia plants of Mount Bisoke, Volcanoes National Park. The species is known in the area but audio recordings from the West of East Africa, including Uganda are limited to 7 in Xeno Canto. The Rwanda example is a first and gazettes the calls of 2 male and 3 females adults during copulation. This opportune recording adds to the limited body of audio data from Uganda and Tanzania.



Red-tufted (malachite) Sunbird. Credit: Paul Van

Giersbergen, African Bird Club Image Data Base.

Audio standardised metadata label: *Red-tufted Sunbird song x 2 male 3 female 15m song FIN 20240830\_110537 -1.4623623, 29.4909659 3570m Mount Bisoke Volcanoes National Park*

Ebird checklist S193820649, Media: ML632280385

[https://docs.google.com/presentation/d/1ajpR1Y0kjGMmwPuJU6d8pvaJmI7N05q0B\\_SbcoRtFcl/edit?usp=sharing](https://docs.google.com/presentation/d/1ajpR1Y0kjGMmwPuJU6d8pvaJmI7N05q0B_SbcoRtFcl/edit?usp=sharing)

### 6.3.6 Joachim Harerimana and Pierre Izabayo, Red-throated Twinspot (*Hypargos niveoguttatus*)

Joachim Harerimana and Pierre Izabayo made repeated visits to little birded fragment forests on the Congolese border at Lake Kivu and the Rusizi River. They listed and audio recorded Red-throated Twinspot (*Hypargos niveoguttatus*) on several occasions. The species is a rarity in SW Rwanda and it was noticed that it tends to be in pairs and forages on the ground in cultivations close to large trees. Their examples were in Pharmakina Forest on Lake Kivu and on the Rusizi River near Buhokoro. They were both audio recorded and record-shots taken on their phones.



Red-throated Twinspot. Credit: John Sawyer, African

Bird Club Image Data Base.

Audio standardised metadata label: *Red-throated Twinspot (Male) song 6m FIN 20250315\_102403 -2.534535,28.819893 1478m Pharmakina Forest Common Bulbul call by Pierre Izabayo*

Ebird checklist S218594750 Media ML632230289

[https://docs.google.com/presentation/d/1SCiBHRJo49z6gLNvnu\\_XxQi8Mz3MaG33fnXor4oW\\_5E/edit?usp=sharing](https://docs.google.com/presentation/d/1SCiBHRJo49z6gLNvnu_XxQi8Mz3MaG33fnXor4oW_5E/edit?usp=sharing)

### 6.3.7 Joachim Harerimana and Pierre Izabayo, Verreaux's Eagle Owl (*Ketupa lactea*)

Joachim Haberimans and Pierre Izabayo did some interesting work close to home at Buhokoro, down the Rusizi River, close to Burundi and DRC. This area has hardly been visited by local or visiting birders, due to its relative remoteness and security issues. Amongst several eBird lists he collected 5 recordings of a duetting pair of Verreaux's Eagle Owl (*Ketupa lactea*). One benefit of local citizen scientist birders and recordists is their reach into such hard to visit areas and their positive interest in owls as a whole. The species is widely vilified across Africa for cultural reasons. Pierre Izabayo achieved a good recording of a juvenile Verreaux's Eagle Owl in Pharmakina Forest, Lake Kivu.



Verreaux's Eagle Owl. Credit: John Harderwijk, African Bird Club Image Data Base.

Audio standardised metadata label: Joachim Harerimana, *Verreaux's Eagle Owl duet song 30m FIN 20250113\_233247 -2.612576,28.917319 1663m Buhokoro, Rusizi*

Ebird checklist S249299519 Media: ML637426900

Audio standardised metadata label: Pierre Izabayo, *Verreaux's Eagle Owl juv call 20m FIN 20250911\_090459 -2.431993,28.906857 1501m Pharmakina forest Secret Peace Yellow whiskered greenbul song, scaly throated honey guide*

Ebird checklist S273759399 Media ML645996543

<https://docs.google.com/presentation/d/1Oz1bafU-VtelY5Ax0VWVXhKC7UX7HLLSZG4W88Fkoxg/edit?usp=sharing>

### 6.3.8 Nyungwe Forest National Park, Daniel Maniragua, Blue-headed Sunbird and Pacific Byringiro, Red-throated (mountain) Babbler

Dan Maniraghua and Pacifique Byiringiro demonstrated the value of an intensive recording session in Nyungwe Forest National Park, where at different times, they collected a total of 25 recordings, including 11 Albertine Rift Endemic species. They included Kungwe Apalis (*Apalis argentea*) song, Blue-headed Sunbird (*Cyanomitra alinae*) song and Red-collared (mountain) Babbler (*Kupeornis rufocinctus*) calls, all more difficult subjects to record well.



