CEPF Final Completion and Impact Report

Organization's Legal Name:	Missouri Botanical Garden
Project Title:	Updating Key Biodiversity Areas within the Lofa-Gola-Mano and Nimba complexes.
Grant Number:	CEPF-104022
Hotspot:	Guinean Forests of West Africa
Strategic Direction:	3 Safeguard priority globally threatened species by identifying and addressing major threats and information gaps
Grant Amount:	$244,458.24
Project Dates:	May 01, 2019 - May 31, 2022
Date of Report:	September 15, 2022

IMPLEMENTATION PARTNERS

The Central African Program of the Missouri Botanical Garden (MBG) was the leading institution and was involved in the following tasks: field work coordination, specimen curation in Europe, activities and financial reporting, relationships between the different partners, data management and valorization, writing publications, communication, and training. In addition to Ehoarn Bidault, PI of the project, Tariq Stévart went to Guinea and Liberia to train the project's team on collecting methods and Red Listing. Bruno Senterre, consultant to MBG, was in charge of the ecosystemic aspects of the project (data gathering, typology, ecosystem Red Listing, KBA analysis, reporting and publications).
The Institut de Recherches Agronomiques de Guinée (IRAG), and its herbarium (SERG) was in charge of the implementation of the project in Guinea. Moussa Diabaté, the local coordinator, ensured the training of the four young botanists hired for this project, in collaboration with MBG. The SERG team was responsible for implementing field work, data capture, specimen management before exportation, identification of collections, harmonization of regional practices, organization of the meetings, communication with local stakeholders. The team was also responsible for training two young Liberian botanists and largely contributed to field survey in Liberia, developing south-south collaboration.
The Forestry Development Authority (FDA) was the local partner in Liberia. Two FDA young botanists were trained by the project team. FDA provided access to protected areas for fieldwork, and administrative support (collection and export permits in Liberia). The Forestry Training Institute (FTI) revealed as an important partner during the project. A collaboration was initiated, and FTI provided assistance in communication with stakeholders in Liberia, establishing a collaboration for future developments.

CONSERVATION IMPACTS

Planned Long-Term Impacts: 3+ years (as stated in the approved proposal)

Impact Description	Impact Summary
La connaissances d'au moins 1000 espèces de plantes et 15 habitats des 21 ZCB des complexes de Lofa-Gola-Mano et des Monts Nimba sera établie ou renforcée, et, dans les 5 ZCB couvertes par des aires protégées sous gestion effective, la flore et de la végétation seront mieux connues et prises en compte dans la gestion des espaces protégés.	A total of 736 different species and infra-specific taxa were collected in the frame of this project, allowing to improve the knowledge on their morphology, distribution and ecology. The expected goal of 1,000 taxa was not achieved for two main reasons: 1) due to Covid-19, the project did not perform fieldwork in Sierra Leone, which would have allowed to study and collect different plant species. 2) ca. 1,500 herbarium specimens, over the ca. 3,800 that were collected by the project teams, still need proper identification as they could only be repatriated in Europe at the end of the project and taxonomic knowledge on the West African flora has to be improved. Due to that, identification is very time-consuming, and will be done over the next few years. This work will very likely reveal more species. Regarding habitats (or ecosystems), a total of 87 were identified within the 21 KBAs, and described in a dedicated report, publicly made available. Results have been incorporated within the website of the project, and allow for a better understanding of the KBAs currently covered by protected areas that were sampled during the project: Nimba strict nature reserve (Guinea), Ziama Biosphere reserve (Guinea), Gola National Park (Liberia), and Lake Piso National Park (Liberia).
Pour les 16 ZCB qui ne sont pour l'instant pas couvertes par une aire protégée, des données fiables de flore et d'habitat auront été générées et compilées, qui renforceront les connaissances de base permettant de mieux évaluer leur importance pour la conservation et de justifier l'éventuelle création d'une nouvelle aire protégée.	Among the KBAs targeted for sampling during this project, Wonegizi and Wologizi (Liberia), Pic de Fon, Diécké, and Mont Béro (Guinea) are currently not covered by a status of Protected Areas with effective management. Nevertheless, Wonegizi and Wologizi currently stand as proposed National Parks, and all the above-mentioned Guinean sites are Forest Reserves. A total of 1,750 herbarium collections were made in those two areas, significantly improving the knowledge on flora and habitats. Data associated are available online on the project website , and can freely be used by stakeholders and deciders to strengthen the case for creation of new PAs or improvement of existing ones.

