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Analysis of Socioeconomic Issues and Fire Dynamics in the Bonama Protected Forest (Lola, Guinea)

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ABSTRACT

The Bonama Protected Forest (7,580 hectares) is located in the Forested Region of Guinea. Despite its protected status, it faces anthropogenic pressures. This study analyzes the socioeconomic issues related to its management and the spatiotemporal trends in burned areas between 2023 and 2025. The methodology combines socioeconomic surveys and geospatial analyses. Semi structured interviews were conducted with 332 individuals (residents and government forestry officials). The interviews focused on forest use and the perceived causes of wildfires. The burned areas during the 2023–2024 and 2024–2025 dry seasons were mapped using Sentinel-2 imagery, with the normalized differential burn index (ΔNBR).

The accuracy of the maps was assessed using confusion matrices, which provide the overall accuracy and Cohen's Kappa coefficient. The demarcation of the forest in 2013 reportedly led to the displacement of approximately 110 Indigenous families without compensation.

However, 81.63% of respondents acknowledge the importance of this forest. Of the 556 activities cited as being carried out in the forest, 42.99% relate to cattle ranching. Local populations use 88 plant species, including 45 medicinal, 35 edible, and 8 dual-purpose species. In 2023–2024, fires affected 96.88% of the forest's area. In 2024–2025, they affected 93.22%. Moderate and high severity classes predominate. The maps achieve overall accuracies of 91.7% and 93.3%, with Kappa coefficients of 0.89 and 0.92.

In 92.37% of responses, livestock farmers were identified as responsible for the fires. This perception alone does not prove a causal link. The authors recommend integrated and tailored management of the Bonama Protected Forest. This recommendation also applies to other protected forests subject to comparable anthropogenic pressures.

Key words: protected forest; bushfires; Sentinel 2; participatory management; Guinea.

1. INTRODUCTION

In Francophone Africa, most protected forests were demarcated by the colonial administration and subsequently taken over by national governments. Their boundaries took almost no account of the land rights of local populations. For this reason, Caillault *et al.* (2026) recommend reexamining this legacy, which continues to guide policies on forest ecosystem conservation and fire management in the subregion. In Côte d'Ivoire, a study by Traoré (2019) reports that cocoa is responsible for approximately 18% of national deforestation and that 82% of new agricultural developments in the Southwest are taking place in classified forests. This situation is generating conflicts between indigenous peoples, migrants, and forestry agencies.

For households living near protected forests, these forests are also a source of income. Around the Diécké Protected Forest in Forested Guinea, Monemou *et al*. (2025) showed that non-timber forest products (NTFPs) finance food (46% of their value). According to the same authors, NTFPs also finance healthcare (20%), construction (15%), education (12%), and social needs (7%). Therefore, a ban on all uses within a protected forest has a direct impact on these households.

Fire is the second leading cause of degradation in protected forests. Observations based on MODIS data from 2003 to 2015 showed that burned areas are increasing in Upper Guinea in forests undergoing transition or degradation, while they are decreasing in stable savannas (Dwomoh and Wimberly, 2017). Konko *et al.* (2021), using Sentinel-2 imagery with a resolution of 10–20 m, demonstrated in Togo that these images can be used to map burned areas and their severity at the forest scale.

The Bonama Protected Forest faces both problems: recent land clearing and annual fires. No previous study had described the management of this forest or measured its fires. The objectives of this study are to (i) trace the history of Bonama's management and its consequences for local communities; (ii) describe the perceptions, land uses, and expectations of local communities; (iii) map the extent and severity of fires during two dry seasons and correlate them with the causes reported by local residents.