Blue-headed Sunbird.  
Babbler.

Red-collared (mountain)

Photo credit: John Caddick, African Bird Club Image Data Base. Photo credit: John Caddick, African Bird Club Image Data Base.

Audio standardised metadata label: *Blue headed sunbird 20m song call at 16.7secs FIN 20240915\_082359 -2.46217, 29.09205 1935m Ndambarare Trail Nyungwe NP*  
Ebird checklist S203429565 Media: ML632248566

Audio standardised metadata label: *Red-collared Mountain-Babbler song 10m (shortened) FIN 20241011\_115707 -2.4630096, 29.0927782 1940m Ndambarare trail Nyungwe NP by Pacifique Byiringiro.*  
Ebird checklist S1983316735 Media: ML625040269

[https://docs.google.com/presentation/d/1EVQBu3q0zqwW-P5aQXo3dBZ4\\_i7T9L60LuWV4EnF4V8/edit?usp=sharing](https://docs.google.com/presentation/d/1EVQBu3q0zqwW-P5aQXo3dBZ4_i7T9L60LuWV4EnF4V8/edit?usp=sharing)

#### 6.4 A Rare Bird Search “In Pursuit of Shelley’s Crimsonwing”



1. The Planet Birdsong Key Recordists, a Rwanda Wildlife Filmmakers photographer and Nyungwe Forest National Park guides join forces in the search for Shelley's Crimsonwing.
2. Shelley's Crimsonwing in the hand. Credit: Colin Jackson, Gorilla Foundation, Mt Tshiaberimu, Virungas NP, 2008

6.4.1 The ABC Project included a search for rare species. Specifically, Shelley's Crimsonwing (*cryptospiza shelleyi*) a large, rare and declining finch in the Estrildidae family of waxbills, firefinches and crimsonwings. It is an Albertine Rift Endemic. It was selected as an example to train the Recordists in preparing for and executing a rare bird search. Also, there are few photos of the species, no wild-flying photos and no sound recordings on record. A reliable site is not currently available across the range of the species, both within and outside Rwanda.

**See Appendix 3 for the full Report and a short video by Rwanda Wildlife Filmmakers.**

6.4.2 The purpose was to:

1. To draw together in a compendium report, all available published information and known sightings in Rwanda and beyond to inform an organised search and report from Rwanda. This includes, document and pursue known anecdotal sightings in Rwanda from the last five years.
2. To encourage Planet Birdsong key sound recordists and trainee photographers to research and record their findings in a methodical way.
3. To pursue a field search in Nyungwe Forest NP and VNP to galvanise interest in the current status of the species, with a view to promoting and informing further search activity by professional ornithologists and birding tourists and habitat and species conservation work by the Park Authorities.

6.4.3 The target species was not found but anecdotal sightings in Nyungwe Forest in the last 3 decades by local guides and the observation of extensive suitable habitat, suggest that Shelley's crimsonwing may still be present, but in very small numbers. Its flighty habits and the probability of seasonality in different parts of the forest for food sources add to the difficulties of detection.

6.4.4 The value of this preview exercise to the citizen scientist participants cannot be overestimated, inspiring young aspirational Rwandan birders to continue in their birding activities as well as teaching them the excitement and rigour of a serious attempt for a rare bird. A further preview expedition to Volcanoes National Park in the months of May or June is needed and further rare bird expeditions are recommended.

6.4.5 A citizen science expedition, by its nature, is a preview and recommended for high value- for-money funding to collect together a compendium of existing information to encourage and inform future professional searches. Ultimately, it is hoped that a collective effort will reveal Shelley's crimsonwing in Rwanda and its neighbours to the World and prompt conservation action.

## **7. African Bird Club Project Impacts**

## 7.1 Conservation impacts

7.1.1 The good quality data collected adds audio evidence to scientists working in biodiversity monitoring and conservation across Rwanda. Professional and academic scientists who have primarily relied on visual observations have been encouraged to explore the scope of audio research and the data is contributing to training AI systems that may then be used in remote monitoring, currently in its infancy in Rwanda.