Planned Short-Term Impacts: 1 to 3 years (as stated in the approved proposal)

Impact Description	Impact Summary
Environ 150 espèces de plantes menacées seront évaluées selon les Catégories et Critères de la Liste Rouge et soumises à l'UICN, et au moins 10 habitats menacés seront identifiés et	We conducted 150 assessments of plants using the IUCN Red List Categories and Criteria. In the end, 122 are considered threatened and 28 are not threatened (NT or LC). Currently, 59 assessments are integrated on the Species Information Service

Impact Description	Impact Summary
décrits, ce qui permettra de renforcer l'efficacité des mesures de conservation.	(SIS) of the IUCN Red List and 26 of which have been published on the Red List website in the last update (21st July 2022). The 92 other assessments should be considered as still preliminary and are available on the project website. They will be slowly published on the Red List as part as the work of the West Africa Red List authority. Moreover, 87 ecosystems were identified and 30 of which were assessed as threatened according to the Red List of Ecosystems (Bland et al. 2015) and 10 of them are described on the project website.
L'analyse des 21 ZCB des deux complexes sera mise à jour en prenant en compte les données de flore et d'habitats compilées et collectées lors de ce projet. Une discussion sur la pertinence des ZCB existantes sera fournie, permettant de mettre à jour si besoin leurs limites, d'identifier des priorités de conservation et de renforcer l'efficacité des mesures dans ces sites. De nouvelles ZCB seront éventuellement suggérées.	A table summarizing the KBA analysis for the 21 sites using ecosystemic (habitats) data was produced by the project and presented in a dedicated report (http://rgdoi.net/10.13140/RG.2.2.17934.89924). A similar table using species data was also produced, and is presented in Annex. In addition, the process of submitting the KBA updating forms revealed more complex than initially thought. Nevertheless, discussions with the KBA secretariat was initiated, and project members participated in establishing the Guinean KBA NCG, and will continue working with the NCG to prepare and submit KBA forms. Up to now, three KBAs are primarily targeted for updating, according to the priorities defined by the Guinean NCG. In Liberia, the establishment of a NCG is desirable to be able to submit proposed updates of existing KBAs.
Au moins 150 espèces de plantes menacées, et 10 habitats menacés seront présentés sur le site web développé par le projet, qui regroupera toutes les données disponibles les concernant, et sera accessible à tous. Ceci permettra la diffusion optimale des informations auprès des acteurs locaux, des décideurs, des financeurs, et des institutions scientifiques.	150 plant assessments using the IUCN Red List categories and criteria are available on the Tropicos website (http://legacy.tropicos.org/Project/Threatened_Plants_LGMN). Information on their life history, phenology, ecology and habitat, and distribution, are compiled. In the end, 122 are considered threatened and 28 non-threatened (preliminary analyses had assessed them as threatened but the data compilation allowed them to refine their status). Ten threatened habitats according to the Red List of Ecosystems, among the 87 different ecosystems identified by the project, are described in detail.

Unexpected impacts (positive or negative)?

During the implementation of the project, a new partner was identified: the Forestry Training Institute of Liberia (FTI). This institution, based in Tubmanburg (north-west of Monrovia), shared its interest in re-establishing a National Herbarium in Liberia, that was unfortunately lost during the civil war. MBG and its Guinean partner SERG started to provide technical assistance in the re-establishment of the National Herbarium. At the end of the project, a second delivery meeting was held at FTI in Liberia, where the results of the project were presented to local Liberian stakeholders. Along with this event also occurred the official opening of the new Herbarium, where the Guinean project team deposited the

first collection of the new herbarium, the 756 herbarium duplicates collected in the frame of this project. The re-establishment of a new Liberian National Herbarium was not a goal of this project, and was unexpected. Nevertheless, this project directly contributed to make it happen.
In addition, Bruno Senterre and Ehoarn Bidault (project PI) were solicited to provide a training on KBA in Conakry, Guinea, to future members of the Guinean KBA national coordination group (NCG). This NCG was created in February 2022 at the end of the training, and include members of the civil society, Guinean NGOs and officials, as well as B. Senterre and E. Bidault.
A collaboration was also established between us and the implementation team of the CEPF-funded project "Identification and Validation of West African Freshwater Key Biodiversity Areas". The project PI E. Bidault provided help in reviewing 15 IUCN Red List assessments and ensure as much data sharing as possible, considering the different timelines of both projects.