2. MATERIALS AND METHODS

2.1. Study Area

The Lola Prefecture is one of the seven (7) prefectures of Forest Guinea. It is in the southeastern part of the Republic of Guinea, between 7°32' and 8°13' north latitude and 8°03' and 8°35' west longitude. It covers an area of approximately 4,608 km², representing 1.9% of the national territory and 10.4% of the Nzérékoré Administrative Region. According to the 2025 RGPH-4 general census, the population of Lola Prefecture is 267,869, comprising 129,035 men and 138,834 women. Its climate is a humid tropical sub-equatorial climate. The dry season lasts three (3) months (December, January, February). Elevation ranges from 341 m in the far south near the Liberian border to 1,752 m at the summit of the Nimba Mountains. The average elevation is 548 m; nearly 86% of the territory lies between 400 and 600 m, and less than 8% exceeds 700 m. The hydrography includes the Youghoun (Cavaly) basin, which originates at the foot of the Nimba Mountains; the Gouan basin, known as Bafing in Côte d'Ivoire, with its multitude of watercourses; and the Mani (Mano) basin. The Kpôkôh River flows through the Bonama Protected Forest (the site of this study). The vegetation is characterized by dense evergreen forest—a mosaic of dense, humid forests that are receding due to deforestation caused by shifting cultivation and bushfires, which have become very common in the prefecture. The dominant soil types are ferralitic. In the valleys, hydromorphic soils with permanent or temporary hydromorphism are found. The population's main economic activity is agriculture. The main linguistic groups are the Könons (the majority), the Manons, the Guerzés, and the Koniankés (Gbèmou, 2017; INS, 2026).

The Bonama Protected Forest is located between 8.2824° and 8.4206° west longitude and 7.9964° and 8.1040° north latitude. It extends across the subprefectures of Lainé, Foumbadou, and Guéasso. Its original gross legal area, as specified in 2009 by the Ministry of Environment and Sustainable Development, was 7,895 hectares. During its boundary demarcation in 2013, this area was reduced to 7,580

hectares. The Bonama Forest is surrounded by thirteen villages: Gambadou, Sidikidou, and Mamadidou (Foumbadou); Kiengbela, Kéanhinta, and Fonian (Lainé); Dongola, Zessou, Gbatota, Fangalota, Kélélata, Sirikita, and Kanvalyta (Guéasso). The village of Yanamouda is located within the forest's boundaries **(Figure 1).** Annual rainfall in Bonama averages approximately 2,600 mm, and the dry season lasts from December through February. The soils are ferralitic on the hillsides and hydromorphic in the lowlands of the Kpôkôh River and its tributaries.

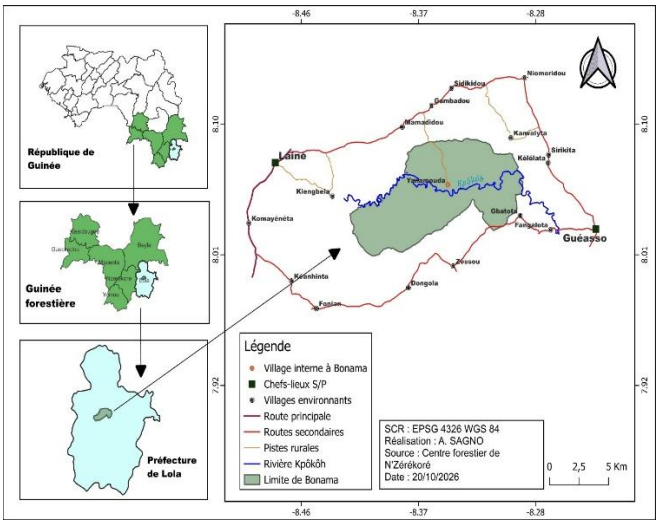


Figure 1: Location of the Bonama Protected Forest and the surrounding villages

2.2. Socioeconomic and Ethnobotanical Surveys

Field surveys combined individual interviews, focus groups, and informal discussions. The questionnaire, designed using KoboToolbox, included open-ended and semi-structured questions (Albuquerque et al. 2019). Informants were selected based on their knowledge of Bonama, length of residence, agricultural or logging activities within the protected area, and administrative or traditional roles. A total of 332 people were interviewed, including 3 managers from the N'Zérékoré Forestry Center (CFZ), 3 flora and fauna protection officers stationed in Bonama, 15 managers from decentralized services, and 311 residents of nearby villages. These surveys were conducted between July and October 2023, November 2024, and January 2025.

