

## Interim Report II

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<b>Project title</b>	<b>Development of agropastoral alternatives to promote the propagation of <i>Azelia africana</i> in Benin, a species threatened with extinction</b>

### 1. Introduction

During our first Rufford Small Grant, we found that more than half of the *A. africana* trees located in suitable habitats, particularly in the Ouémé Supérieur Gazetted Forest (OSGF), were completely pruned, especially the large diameter individuals. This practice led to a reduction in seed production and consequently a decline in seedling density. Indeed, this protected area, which is highly suitable for the present and future conservation of *A. africana* in Benin, is located in the Sudanian–Guinean zone, a region that hosts transhumant herds from Burkina Faso, Niger, and Nigeria during the dry season (Koutchoro et al., 2022). These transhumant animals create overgrazing and compete with local livestock for fodder resources. The low productivity of pastures during the dry season makes woody fodder essential for the survival of these transhumant animals because of its high protein, energy, and mineral content (Sidi Imorou et al., 2016; Honvou et al., 2019). This practice, combined with illegal logging, has led to a reduction of at least thirty percent of the species' population in recent years (IUCN, 2019). However, one question remains: what alternatives exist for the sustainable conservation of *A. africana* in the context of pastoral livestock systems? In other words, what agricultural innovations can meet the fodder needs for animal feeding during the dry season while reducing tree pruning in protected areas?

The project "*Development of agropastoral alternatives to promote the propagation of *Azelia africana* in Benin, a species threatened with extinction*", funded by The Rufford Foundation, aims to (i) train local communities on advanced nursery production and planting techniques for *A. africana*, (ii) develop biomass production techniques in nurseries using *A. africana*, (iii) implement awareness and environmental education programs focused on the conservation of *A. africana* and its habitats, and (iv) carry out reforestation actions in favorable habitats to increase the density of *A. africana* and ensure its sustainability. This second interim report presents the activities carried out to achieve objectives (i), (iii), and (iv).

### 2. Methodology

#### 2.1. Awareness and training of local communities

We organized awareness sessions in villages located near the OSGF (Boko, Bétérou, Oubérou, Sinaou (1 et 2), Kika (1 et 2)). Additionally, educational activities focused on the conservation of endangered species and their habitats were conducted for schoolchildren in each selected village. During the meetings, posters (Fig. 1) and T-shirts with key messages were used to raise awareness about the conservation of *A. africana* and its habitats, as these materials help attract attention and communicate messages more effectively (Savage et al., 2010; Littlewood et al., 2020).

Following the awareness sessions, we formed a volunteer group in each village composed of farmers and herders. Members of these groups were trained in nursery production techniques and in the planting of endangered species (*A. africana* and *Khaya senegalensis*), as well as in assisted natural regeneration. In collaboration with the volunteers, a secure site was established in each village to apply the skills gained (Fig. 2).

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Fig. 1. Poster used for awareness-raising and environmental education.



Fig. 2. Site for applying nursery production techniques for threatened species established in the village of Boko.

## 2.2. Reforestation and Transplanting

In partnership with the OSGF managers and based on the land use map, degraded habitats were identified, and seedlings of *A. africana* and *K. senegalensis* were planted in mixed stands, spaced 4 m × 4 m apart. Additionally, plantations of the two species were established in the fields of volunteer farmers at a density of 50 trees per hectare. Transplanting was carried out in the Baka biodiversity conservation sites (BBCS, University of Parakou), and follow-up activities were conducted.

### 3. Key findings

#### 3.1. Awareness and training of local communities

We organized five awareness sessions in five villages (Boko, Bétérou, Oubérou, Sinaou (1 et 2), Kika (1 et 2)), bringing together a large number of participants from different stakeholder groups (Fig. 3, 4, and 5), with an average participation of 30 people per village. Educational activities conducted in schools reached all students in the targeted establishments (Fig. 6, 7 and 8), and more than 1,500 schoolchildren were sensitized to the conservation of endangered species and their habitats. The use of appropriate communication materials, such as posters (Fig. 1) and message bearing T-shirts, strengthened the understanding of conservation messages, with an adoption rate estimated at more than eighty percent during participatory evaluations conducted at the end of the sessions.

The inclusive approach adopted to involve nomadic and transhumant herders helped reduce tensions related to access to natural resources. At least one group of mobile pastoralists per village was reached through itinerant awareness activities (Fig. 8) and radio broadcasts in local languages, which increased the outreach of the project.

The creation of volunteer groups in each village resulted in the training of at least ten members per locality in seedling production techniques, planting of threatened species, and assisted natural regeneration (Fig. 9 and 10). These groups established secure sites (Fig. 2) where more than 5,000 seedlings of *A. africana* and *K. senegalensis* were produced and planted.



Fig. 3. Awareness raising with local communities 1.



Fig. 4. Awareness raising with local communities one 2.



Fig. 5. Awareness raising with local communities 3.



**Fig.6.** Environmental education 1.

**Fig. 7.** Environmental education 2.

**Fig. 8.** Environmental education 3.



**Fig. 9.** Training of local communities 1.



Fig. 10. Training of local communities 2.

### 3.2. Reforestation and Transplanting

In partnership with OSGF managers and local communities, 1,800 seedlings of *A. africana* and *K. senegalensis* were planted in mixed stands in degraded habitats (Fig. 13). Additionally, more than 3,200 seedlings of both species were planted in the fields of farmers surrounding the forest (Fig. 12). 100 seedlings were also planted in schools (Fig. 14 and 15) and in the yards of nearby households (Fig. 11). Follow up and maintenance of these seedlings are currently ensured by the NGOs *Numérique, Education et Développement Durable* (NEDD NGO), SOS Svane, the *Centre d'Études et de Recherches pour la Promotion des Initiatives Communautaires* (CERPIC NGO), and the Forest Office of Borgou. The transplanting of 360 seedlings of *A. africana* was also carried out in the biodiversity conservation sites of the University of Parakou.



**Fig. 11.** Planting in household yards.



**Fig. 12.** Planting in agroforestry systems.



**Fig. 13.** Planting in degraded forest habitats.



**Fig. 14.** Planting in schools 1.

**Fig. 15.** Planting in schools 2.

#### **4. Conclusion**

Awareness and training of local communities strengthened the understanding of endangered species conservation and their habitats, reaching more than fifteen hundred students and numerous local stakeholders, including nomadic and transhumant herders. The establishment of volunteer groups and the training of their members contributed to ensuring the sustainability of planting initiatives and assisted natural regeneration, with more than five thousand seedlings produced and planted in secure sites.

The activities implemented under objectives (i), (iii), and (iv) of the project therefore helped strengthen community participation in conservation, promote the harmonious management of shared natural resources, and restore biodiversity in the OSGF. These results demonstrate the effectiveness of the inclusive and participatory approaches adopted, which can serve as a model for similar conservation and ecological restoration initiatives.

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