PROJECT RESULTS/DELIVERABLES

Overall results of the project:
The forests of West Africa are among the most threatened landscapes of the continent. The Lofa-Gola-Mano and Nimba complexes hold together a significant portion of these forests, but are under current threat from habitat destruction due to deforestation for crops, wood harvesting, and industrial projects. Within the two complexes, 21 Key Biodiversity Areas (KBA) have been designated, but mainly on the basis of faunistic data. Flora and vegetation were rarely taken into account in the KBA analysis, moreover, data availability is heterogeneous among the sites. Some are relatively well-known (Nimba Mountains, Simandou range), many others are almost devoid of any botanical data. The goals of this project were to train a local team of botanists (in both Liberia and Guinea), to harmonize methods of fieldwork between the two countries, to start addressing the gaps in flora and vegetation knowledge within the complexes, to identify the threatened components of flora and vegetation through species and ecosystem Red Listing, and to provide an updated KBA analysis for the 21 sites of the two complexes.
The results can be summarized as follows: 1. The flora and vegetation of the two complexes are much better known, due to 3 field campaigns in Liberia and Guinea involving international partners, and 5 field campaigns performed by the Guinean implementation team, which allowed the gathering of more than 3,800 collection numbers in 2 to 5 duplicates (1732 in Guinea, and 2082 in Liberia, which represents a 10% increase of the total number of collections known from this country). A total of 63 vegetation transects, at 9 different sites, were made, allowing for a better understanding of the forests diversity, and tree species distribution. In addition, 493 living orchids are currently cultivated at the orchid shadehouse of Sérédou, a by-product of the project. All those collections led to the gathering of 5,610 photographs linked to vouchers, documenting a significant proportion of the flora, and now publicly available on Tropicos, along with all data associated with those collections. The identification of this material is still ongoing, involving international expertise, which will allow to prepare online checklists for the two complexes. In addition, 87 ecosystems were identified throughout the complexes, based on available literature on habitats, vegetation mapping model and ground-truthing approach. The ecosystems and the method used to define them are described in Bruno Senterre's report, which was published online (Senterre et al. 2020). 2. The threatened components of the flora and vegetation were identified. We gathered all known floristic datasets that were available for the two complexes, including data available on GBIF, the Liberian flora dataset, and the RainBIO dataset, in order to identify 204 potentially threatened species using the ConR script (Dauby et al. 2017). A total of 150 species were then assessed against the Categories and Criteria of the IUCN Red List, among which 3 were assessed as Critically Endangered (CR), 61 as

Endangered (EN), and 58 as Vulnerable (VU). All threatened species are presented and detailed on the dedicated website. Ecosystem Red Listing revealed 30 threatened ecosystems, and 10 of them are described on the project website. 3. Two technicians and two students were trained in Guinea, as well as two technicians in Liberia to perform field work, gather high quality herbarium material and associated data, manage herbarium specimens, perform forest transects, and recognize plants. One of the Guinean students is currently finishing his Master's degree in Conakry, and one Liberian technician is now hired at the refurbished Liberia National Herbarium. Among the 6 trainees, two are women. 4. The data generated by the project were used for a KBA analysis on all 21 sites concerned, including flora and ecosystems data. The KBA analysis with ecosystemic data was published online (Senterre et al. 2020), and the KBA analysis with flora data was submitted to the newly created Guinean KBA National Coordination Group. Follow-up will be provided by the project PI to ensure those results are taken into account and published on the World Database for KBAs. 5. Long-term local capacities were strengthened: the project has indirectly resulted in the re-establishment of a National Herbarium in Liberia, thanks to the collaborative efforts of Liberia's Forestry Training Institute (FTI, in Tubmanburg), and duplicates for all project collections made in Liberia were deposited at the herbarium at the end of the project. In addition, Ehoarn Bidault and Bruno Senterre have coordinated a KBA training in Conakry in order to create the Guinean KBA National Coordination Group. Finally, the Herbarium of Sérédou, Guinea, was reinforced by the training of 4 students and technicians, who are now staff of the institution. Both Guinean and Liberian institutions have received technical support from the project to strengthen their ability to perform fieldwork. The results of the project were presented to stakeholders during two restitution meetings, held in Sérédou, Guinea, and Tubmanburg, Liberia. The powerpoint presentations containing the overall results are provided as annex.

Results for each deliverable:

Component		Deliverable		
#	**Description**	**#**	**Description**	**Results for Deliverable**
1.0	Identification des espèces de plantes et des habitats menacés.	1.1	Mise en place d'une base de données d'occurrences d'espèces de plantes des deux complexes.	A database of all accessible and databased records for all the known species of each site, has been generated. This database has served as a basis for the assessment of potentially threatened species following the IUCN Red List Categories and Criteria. This database has been enriched with records from several herbaria institutions as well as records generated from the performed fieldwork. An integration of all records from the GBIF database has been made, to increase the representativity of our database. The database has been refined during the process of preparing Red List assessments. Selected cleaned records were made freely available online on Tropicos, MBG's database.
1.0	Identification des espèces de plantes et des habitats menacés.	1.2	Revue de la littérature sous forme d'un rapport bibliographique et d'une bibliothèque en ligne.	A review of the available literature has been performed during the initial gap analysis, and presented in a bibliographical report and gap analysis as a powerpoint presentation during the launch meeting. A Zotero online library (https://www.zotero.org/groups/2353438/cepf_waf_library) was created and now contains 270 references.
1.0	Identification des espèces de plantes et des habitats menacés.	1.3	Tableau récapitulatif des statuts préliminaires des espèces selon les Catégories et le Critère B de la Liste Rouge de l'UICN.	Please see this summary table in the supplementary materials.