The questionnaire covered the history of Bonama's classification as a protected forest, human settlements within the protected area, awareness of its boundaries, land losses during the demarcation process, activities carried out in the forest, methods of accessing resources, species utilized, perceptions of the protected forest, causes of fires, and the expectations of local residents. The data was processed in Microsoft Excel. Qualitative variables are described by their counts and relative frequencies. For multiple-choice questions, percentages are reported relative to the total number of responses given. The uses of plant species were classified into three categories: medicinal, food, and mixed. Historical and land-use information was verified by cross-referencing statements from various stakeholder groups, minutes from consultation meetings, citizen commitments, Decree No. 3128/MEDD/SGG/CAB/09 dated November 19, 2009, and field observations.

2.3. Mapping of Burned Areas

Four Sentinel-2 images in SAFE format were downloaded from the European Space Agency's Copernicus platform: November 6, 2023, and February 24, 2024, for the 2023–2024 season; November 5, 2024, and February 28, 2025, for the 2024–2025 season. These images were processed in ArcGIS Pro 3.1.0. The NBR (Normalized Burn Ratio) index was calculated for each date using bands 8 (near-infrared) and 12 (short-wave infrared). Next, the severity was calculated as the difference between the two dates (ΔNBR):

$$NBR = (B8 - B12) / (B8 + B12) \quad (1)$$

$$\Delta NBR = NBRbefore - NBRafter \quad (2)$$

The ΔNBR values were classified according to the thresholds of the USGS FireMon program (Key and Benson, 2006): Slow vegetation recovery (< -0.10), Unburned (-0.10 to 0.10), Low severity (0.10 to 0.27), Moderate severity (0.27 to 0.44), High severity (0.44 to 0.66), and very high severity (> 0.66) (Boucher et al., 2017; Jaziri and Baccouche, 2020). To avoid confusion between burned areas and open water, the NDWI index = (B3 - B8) / (B3 + B8) was calculated for each image (Konko et al., 2021). The ΔNBR rasters were vectorized, and areas were calculated by class. After converting the classified rasters into polygons, QGIS 3.44 was used for symbology and map layout. The accuracy of the maps was assessed using a confusion matrix and the Kappa coefficient (Congalton, 1991), based on 72 control points in 2023–2024 and 60 in 2024–2025, established from field observations. The Kappa coefficient is interpreted according to Landis and Koch (1977).

3. RESULTS

3.1. History of the Classification and Socioeconomic Issues in the Management of the Bonama Classified Forest

3.1.1 History of the Designation and Management of the Bonama Protected Forest

The Bonama Forest was designated for classification in 1953–1955 and placed under the jurisdiction of the Beyla District. After independence, it was entrusted to the National Directorate of Water and Forests until 2009, without demarcated boundaries. During this period, local farmers and migrants mainly from the prefectures of N'Zérékoré (Womé, Gbouo, Kpakalè) and Beyla farmed the land there. As a result, fourteen settlements grew into hamlets. Two companies logged the area and cut down the largest trees: the Dramane Diaby company from 1990 to 1993, north of the Kpôkôh River, and the Ivorian company Senkun in 2005–2006, in the southern part.

Decree No. 3128/MEDD/SGG/CAB/09 of November 19, 2009, entrusted management of the forest to the CFZ. Following public information meetings in 2009, the demarcation process began in April 2012 in Gambadou. The boundary markers were marked with Chinese bamboo (Bambusa vulgaris) or Gmelina arborea saplings, planted together with residents. At the feedback workshop held in Lola on September 21, 2013, the deadline for farmers to vacate the area was set for November 30, 2013. Only the residents of Yanamouda were provisionally authorized to farm the lowlands, and livestock herders were allowed to remain. Consequently, in 2018, more than 29 zebu pastures and cultivated lowlands were visible within the perimeter. In 2020, unauthorized logging was carried out near Gbatota by the company Forêt Forte.

Monitoring in Bonama relies on three flora and fauna protection officers, instead of the seven officially assigned there. Furthermore, these officers have neither GPS devices, nor transportation, nor protective gear. Each of the surrounding villages has an 11-member advisory committee, whose members are not paid by the CFZ. No management plan has been adopted, and no regulations set forth the conditions for harvesting non-timber forest products (NTFPs) or deadwood. Violations are punished by the confiscation of tools, a written citation, and a written pledge. Consequently, none of the respondents reported having paid a fine. In Bonama, arson is the most common offense, and the perpetrators are almost never caught in the act.