7.1.2 The project has highlighted locations with an abundance and a good range of birds, bringing these to the attention of professional ecologists in Rwanda. The remnant lowland forests recovery programme is an example, with contributions at Busaga Forest, recently designated as an Important Birding Area and Pharmakina Forest in the South West, Rusizi District, brought to the attention of the management of the Western Province Remnant Forests Recovery Project, being led by the Rwandan Government. On-going audio work at Rugezi Marshes, a RAMSAR site, has greatly assisted in establishing the presence of scarce bird species. The data contributes to evidence in support of International grant applications.

7.1.3 Rugezi wetlands, Kigali wetlands, Nyungwe Forest National Park and Gishwati Mukura National Park are locations where Planet Birdsong trained recordists have contributed to surveys and data collection. Biodiversity monitoring of the Eastern Province for a large restoration project which includes the Kagera River wetlands, fed by the Nyaborongo and Akanyaru Wetlands (IBA's) has included audio survey work made possible by the training and mentoring supplied by Planet Birdsong. The recordists continue to contribute to data banks, are commissioned for survey work and have set a citizen science standard and model to which other countries and organisations are now responding e.g. The Cornell University Lab. of Ornithology Big Year of African Sound (BOAS) is now active in at least six countries.

7.1.4 The recording nodes around Rwanda, by their example, highlight interest in bird sound and habitat in rural communities across the country. They dovetail into wider community initiatives to conserve the bio-diversity of Rwanda and move towards more sustainable traditional and modern farming methods.

7.1.5 The audio skills learned also contribute to the capabilities of the recordists as bird tour guides. In a country which depends heavily on tourism as a source of foreign exchange, excellent guiding skills add to the reputation and earning capacity of this sector. In turn revenue is available to fund an active conservation programme by Government and NGOs. In the wider economy, more citizens skilled and impassioned by nature and the environment, are entering economic sectors such as agriculture, forestry, urban planning, flood control, community administration and education, all with benefits for a strong and widely held attitude towards environment, habitats and biodiversity conservation.

## 7.2 Citizen Science Impacts

7.2.1 The value of the project lies in embedding and reinforcing the skills and motivations developed such that they become self-sustaining. The project teaches rigorous methods to mainly non-scientists. It contributes all data to global commons data sets, eBird at Cornell and the Rwanda Biodiversity Information System, managed by CoEB, with data from a wide range of protected and unprotected areas. The Planet Birdsong methodology is a citizen science entry-level system but the interest, awareness and confidence generated is leading to bioacoustic activity at a more advanced level. It is an objective of the project to be part of a continuing programme to grow data, capacity and local competencies.

7.2.2 The Planet Birdsong Project activities have contributed to the profile and infrastructure of birdwatching and bird surveying across Rwanda. Birding and ornithology has been around for a long time, but capacities and interest have grown hugely in recent years, particularly amongst ordinary people. This impacts attitudes, effort and capabilities in the economy. It is hard to measure the impact of the ABC Project at this level but anecdotally, Planet Birdsong activity over the year is highly regarded and a key input in birding activity.

7.2.3 The activities have contributed to the name of Planet Birdsong becoming known in Rwanda and being recognised for its work by offers for collaborations from other organisations.

7.2.4 Participation levels and the number of nodes and collaborations formed (7) demonstrate the value seen in the project. The activity garners local interest and curiosity. Bird songs and calls are around us, are highly accessible to all and draw attention to the natural environment.

7.2.5 Individuals value the enhanced skills achieved for their careers generally or as Bird Guides.

Engagement and interest is carried back to home communities, often in villages where engagement in more sustainable farming and management practices is developing.

7.2.6 Recordists have engaged successfully with general environmental training in schools and colleges. The activity is a vector for the welfare and inclusion of young people, providing additional skills and a sense of individual self-worth and confidence.

7.2.7 The scope for bird tourism activities and economic benefit have been identified, for example: The management of Nyandungu Wetlands in Kigali invited Kigali Bird Club, with PBS recordists and birders at its core, to base themselves at the Wetland centre. The Head Guide is also PBS trained. Late in 2025, Planet Birdsong was invited to participate in developing birding activities for visitors at Nyandungu Wetlands.

7.2.8 Lake Rweru on the Burundi border and its large wetlands (part of the Bugasera wetland complex) is attracting conservation attention from local NGO's and PBS Recordists now have competencies that could be utilised in the future.