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
1.0	Identification des espèces de plantes et des habitats menacés.	1.4	Tableau récapitulatif des habitats potentiellement menacés des deux complexes.	Please see this summary table in the supplementary materials.
1.0	Identification des espèces de plantes et des habitats menacés.	1.5	Tableau récapitulatif des ZCB des deux complexes et analyse de leur niveau de connaissances sur la flore et les habitats	Two different tables were created; one for floristic data, one for ecosystemic data. Please see them in the supplementary materials. They currently serve as basis for preparing the KBA updating forms.
2.0	Caractérisation des habitats et de la distribution des espèces menacées.	2.1	Cartes et fiches descriptives de chaque espèce menacée et de chaque habitat potentiellement menacé.	150 plant assessments using the IUCN Red List categories and criteria are available on the Tropicos website. Information on their life history, phenology, ecology and habitat, and distribution, are compiled. Ten threatened habitats according to the Red List of Ecosystems are described in detail.
3.0	Red Listing des espèces menacées.	3.1	Complétion de la base de données TROPICOS concernant les espèces menacées. (output : liste des nouvelles données incluses dans TROPICOS).	The TROPICOS database has been updated to include data generated throughout the project. The list of newly incorporated data is available in supplementary materials.
3.0	Red Listing des espèces menacées.	3.2	Évaluations des statuts de conservation selon les critères de l'UICN. (output : liste des espèces soumises au Species Information System Toolkit de l'UICN)	150 plant species were assessed during the project, including 26 that were submitted to the IUCN Species Information System (please see the list of those in supplementary materials).
4.0	Réévaluation des Zones Clés de Biodiversité.	4.1	Rapport sur les évaluations des ZCB ; la pertinence du réseau de ZCB et d'aires	A KBA analysis was proposed in Bruno Senterre's report, using ecosystemic data (see supplementary materials). A KBA analysis for

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
			protégées dans les deux complexes ; et des cartes de chaque ZCB.	flora was also produced (see supplementary material), and was provided to the Guinean KBA NCG.
5.0	Renforcement des capacités.	5.1	Deux botanistes guinéens, et deux botanistes du Liberia formés à la collecte de données de flore et d'habitats. (output : partie dédiée dans le rapport final d'activité)	Two botanists from Liberia, as well as 4 botanists from Guinea were trained to collect species, vegetation and ecosystem data. They have been included in all the fieldwork activities, as far as possible.
5.0	Renforcement des capacités.	5.2	Atelier de formation au Red Listing (output : partie dédiée dans le rapport final d'activité)	A training for two of the 4 Guinean botanists was to be delivered in Belgium by T. Stévart and E. Bidault in September 2020. Nevertheless, due to the sanitary situation and the ban on travels between Europe and many African countries, the training could not be held, and will not happen. A first introduction to the IUCN Red List has been provided by PI Ehoarn Bidault during the delivery meetings in February 2022, in Conakry and Sérédou.
5.0	Renforcement des capacités.	5.3	Deux étudiant(e)s guinéens encadrés lors du projet. (output : partie dédiée dans le rapport final d'activité)	Two of the 4 Guinean botanists are students, and has been trained throughout the duration of the project, one focusing on species, the other one on habitats. One of them (Mohamed Diabaté) is expected to obtain his masters degree in 2022.
5.0	Renforcement des capacités.	5.4	Dépôt d'un double de chaque récolte botanique dans une institution de référence au Liberia en	A duplicate for all botanical records was made during field activities and was deposited in the reference herbarium for the sub-region, in Sérédou. An additional duplicate, if possible,

