

## Project Factsheet

**Project duration:** August 2024 – July 2027

**Implementation partner:** The University of Queensland (UQ)

**Further partners:** Kwame Nkrumah University of Science and Technology (KNUST), Nature Conservation Research Centre (NCRC)

**Direct beneficiaries:** Actors involved in cocoa sustainability

**Focus areas covered:** increasing the understanding about the farmers and their environment

## Improving Biodiversity Outcomes in West African Cocoa Ghana



Picture 1: The vulnerable white-necked Rockfowl (*Picathartes gymnocephalus*). Photo by Michael Anders licensed under [CC BY](#). Image source: flickr.

### About the Lindt Cocoa Foundation:

The Lindt Cocoa Foundation was founded in 2013 and has the declared purpose of working to achieve social and ecological sustainability in the cultivation, production and processing of cocoa and other raw materials used in chocolate production.

Learn more:

[www.lindtcocofoundation.org](http://www.lindtcocofoundation.org)

Sustainability efforts in the cocoa sector have largely focused on reducing climate change impacts, while biodiversity—critical for human health and ecosystems—has received less attention. Enhancing biodiversity in cocoa production can improve yields, and provide additional ecosystem services, but current initiatives and data are insufficient to fully address these issues.

### Background

Land use for food production drives biodiversity loss. In Ghana and Côte d'Ivoire, cocoa, grown on over 7 million hectares, is mostly produced on low-shade farms with little biodiversity, and continues to contribute to deforestation, even in protected areas. Addressing these issues is essential for sustainable cocoa production.

### Project Objectives and activities

This three-year project, implemented by the University of Queensland, aims to assess current biodiversity, identify key local and landscape level features that benefit biodiversity, and identify high-priority areas for sustainability interventions, such as cocoa agroforestry, to maximize benefits for bird diversity. The project will also lay the groundwork for long-term monitoring by identifying indicator species and testing cost-effective monitoring methods. It builds on a previous project in collaboration with ETH Zurich, funded by the Lindt Cocoa Foundation, where two machine-learning models were developed to develop regional maps of shade-tree cover and carbon stocks in cocoa farms.

The project comprises seven parts:

Baseline assessment of biodiversity in cocoa production systems: The project will assess bird biodiversity in Ghana's cocoa farms through surveys of selected farms and passive acoustic recorders. It will also measure farm management practices, such as shade tree cover and cocoa tree density, and use GIS data to analyze forest proximity, helping establish a baseline for the current status of bird biodiversity associated with cocoa production systems in Ghana.

Identify features of cocoa-growing landscapes linked to higher bird diversity: The project will survey selected cocoa farms with varying local and landscape features such as shade cover, canopy height, habitat connectivity, altitude and forest degradation, to identify those features that most effectively support bird diversity and abundance. The findings will help guide future conservation efforts by targeting most impactful interventions for supporting bird diversity.

Systematic conservation planning to identify high-priority areas for biodiversity conservation via agroforestry interventions: The project will use systematic conservation planning to identify high-priority areas for agroforestry interventions in Ghana and Côte d'Ivoire. This approach uses mixed-integer linear programming to analyze data on habitat requirements, species distributions, landscape complexity, and the configuration of cocoa farms. By factoring in costs and constraints, the project will explore scenarios to identify where agroforestry interventions can maximize biodiversity benefits while minimizing costs. The results will be used to create actionable maps that highlight key areas for investment in shade-tree planting to maximize biodiversity gains.

Identify indicator species to track biodiversity changes: The project will use data on bird presence and abundance from the previously described fieldwork to determine

which bird species can serve as indicators of habitat quality in specific locations within the cocoa landscape, to monitor changes in habitat quality over time.

Pilot of passive acoustic survey methods to monitor biodiversity: This project will pilot passive acoustic monitoring in Ghanaian cocoa farms to compare its effectiveness with traditional human-based bird surveys. Acoustic recorders will capture bird vocalizations to create species lists and assess vocal activity. This will help evaluate the bird diversity monitoring method reliability and support future machine-learning developments.

#### Stakeholder engagement

Engaging local organizations and stakeholders is crucial for the study's success, as it leverages their expertise and local knowledge, while aligning with community needs. The project will strengthen existing partnerships and establish new collaborations with local universities and research centers. Additionally, interviews with industry experts will provide valuable insights into the costs and constraints associated with cocoa agroforestry.

#### Dissemination and outreach

The project will identify key areas for tree-planting and other sustainability interventions to better conserve bird biodiversity. To maximize impact, findings will be shared via webinars, conferences, peer-reviewed articles, alongside awareness sessions designed to engage local communities and stakeholders in Ghana about the critical role of biodiversity in cocoa landscapes.

#### **Alignment with the Lindt Cocoa Foundation's goals**

The project supports the Lindt Cocoa Foundation's aim of advancing ecological sustainability in cocoa cultivation by enhancing biodiversity understanding and guiding conservation efforts to ensure ecosystems health and the well-being of local communities.

September 2024