### **7.3 International Impacts**

7.3.1 Recordists have demonstrated the capacity of PBS to participate in citizen science models such as the Big Year of African Sound (BYAS) 2026, being promoted to boost African bird sound recording to build the Cornell Library data set and inform AI training of apps such as Merlin. The level of Recordist activity during the ABC Project Year was particularly noted by eBird staff and our methodology has been promoted for BOAS. In support of the Planet Birdsong aim to establish hubs in other African countries, we have been recognised by potential collaborators in South Africa, Zambia and Kenya. PBS has good connections with AP Leventis Ornithological Research Institute (APLORI), in Nigeria, linked with University of St Andrews.

### **7.4 Impacts on Individual Citizen Scientists - some examples**

7.4.1 Planet Birdsong trained audio-recordists are sought out for their surveying and guiding skills and their employability arising from growing birding knowledge and personal confidence.

7.4.2 The Lead Recordist, Remy Mbonigaba was invited to participate in surveying by the Centre of Excellence in Biodiversity and Natural Resource Management in the Akenyaru Wetlands area along the Nyaborongo River. He also obtained an internship in Gishwati Mukura National Park, on the back of his skills, where he contributed to biodiversity surveying of this recovering and expanding forest area and added to audio media available for the area, e.g. Archer's robin chat (*Dessonoris archeri*), and Albertine Rift Endemic. He and another recordist were also invited by the eBird team to train Ugandan birders in the PBS method. He was also invited to train a group of Local Guides at Kinunu on Lake Kivu, an employment enhancement programme funded by the Rwanda Government. He has demonstrated commitment to data collection and group training. As a result he has been entrusted with grants to develop the skills of the Kinunu Local Guides, including a target of 400 recordings from the Lake Kivu shores area and funds to enhance the BOAS data collection in Rwanda. His management potential has been recognised with an application to the Conservation Leadership Fund to continue the pursuit of the Endangered Shelley's crimsonwing, focussing on visual and sound media. Further applications are anticipated.

7.4.3 Three school level recordists at Kivu Hills Academy did particularly well in their National school exams in Tourism. The school Principal acknowledged and appreciated the value of the data collection methodology and discipline for aiding their attitude and precision across their exam subject range. The PBS collaboration with the KHA Bird

Club is well embedded and inspired by the ABC project. Two students are now studying at IPRC Kitabi and are already taking a lead in the Kitabi Bird Club. Cornell eBird have recognised their productivity during the year. This has prompted the BOAS small grant being managed by Remy Mbonigaba and they may supply recording equipment, pending contributions to BOAS data.

During the year, one Key Recordist obtained a very good hotel guiding job with a top lodge, based on his enhanced birding skills learned with the Planet Birdsong project.

7.4.4 Another Key Recordist enhanced his confidence and position in the Rugezi Ornithology Centre, a local NGO and PBS collaborator, aimed at promoting youth birding and ornithological surveying. He is studying for a BTech at IPRC Kitabi and is increasingly finding tourist guide opportunities. He initially obtained a key job with a start up company and he is now a professional free-lance guide, working in Rwanda and Uganda.

Many others have made a similar impression during the year, enhancing training, interest, birding tourism jobs and surveying. Planet Birdsong is widely recognised for this contribution to Rwandan development.

## **8. System Weaknesses, Learning Points and Recommendations from the Citizen Science Model**

8.1 One aim of the project was a critical examination of the citizen science model in an African setting.

8.2 Methodological and operational limitations have been exposed but new collaborations have benefitted from the learning points, extending an opportunity to address the problems and further develop the strengths and benefits of mass data collection by Africans, in Africa.

8.3 Incentivising time spent on data collection was found to be essential. Not because of a lack of interest, but because of the imperative of spending most time on daily work, or studying or family matters. The luxury of surplus time spent in recreational birding and citizen science, per the Western model, is not available to most participants.

8.4 The funding model concentrated on a small number of competent recordists, to maximize the returns of quality data for the budget available. The costs, whilst small for individual stipends and trip expenses, proved high per data record collected and submitted to eBird (£6.50 per record or 12,847.00 Rwf per record). Management and administration of even a small group was labour intensive. When added to maintaining the system, building contacts, fund-raising networking and continuous on line comment, information and training, the project was very time demanding for the Rwanda Project Manager. A more sustainable logistics model is needed.