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
			Guinée. (output : liste des échantillons déposés)	was also made to be deposited in the new national herbarium of Liberia, that was established in February 2022.
5.0	Renforcement des capacités.	5.5	Création d'une ombrière à Sérédou par le MBG, sur fond propre. (output : partie dédiée dans le rapport final d'activité)	A shadehouse for Orchid study and conservation has been built during the first main field trip in September 2019. It is currently being monitored and enriched by the local team at Sérédou. It gives visibility to the activities undertaken by the local partner in Sérédou, and has been the object of an official opening during the delivery meeting in February 2022, in order to participate in presenting the outcomes of the project.
6.0	Dissémination des données et résultats.	6.1	Site web présentant les informations sur les plantes et les habitats menacés des deux complexes.	The website aiming at presenting the informations on plant species and habitats for the two complexes has been created in July and August 2019. It has been regularly updated and enriched with the descriptive sheets for threatened species and habitats.
6.0	Dissémination des données et résultats.	6.2	Bibliothèque en ligne regroupant toutes la littérature étudiée et générée lors du projet.	A Zotero online library was created and now contains 270 references. It will continue to be updated and enriched beyond the project.
6.0	Dissémination des données et résultats.	6.3	Posters et brochures sur les ZCB des deux complexes.	One poster presenting the project was created, and brochures were prepared, examples can be found in supplementary materials.
6.0	Dissémination des données et résultats.	6.4	Articles scientifiques sur la flore et la végétation des deux complexes.	Checklists of plant species were prepared and made available on the website. Description of new species are being prepared, but overcome the timeframe of the project. An article

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
				describing the method of assessing the threatened ecosystems was published in July 2021 (see supplementary materials). A report describing the ecosystems of the project area has been shared to the public on ResearchGate.
6.0	Dissémination des données et résultats.	6.5	Transfert des acquis et objectifs aux parties prenantes et acteurs de la conservation (output : partie dédiée dans le rapport final d'activité)	The delivery meeting was held in February 2022, in both Sérédou (Guinea), and Tubmanburg (Liberia). Results of the project were presented to stakeholders in the shape of a powerpoint presentation (see supplementary materials).
7.0	Gestion et suivi de la conformité du projet	7.1	Augmentation de la prise en compte des problématiques de genre par le MBG, sur base de l'indicateur Gender Tracking Tool, mesuré au début et à la fin du projet.	Women are being included more regularly during fieldwork and herbarium activities both in Guinea and Liberia. Two women have been hired as botanists for the duration of the project, and were trained in order to ensure as far as possible the continuity of their activities. They are expected to play an important role in their respective institutions and their future activities. Philomena Yarwoah, who was trained in the frame of the project, was hired as the main technician of the new National Herbarium of Liberia.
7.0	Gestion et suivi de la conformité du projet	7.2	Plan de mobilisation des parties prenantes implémenté et suivi, comme prouvé dans les rapports programmatiques soumis en janvier et juillet de chaque année au CEPF.	The initial stakeholder management plan is given in supplementary materials. All supporting documents have been made available through the project website (including the newsletters). The KBA form with ecosystemic data has been sent to the KBA secretary and shared with the newly created

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
				Guinean NCG. Training documents corresponding to 4 training sessions held at Sérédou and Tubmanburg were shared upon requests. The launch meeting was organized in September 2019 and objectives were presented. The restitution meetings were organized in Sérédou and Tubmanburg in February 2022 and the powerpoint presenting the results were shared upon requests and made available on the website.
7.0	Gestion et suivi de la conformité du projet	7.3	Rapports financiers et programmatiques soumis en ligne à temps et de façon précise.	Financial reports are being prepared by the PI, and validated by the PI's supervisor as well the MBG accountant prior to submission to CEPF.
7.0	Gestion et suivi de la conformité du projet	7.4	Les impacts de projet sont suivis et documentés dans le Rapport Final soumis en ligne au CEPF.	All impacts have been documented in the various reports submitted to the CEPF and in the final report.
7.0	Gestion et suivi de la conformité du projet	7.5	Les supports de communication sont partagés avec l'Équipe Régionale d'Implémentation, par email ou tout autre moyen.	3 newsletters have been prepared by the project PI, that contain all the news from the local and international implementation team of this project. They were shared among partners, local stakeholders, institutional partners, and the Regional Implementation Team.

Tools, products or methodologies that resulted from the project or contributed to the results:
The methodology to collect ecosystemic data and the rationale behind it was refined during this project, and presented in a peer-reviewed article: https://doi.org/10.1016/j.ecocom.2021.100945
The GIS data linked to the ecosystemic part of the project was made publicly available online, on Earth Engine: https://code.earthengine.google.com/?asset=users/bsenterre/waf2020

We also made publicly available an Earth Engine script that gives the coloring palettes and legends for the created maps, and that shows how to manipulate the main image output and components: https://code.earthengine.google.com/?scriptPath=users%2Fbsenterre%2FSenterre_2020_waf%3Awaf2020_maps

