Introduction
Mount Hombori is an inaccessible tableland located south of Timbuktu (Mali). Due to the high cliffs surrounding its summit plateau, its flora has been preserved from pasture and agriculture for centuries and constitutes one of the very few untouched places of Sahel. A multidisciplinary study named Hombori Project and gathering 22 scientists (botanists, zoologists, pharmacists, a phytochemist and an historian) was conducted on Mount Hombori itself and in the neighbouring plains with the following aims:
- evaluate Mount Hombori biodiversity (list of the locally endangered species)
- understand the mechanisms of plant rarefaction in the Hombori region, by extension in the Sahel
- comparison with the flora found in the neighbouring plains
- are/were these species useful for the inhabitants of the neighbourhood of Mount Hombori?
To answer these questions, the following methodology has been used:
- botanical survey of the top of Mount Hombori
- comparison with the flora found in the neighbouring plains
- selection of the plants that commonly grow on the summit plateau of Mount Hombori and are absent/there in the plains
- ethno-botanical study (including medicinal, veterinary, technological, food and other uses) based on these selected plants.

Botanical survey of Mount Hombori
A total of 119 species were collected and identified on the top of Mount Hombori. The lack of thorny species illustrates the absence of grazing pressure. All the woody species such as Boscia salicifolia Bl. or Bombax costatum Pellegr. et Vuillet observed on the Mount Hombori plateau are rare or not present in the surrounding plains.

Following a botanical survey of Mount Hombori, a selection of 13 plants (see Table 1) commonly found on its summit plateau but rarely or not observed in its neighbourhood were shown to 15 different local traditional healers as well as aged people in the frame of a structured questionnaire.

The ethnobotanical survey
Through their responses to the questionnaire, it was found that 12 of these plants have currently, or had in the past, at least one medicinal, veterinary, technological, pastoral and food uses, with most of the plants being used for several purposes. Table 1 gives a summary of the results collected during the ethnobotanical survey.

Table 1. List of plant uses

<table>
<thead>
<tr>
<th>Plant</th>
<th>Family</th>
<th>Uses</th>
<th>Insufficiency</th>
<th>Skin irritation</th>
<th>Insufficiency (2)</th>
<th>Skin irritation (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloriosa superba</td>
<td>Asclepiadaceae</td>
<td>Food</td>
<td>Prophylaxis of cold</td>
<td>2</td>
<td>No</td>
<td>Rare</td>
</tr>
<tr>
<td>Boscia salicifolia</td>
<td>Moraceae</td>
<td>Fruits</td>
<td>Preparation of sauces</td>
<td>1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Burret (Miq.) Miq.</td>
<td>Bombaceae</td>
<td>Food for cattle</td>
<td>Bush fire</td>
<td>1</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Amorphophallus danda kobo</td>
<td>Ascorbiaceae</td>
<td>Food</td>
<td>High</td>
<td>1</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Raphionacme koum</td>
<td>Malvaceae</td>
<td>Fruits</td>
<td>Prophylaxis of cold</td>
<td>1</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td><em>S. Ellioti</em></td>
<td>Moraceae</td>
<td>Food</td>
<td>Prophylaxis of cold</td>
<td>1</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Thunbergia personata</td>
<td>Comm.</td>
<td>Prophylaxis of cold</td>
<td>Prophylaxis of cold</td>
<td>1</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Ficus cordata</td>
<td>Moraceae</td>
<td>Prophylaxis of cold</td>
<td>Prophylaxis of cold</td>
<td>1</td>
<td>Rare</td>
<td>Rare</td>
</tr>
</tbody>
</table>

Discussion of the ethnobotanical survey
A comparative data analysis of the Mount Hombori botanical survey of the ethnobotanical study performed with the help of the surrounding villages indicates that Mount Hombori is a refuge for several species that have almost totally disappeared from its plain. Most of these species have been identified as useful plants by several holders of the traditional knowledge living in the Mount Hombori area. From their answers, it can also be assessed that the majority of these endangered species were more abundant in the past in this region and that the most frequent reason of their rarification was the lack of rainfall. Interestingly, human pressure on its environment was only mentioned twice as an explanation for plant disappearance in spite of the fact that several uses of the plants were given in the same time by the interviewees. The use of woody species such as Lannea humilis, Bombax costatum, Boscia salicifolia, *Ficus* cordata for technological, medicinal and pastoral purposes could for example be partly responsible for the present scarcity of the species when compared with their relative abundance in the past.

Organisation of Project Hombori: a challenge at the interface of science and logistic
The project has requested a two-year preparation period that has included the research of a financial support, the establishment of a local collaboration team (see above) as well as the scientific, logistic and administrative planning of the expedition. The main technical challenges faced were the access of the summit plateau to scientists and their material. The north face of Mount Hombori (see above) is an impressive 800 m high rock wall of extreme climbing difficulty. Fortunately, one of its ending sides (next to the peak of the picture above) was of easier access with “only” 250 m of height. A fixed rope was installed by the team (see picture) in order to secure daily trips up to the top from the base camp located in-between Mount Hombori and the peak. Average temperature during day-time: 40-45°C, frequent sand and rain storms during night-time (one of the tents was brought back in several pieces by villagers lying down the mountain after one of these storms).

Conclusion and perspectives
This multidisciplinary study has monitored the biodiversity of Mount Hombori summit plateau and established a list of plant species that could not – or could only rarely – have been found in its surroundings. An ethnobotanical survey conducted with holders of the traditional knowledge showed that on one hand these rare plants are useful plants as most of the selected species were identified for several purposes and that on the other hand most of these plants were more abundant in the past in the Hombori area. It was also noted that local people seem to hold external factors such as lack of rainfall responsible for the rarification/extinction of these species as only a couple of reports of human activities were indeed mentioned to contribute to it. The risk of climate changes remains under investigation and will be evaluated using “time-snapshots” of reference sectors located on the top of Mount Hombori.

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