8.5 Supported recordists continued throughout the year, but with decreasing productivity as distractions increased. The fall out rate amongst the unfunded recordists was considerable but many stayed in anticipation of gaining support and career benefits. An element of unfairness towards highly productive but unfunded individuals was felt. One person was made a funded Key Recordist mid-year. A way of rewarding wider effort is needed.

8.6 Every person engaging with a club and or training gains an enhanced appreciation of biodiversity and habitats, but sustaining training to a higher and productive level was limited to a much smaller number of keen participants. Continued motivation and encouragement is needed. Mutual support and training is a very positive feature, but continuous effort to build the skills of newcomers and maintain the skills learned is essential.

8.7 Equipment supply, delivery and replacement of failed equipment remains a challenge. Equipment requires to be robust and accessible to ensure participation. To maximize the quality of results, the design of audio equipment to suit the conditions is essential and training must include practices to make the best use of what is available. Resourcing of citizen science needs to include the funding of good equipment for those showing commitment and productivity.

8.8 A system operated in-country by Rwandans matches the self-governing objectives of the country as a whole and is likely to better sustain motivation, productivity and the proven socio-economic benefits to Rwandan youth, compared to the international NGO model.

A system operationally managed in Rwanda and formed around a single administrative hub and a series of nodes is being considered and may help to resolve logistical problems, but the citizen science and mass data collection model requires good resources.

8.9 It is notable that since the end of the ABC Project Cornell Macaulay Library/eBird have introduced the BYOS 2026 data collection year. They have drawn on PBS experience during the ABC Conservation Grant Year. Small seed fund grants to local organisers and some equipment have been made available to fund recordists, but stipends are not payable. Voluntary effort and instilling a competitive approach through a published “Leader Board” by recordist and country an alternative approach. The effectiveness of this model should be monitored.

8.10 In the case of working guides, a different training and citizen science model is needed to compensate for a lack of time and inclination to do the full audio training. The technical aspects certainly appeal to a younger participant. PBS has put in place a short training for “busy birders” and guides working in the field with clients, but the results of the ABC Year indicate that this group could only make a limited contribution to results. Focussed training for this group should continue.

## 9. Conclusions

9.1 The citizen scientists and system tested through the African Bird Club Planet Birdsong Project have clearly demonstrated some very positive results, both in terms of data collected and for training local Africans in citizen science methods. As such, ordinary non-scientists can usefully make both a quantitative and qualitative contribution to African biodiversity and birdlife conservation, through providing usable data to complement and supplement scientific studies. A number of examples are cited. Audio media collection increased significantly but it is still too small, highlighting the task for both professional ornithologists and citizen scientists working across Africa.

9.2 The system can provide personnel to support future research or to move into higher ornithological studies. Others have gained good bird guiding jobs and are better and more confident tour guides, with a deeper knowledge of their subject, or they are leading local bird clubs. The ABC Planet Birdsong project has given them an edge in a very competitive employment market. Their activities have attracted attention and raised a much greater awareness of the value of birdlife, biodiversity and the environment amongst ordinary communities, both in rural villages and amongst increasingly urban city dwellers.

9.3 Whilst not at the pinnacle of scientific research, the good audio data results and examples of individual successes demonstrate that ordinary Rwandan citizens can be trained and work locally to pave the way for a wider application of citizen science in an African setting. It is notable that Rwanda and most probably other countries in Africa have a culture of mutual support, where sharing of knowledge and materials is a key. This came to the fore during the project in the level of mutual training and support that emerged. This is a key trait for harnessing citizen science methods.

9.4 The results achieved in sustaining an active system of Bird Clubs and collaborations provides a legacy for an interest in bird life amongst the public at large and Country administrations. There is an increasing passion for bird life and nature in Rwanda, for conservation of remaining biodiversity, enhancement of the best and for the personal wellbeing of individual people in a busy life. Planet Birdsong has had a notable impact on this legacy. Limitations have been identified, but the Project findings have already assisted in redesigning the organisational aspects of citizen science that make possible a positive and impactful contribution to African biodiversity conservation.

9.5 The project management costs were high in terms of time demands and direct data collection costs. Subsequent projects, such as the current Big Year of African Sound have identified savings by engaging local providers and declining to pay recordist stipends, instead providing competitive incentives (prizes for highest productivity). It remains to be seen how this affects the data results, participation and the wider citizen

science benefits for communities and economic sectors as a whole but current activity is promising.