PORTFOLIO INDICATORS

Portfolio Indicator Number	Portfolio Indicator Description	Expected Numerical Contribution	Expected Contribution Description	Actual Numerical Contribution	Actual Contribution Description
3.2	Number of inventory of Key Biodiversity Areas in the hotspot is updated to fill critical information gaps, particularly with regard to the Lower Guinean Forests subregion, and freshwater ecosystems.	21	L'analyse des 21 ZCB des 2 complexes sera mise à jour en prenant en compte les données de flore et d'habitats compilées et collectées lors de ce projet. Une discussion sur la pertinence des ZCB existantes sera fournie.	21	All KBAs were targeted by the KBA update analysis performed on the basis of ecosystemic data. Freshwater. The KBA number fw5 (Lower reaches of St. Paul River) was specifically targeted for sampling of freshwater plant species (Podostemaceae), which represents usually threatened species and a critical gap of knowledge in West Africa, and in Liberia in particular.
3.3	Number of species from poorly assessed taxonomic groups with their global conservation status updated or assessed for the first time on the IUCN Red List (target: at least 100).	150	150 espèces de plantes menacées seront évaluées selon les Catégories et Critères de la Liste Rouge et soumises à l'UICN, et au moins 10 habitats menacés seront identifiés et décrits, ce qui permettra de	151	Among the 59 assessments that are integrated on the Species Information Service of the IUCN Red List 4 are poorly assessed species and 55 are first assessed. Among the 92 preliminary assessments 29 are poorly assessed species and 63 are first assessed.

Portfolio Indicator Number	Portfolio Indicator Description	Expected Numerical Contribution	Expected Contribution Description	Actual Numerical Contribution	Actual Contribution Description
			renforcer l'efficacité des mesures de conservation.		
5a	Number of networks are formed among civil society, government and private sector actors to facilitate capacity building, avoid duplication of effort and maximize impact (target: At least 15).			1	FTI-USFS-MBG Partnership was created to reestablish the National Herbarium of Liberia, The Forestry Training Institute harbors the Herbarium and provides salary for a technician (who was trained by the project). US Forest Service provides financial support to purchase supplies and material for the Herbarium. Missouri Botanical Garden provides training, expertise and technical advice, and seeks for activities to be implemented by the FTI teams in-country.
2.2	Number of key biodiversity areas with locally-relevant information on natural ecosystems generated and used to influence political and economic decision-making in favor of their conservation (target: for at least 20).	16	Pour les 16 ZCB qui ne sont pas couvertes par une aire protégée, des données fiables de flore et d'habitat auront été générées et compilées, qui renforceront les connaissances de base permettant de mieux évaluer leur importance pour la conservation.	16	All KBAs were targeted by the KBA update analysis performed on the basis of ecosystemic data, including the 16 not covered by an effective PA, which allowed to include new locally-relevant information. Nevertheless, only 5 of the 16 KBAs not covered by an effective PA showed an increase in floristic data, as they were sampled for flora during the implementation

Portfolio Indicator Number	Portfolio Indicator Description	Expected Numerical Contribution	Expected Contribution Description	Actual Numerical Contribution	Actual Contribution Description
					of the project. Already existing floristic data was mobilized and made available through the project website for all KBAs not directly sampled by the project.

GLOBAL INDICATORS

Protected Areas

Protected areas that have been created and/or expanded as a result of the project. Protected areas may include private or community reserves, municipal or provincial parks, or other designations where biodiversity conservation is an official management goal.

Name of Protected Area	WDPA ID*	Latitude	Longitude	Country	Original Total Size (Hectares) **	New Protected Hectares ***	Year of Legal Declaration or Expansion

*World Database of Protected Areas

**If this is a new protected area, 0 should appear in this column

*** This column excludes the original total size of the protected area.

Key Biodiversity Area Management

Key Biodiversity Areas (KBAs) under improved management—where tangible results have been achieved to support conservation—as a result of the project.

KBA Name	KBA Code	Size of KBA	Number of Hectares with Improved Management

Production Landscapes

Production landscapes with strengthened management of biodiversity as a result of the project.

A production landscape is defined as a site outside a protected area where commercial agriculture, forestry or natural product exploitation occurs.

Name of Production Landscape	Latitude	Longitude	Hectares Strengthened	Intervention

Benefits to Individuals

- **Structured Training:**

Number of Men Trained	Number of Women Trained	Topics of Training
4	2	Students and botanists have been trained in 1) specimen and data gathering in the field; 2) forest transects; 3) budget management linked to field activities; 4) supplies management and planning field trips; 5) data management and specimen curation at the herbarium; 6) botanical knowledge; 7) foreign langages (Liberians started to learn French, Guineans started to learn English); 8) basic Red List training; 9) notions in KBA

- **Cash Benefits:**

Number of Men – Cash Benefits	Number of Women – Cash Benefits	Description of Benefits
1	1	Philomena Yarwoah, the Liberian woman who was trained during the project, has received ca. 500$ for ten days of fieldwork (botanical inventories) conducted in Liberia outside the frame of the project, but linked

Number of Men – Cash Benefits	Number of Women – Cash Benefits	Description of Benefits
		with capacities and knowledge acquired during the project. Ezekiel Gaye, the Liberian student who was also trained during the project, has received ca. 300$ for the same reasons.

