Introduction

Fungi play a vital role in maintaining ecosystem health and functioning and they contribute to nutrient cycling, soil fertility, and plant symbiosis. Despite their ecological importance, fungal biodiversity in the West African region remains largely underexplored and underappreciated (Yorou and De Kesel 2011). With increasing anthropogenic pressures such as deforestation, agricultural expansion, and climate change, the risk of losing valuable fungal species and associated traditional knowledge is increasing (Bouzigues 2017). Effective conservation and sustainable management of fungal biodiversity are therefore essential to preserve ecosystem resilience and ensure the long-term food security and livelihoods of West African communities (Jacob et al. 2025). Traditional knowledge systems have historically played a critical role in the identification, use, and conservation of fungal species in West Africa. Local communities have developed rich cultural practices and ecological knowledge around fungi, often used for food, medicinal, and spiritual purposes. However, these knowledge systems are at risk of being lost due to cultural changes and lack of documentation. To address the challenges that may affect the conservation of wild edible mushrooms, a co-creation approach, facilitating the bridging of traditional knowledge and the conservation of fungal diversity, is essential.

Here, co-creation emphasizes collaborative decision-making, knowledge sharing, and mutual respect among all stakeholders in fungal ecosystem management. This approach not only promotes community ownership of conservation initiatives but also leverages diverse perspectives to develop sustainable solutions. This report highlights data collection efforts through 1 km long and 100 m wide transects (Yorou et al. 2001), exchanges with traditional knowledge holders to document traditional knowledge on edible mushrooms and the reforestation of degraded fungal habitats, as well as the achievements of training local communities on edible mushroom cultivation.

Survey of the most known wild edible mushrooms

Surveys were conducted in three villages around each forest: Bagre-Tamou, Dokonde, and Kota-Monongou (Kota gallery forest); Tchapeta, Koussoucoingou, and Kouaba (Koussoucoingou gallery forest); and Bassila, Aledjo, and Manigri (Bassila Forest Reserve). In each village, 30 participants were individually interviewed using fresh, mature WEM samples collected. The edibility of each species was assessed and ranked as follows: 0 = inedible, 1 = questionable, and 2 = edible. Data will be analyzed using R 4.1.2 software (R Core Team, 2021).

Lentinus squarrosulus

Cantharellus congolensis

Lactarius saponaceus

Cantharellus solidus

Photo 1. The most well-known edible species in the project region

The citation frequency was determined to identify the species most commonly used by respondents. The citation frequency (F) of a species corresponds to the ratio between the number of respondents (n) who cited the species and the total number of respondents (N).

$$F = (n \times 100) / N$$

The results show that among the edible mushroom species presented, the most widely recognized by local communities are *Lentinus squarrosulus, Cantharellus congolensis, Lactarius saponaceus* and *Cantharellus* solidus.These species appear to be the most familiar to communities, which reflects their ecological, cultural, and dietary importance in the region. Furthermore, certain species, such as *Boletus pseudoloosii* and *Amanita* spp. are consumed locally, but due to a lack of evidence and data, these species are classified as of questionable edibility by De Kesel et al. (2024)

Knowledge sharing between generations

As part of the project' s participatory approach, three focus group discussions on wild edible mushrooms (WEMs) were successfully conducted in the villages of Kota-Monongou, Koussoucoingou, and Bassila. A total of 60 participants were mobilized, including 45 young people aged 18 to 30 and 15 elders aged 50 to 90. This intergenerational exchange created a dynamic platform for mutual learning and knowledge sharing. The activity aimed to bridge the gap between traditional ecological knowledge and the perspectives of the younger generation. Through co-creation, participants shared their experiences, cultural practices, and local knowledge related to mushroom identification, seasonal availability, uses, and

threats to their habitats. Elders played a key role in transmitting indigenous knowledge, while youth contributed new ideas and enthusiasm for sustainable solutions.

Several concrete ideas emerged:

1. WEM maps: Mapping of traditional harvesting areas to facilitate the identification of forests and wetlands where WEM grows, transmitted orally by elders;

2. Recognition of edible and toxic species: This involves documenting local knowledge on the criteria for identifying safe mushrooms, often transmitted through observation and practice;

3. Harvesting calendars: Production of a fact sheet summarizing knowledge on suitable harvesting periods for the most well-known species;

4. Preservation and processing techniques: Document traditional practices for drying, preserving, and cooking WEM to facilitate sustainable use;

5. Threats to habitats and local solutions: Initiate local actions to raise awareness to reduce the causes of degradation (deforestation, agriculture, bushfires) and propose community solutions (reforestation, protection of undergrowth).

Photo 2. Training on sustainable agriculture and mushroom preservation

Nurseries and reforestation

A nursery of 3,000 *Berlinia grandiflora* and *Isoberlinia doka* plants was installed as part of this project. The plants were maintained for six months before being planted. Prior to this, degraded species were identified and the reforestation process and the concept of safe planting of seedlings was explained to the participants prior to reforestation.

Photo 3. Les espaces dégradés identifiés et reboisement

Edible mushroom production

In the villages of Kota-Monongou, Koussoucoingou, and Bassila, located near the Kota gallery forest, the Koussoucoingou gallery forest, and the Bassila forest reserve, respectively, 15 individuals per village were selected from women's groups and young edible wild mushroom pickers for this training. The mushroom cultivation training focused on two edible mushroom species: *Volvariella volvacea* and *Pleurotus ostreatus*. Locally available agricultural waste, such as rice residues, sorghum stalks, and corn cobs, was used. Participants trained in cultivation techniques were encouraged to adopt mushroom production as a complementary livelihood activity.

Photo 4. Theoretical explanation of the production of edible mushrooms

Photo 5. Training on the production of edible mushrooms

Conclusion

This project demonstrated the ecological and socio-cultural importance of wild edible mushrooms (WEM) in West Africa and underscored the relevance of integrating traditional knowledge with scientific research for effective biodiversity conservation. Through a participatory and co-creative approach, the initiative successfully engaged local communities, both youth and elders in documenting valuable knowledge about edible mushrooms, their habitats, uses, and associated threats. The identification of the most commonly known WEM species, such as *Lentinus squarrosulus* and *Cantharellus congolensis*, confirmed the communities ' deep-rooted familiarity and reliance on fungi for food and livelihoods.

The project also addressed urgent conservation needs by mapping key harvesting zones, documenting preservation techniques, and co-developing harvesting calendars. These tools not only enhance awareness but also guide sustainable management practices. The training activities on mushroom cultivation using local agricultural by-products have opened pathways for alternative income sources, particularly for women and young people. In parallel, the establishment of nurseries and reforestation of degraded areas with native species like *Berlinia*

grandiflora and *Isoberlinia doka* contributes to the restoration of habitats that support fungal biodiversity.

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