9.6 Without the African Bird Club Conservation Award that allowed the Planet Birdsong project to continue at an intensive level over 2024- 2025, none of the above findings and achievements would have been possible. Bio-acoustic recording in Africa has taken a major step forward as a result of the Project. For this Planet Birdsong Foundation and the citizen scientist recordists of Rwanda are grateful.

9.7 Planet Birdsong Foundation thanks, in the profoundest terms, the Project Recordists, for their huge effort in making these findings possible, and our collaborators across Rwanda for their continuous encouragement and support.

## 10. Sources and References

### 10.1 Data Research

African Bird Club Website Country Entry.

<https://www.africanbirdclub.org/countries/rwanda/rwanda-introduction/>

Birdlife International Datazone. <https://datazone.birdlife.org/country/factsheet/rwanda>

IUCN Red List of Threatened Species 2025 <https://www.iucnredlist.org/search>

AviList: The Global Avian Checklist, v2025 by AviList Core Team Licensed under 97CCBY4.0

eBird 2021. eBird: An online database of bird distribution and abundance. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: Date 26/01/26).

The eBird/Clements checklist of Birds of the World: v2024. Clements, J. F., P. C. Rasmussen, T. S. Schulenberg, M. J. Iliff, T. A. Fredericks, J. A. Gerbracht, D. Lepage, A. Spencer, S. M. Billerman, B. L. Sullivan, M. Smith, and C. L. Wood. 2024.

[Xenocanto.org/explore/region](https://xenocanto.org/explore/region)

Current Rwanda list of Albertine Rift Endemics, Claver Ntoyinkima, Nyungwe National Park, African Parks 2024.

### 10.2 Methodology

Macaulay Library on line resources <https://www.macaulaylibrary.org/resources/>

[Ebird.org/explore](https://ebird.org/explore), <https://ebird.org/region/RW> [Ebird.org/explore/species](https://ebird.org/explore/species)

Cornell Lab of Ornithology Ebird support

<https://support.ebird.org/en/support/solutions/articles/48001214056-merlin-sound-id-best-practices>

Planet Birdsong Foundation Training Slides in Bird Sound Recording Using a Phone (Rwanda Edition 2021, Macaulay Library utilising audio recording resources),

<https://planetbirdsong.org/en/citizen-science-and-education-bioacoustic-recording.php>

### 10.3 Publications

Birds of East Africa Kenya, Tanzania, Uganda, Rwanda, Burundi Second Edition 2020  
Authors Terry Stevenson, John Fanshawe, illustrators John Gale and Brian Small. Helm  
Field Guides ISBN: 978-1-4081-5736-7.

Birds in Rwanda: an Atlas and Handbook Jean P. Van de Weghe, Gael R. Van de Weghe,  
published by Rwanda Development Board 2011, including update notes 2018 by GVdW  
ISBN: 978-2-7466-3490-9.

Wild Rwanda: Where to watch birds, primates and other wildlife Ken Behrens, Christian  
Boix, Keith Barnes with contributions from J. Anderson, Claver Ntoyinkima, published by  
Lynx Edicions 2015 ISBN 978-84-96553-96-5

## 11. Appendices

Appendix 1 African Bird Club Planet Birdsong Rwanda Accounts and Performance  
Metrics Project Period 2024 - 2025

[https://docs.google.com/spreadsheets/d/1gxW0RQ62ZKy-G9yqhdT9ij4job0ODqI0\\_Ry\\_tuZGKxs/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1gxW0RQ62ZKy-G9yqhdT9ij4job0ODqI0_Ry_tuZGKxs/edit?usp=sharing)

Appendix 2 African Bird Club Planet Birdsong Final Report Audio Examples  
It is recommended that a headset or headphones are used to listen to the  
audio links.

[Appendix 2: ABC Planet Birdsong Project Final Report Audio Examples](#)

Appendix 3 In Pursuit of Shelley's Crimsonwing, Nyungwe Forest and Volcanoes  
National Parks, Rwanda February 2025, Hilary MacBean, April 2025

Report:

<https://docs.google.com/document/d/1f7nKeDMfhp1t7wEcq1Hp1QxdJI5Ta0AW/edit?usp=sharing&oid=110076979459753893971&rtpof=true&sd=true>

Video film by Roger Irakoze, Rwanda Wildlife Filmmakers

[In Pursuit of Shelley's Crimsonwing.mov](#)