Benefits to Communities

View the **characteristics** column below with the following corresponding codes:	View the **benefits** column below with the following corresponding codes:
1- Small Landowners	a. Increased Access to Clean Water
2- Subsistence Economy	b. Increased Food Security
3- Indigenous/ Ethnic Peoples	c. Increased Access to Energy
4- Pastoralists / Nomadic Peoples	d. Increased Access to Public Services
5- Recent Migrants	e. Increased Resilience to Climate Change
6- Urban Communities	f. Improved Land Tenure
7- Other	g. Improved Use of Traditional Knowledge
	h. Improved Decision-Making
	i. Improved Access to Ecosystem Services

Community Name	**Community Characteristics**							**Type of Benefit**								**Country**	**Number of Males Benefitting**	**Number of Females Benefitting**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**			

Characteristics of "Other" Communities:

Policies, Laws and Regulations

View the **topics** column below with the following corresponding codes:			
A- Agriculture	E- Energy	I- Planning/Zoning	M- Tourism
B- Climate	F- Fisheries	J- Pollution	N- Transportation
C- Ecosystem Management	G- Forestry	K- Protected Areas	O- Wildlife Trade
D- Education	H- Mining and Quarrying	L- Species Protection	P- Other

No.	**Name of Law**	**Scope**	**Topics**														
			A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**

"Other" Topics Addressed by the Policy, Law or Regulation:

No.	Country/ Countries	Date Enacted/ Amended	Expected impact	Action Performed to Achieve the Enactment/ Amendment

Companies Adopting Biodiversity-friendly Practices

A company is defined as a for-profit business entity. A biodiversity-friendly practice is one that conserves or uses natural resources in a sustainable manner.

Name of Company	Description of Biodiversity-Friendly Practice	Country/Countries where Practice was Adopted

Networks and Partnerships

Networks/partnerships should have some lasting benefit beyond immediate project implementation. Informal networks/partnerships are acceptable.

Name of Network/Partnership	Year Established	Country/ Countries	Established by Project?	Purpose
FTI-USFS-MBG Partnership to reestablish the National Herbarium of Liberia	2022	Liberia;United States	Yes	This partnership (yet to be formalized by a MOU) was established in February 2022 to provide a frame for the re-establishment of the National Herbarium of Liberia. This initiative is directly linked to the project, even though the collaboration will go beyond the

Name of Network/Partnership	Year Established	Country/ Countries	Established by Project?	Purpose
				project. The Forestry Training Institute harbors the Herbarium and provides salary for a technician (who was trained by the project). US Forest Service provides financial support to purchase supplies and material for the Herbarium. Missouri Botanical Garden provides training, expertise and technical advice, and seeks for activities to be implemented by the FTI teams in-country.

Sustainable Financing

Sustainable financing mechanisms generate funding for the long-term (generally five or more years). These include, but are not limited to, conservation trust funds, debt-for-nature swaps, payment for ecosystem services (PES) schemes, and other revenue, fee or tax schemes that generate long-term funding for conservation.

Name of Mechanism	Purpose	Date Established	Description	Country/ Countries	Project Intervention	Delivery of Funds?

Globally Threatened Species

Globally threatened species (CR, EN, VU) on the IUCN Red List of Threatened Species, benefitting from the project.

Genus	Species	Common Name (English)	Status	Intervention	Population Trend at Site

LESSONS LEARNED

A pluri-annual project such as this one needs a strong collaboration between various partners. We have been able to build on the past experience of the Guinean team in Liberia, and use this experience to strengthen the regional cooperation, despite the challenges. The langage barrier has not been too much of a problem, because Philomena Yarwoah, one of the Liberian trainee, speaks both english and french. Unfortunately, due to Covid, Marburg and the military coup in Guinea, the border between the two countries remained closed for several months, which did not allow for as much south-south collaboration as expected. Nevertheless, the Liberian trainees have been able to travel 3 times to Guinea to perform fieldwork and be trained in herbarium specimen and data management. The delivery meeting also saw the FTI Managing Director come to the Sérédou Herbarium and witness what could be achieved in Liberia in terms of the refurbishment of a Liberian National Herbarium. This had a strong impact on the motivation of both teams, and allowed acquisition of high quality data in remote places, strongly increasing the knowledge on the plant distribution, especially in Liberia. The taxonomical expertise necessary to identify the threatened plant species of this region revealed challenging. The project coordinator Ehoarn Bidault is used to work in Central Africa, where taxonomical knowledge is more advanced and more easily available (through the Flore du Gabon, Flore du Cameroun and Flore d'Afrique Centrale series notably), whereas only few bibliographical references are available. Moreover, the Covid pandemic greatly impacted our abilities to visit other botanical institutions in Europe to consult the reference collections, which significantly delayed the identification process of the collected material. Without the pandemic, more threatened species could have been identified, consequently strengthening the KBA analysis, that would not have been delayed as we experienced during this project.

SUSTAINABILITY/REPLICATION

As previously mentioned, two technicians and two students were trained in Guinea, as well as two technicians in Liberia to perform field work, gather high quality herbarium material and associated data, manage herbarium specimens, perform forest transects, and recognize plants. A key outcome is that one Liberian technician is now hired at the refurbished Liberia National Herbarium, while the Herbarium of Sérédou, Guinea, was reinforced by the training of 4 students and technicians, who are now staff of the institution. Both Guinean and Liberian institutions have received technical support from the project to strengthen their ability to perform fieldwork.
Also, a duplicate for all botanical records was collected during field activities and deposited in the reference herbarium for the sub-region, in Sérédou and, whenever possible, in the new national herbarium of Liberia. This provides an additional security for the knowledge which was gathered during the project, while providing local access to these records.

ENVIRONMENTAL AND SOCIAL SAFEGUARDS/STANDARDS

The project had to face multiple challenges during its implementation. The Covid pandemic resulted in a shutdown of all activities during two months. After the first lockdown, activities slowly recovered, but had to take into account travel limitations and safety issues. The project coordinator ensured that all Guinean members were vaccinated as soon as vaccines were made available, and that health and safety measures were observed during fieldwork and herbarium work. Travel of Guineans to Europe were consequently made almost

impossible, which led to the cancellation of the IUCN Red Listing training initially planned to be provided to two Guinean student and technician in Brussels. The project coordinator decided to provide a lighter version of the training in Guinea, as a replacement. In addition, since the border between Guinea and Liberia were closed, activities were shut down in Liberia for several months, and field work mostly occurred in Guinea. In July 2021, a Marburg epidemic was revealed in Guinea, resulting in another shutdown of all activities until September 2021, and the official end of the epidemic. Nevertheless, in September 2021, a military coup took place in Guinea. Activities were, again, shut down for several weeks, and the border between Guinea and Liberia was closed. The project coordinator, by liaising with the local coordinator in Guinea, ensured that travel within Guinea was safe before re-initiating activities. Nevertheless, the border remained closed for several months, which prevented the Liberian members of the project to work along the Guineans during field activities. In addition, international travel to Guinea was made nearly impossible for several months, which has forced the project coordinator to avoid visiting the country during the last international field trip (October 2021), and focus on Liberia. Training initially planned to be given in Guinea had to be delayed.

ADDITIONAL COMMENTS/RECOMMENDATIONS

We would like to thank CEPF for providing us the opportunity to adapt our timeline, and extend, at no cost, the project.

ADDITIONAL FUNDING

Total Amount of Additional Funding Actually Secured (USD)	$42,550.00
Breakdown of Additional Funding	The salary of our local coordinator in Guinea, Moussa Diabate, was entirely covered by IRAG ($275 per month at 50% for 34 months, totaling $9350). Porter P. Lowry, head of the Africa & Madagascar Program of MBG, provided support for administrative and strategic questions, including 10 days of his time at $675 (totaling $6750). At Brussels' Free University (BRLU herbarium) and MBG, technicians have managed collections generated by the project (15 days at $140 for MBG and 15 days at $250 at BRLU, totaling $5850). A shadehouse was built at IRAG, entirely covered by MBG. The cost of the structure was $4000. Tariq Stévart trained the IRAG staff tasked with maintaining the shadehouse. All the salaries linked with this activity were covered by MBG (7 days of TS time, totaling $2500, and salary of a IRAG technician, at $150 per month for 18 months, totaling $2700). Olivier Lachenaud, researcher at Meise Botanical Garden (Belgium), has spent ca. 1 month of time identifying the collections generated by the project. His cost is estimated at $6900.

	US Forest Service has provided financial support to assist the re-establishment of the National Herbarium of Liberia, which was beneficial to the project (ca. $3000). Project PI Ehoarn Bidault has spent a week providing technical assistance to the re-establishment of the National Herbarium of Liberia, outside of project time (ca. $1500).

INFORMATION SHARING AND CEPF POLICY

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned and results. For more information about this project, you may contact the organization and/or individual listed below.

Missouri Botanical Garden, Central African program, mbg@mobot.org