3.1.2 Evictions, Customary Rights, and Conflicts of Use Surrounding the Bonama Protected Forest

The 2013 eviction affected, on the one hand, non-indigenous residents who had settled through leases, purchases, or squatting, and, on the other hand, approximately 110 indigenous families who were farming inherited land **(Table 1)**. None of these families received compensation. Residents of Yanamouda and Zessou report having sacred and initiation sites within the current boundaries. Thus, the forest contains two places of worship: the sacred forest of Yanamouda and the forest of the initiates, on the banks of the Kpôkôh River. This leads the local population to view Bonama as an area illegally seized by the authorities to the detriment of the population's well-being. This situation also fuels illegal activities within the protected forest.

Table 1: Number of Indigenous families evicted in 2013, by village

No.	Village	Families
1	Dongola	32
2	Yanamouda	28
3	Kéanhinta	17
4	Gambadou	9
5	Zessou	5
6	Gbatota	4
7	Fonian	3
8	Kélélata	3
9	Kiengbela	2
10	Sidikita	2
11	Sidikidou	2
12	Mamadidou	2
13	Kanvalyta	1
	Total	**110**

3.2. Socio-professional Profile of Respondents and Their Perception of the Importance of the Bonama Protected Forest

Of the 332 respondents, 291 are farmers, 24 are local government officials, and 17 are merchants. Among them, 71.08% can read. In total, 81.63% consider the protected forest to be important for the population. The remaining 18.37% do not dispute the forest's functions but believe that an unprotected forest can fulfill them and that perennial crops such as coffee, cacao, bananas, oil palms, etc., do not destroy the forest. In terms of the forest's benefits, the protection of biodiversity which guarantees access to food and medicinal plants (62.78%) ranks first, followed by economic importance (17.57%), climate regulation (9.07%), the protection of springs and waterways (6.91%), and finally, research at 2.3%.

1.37% of respondents stated they knew nothing about the benefits of protected forests **(Figure 2).**

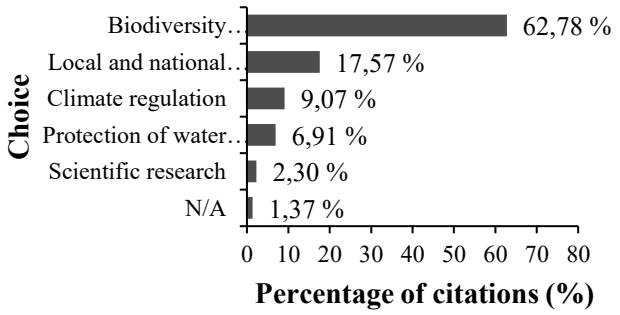


Figure 2: Frequency of mentions of the importance of classified forests

3.3. Socioeconomic activities carried out in the forest and expectations of residents

Regarding the socioeconomic activities carried out in the Bonama Forest despite the ban on some of them the study revealed, based on the respondents **(Figure 3)**, that cattle raising (42.99% of mentions) is the dominant activity, followed by agriculture (21.22%), gathering medicinal and edible plants (16.01%), and hunting and fishing (9.89% each).

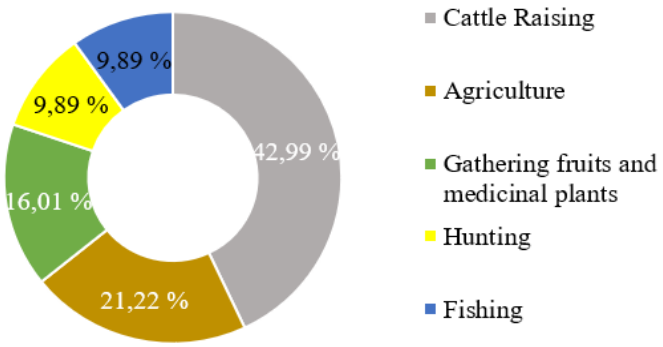


Figure 3: Proportion of mentions by respondents of socioeconomic activities carried out in the Bonama Protected Forest

Regarding edible and medicinal plants, the survey identified a total of 88 plant species used by local communities, including 45 for medicinal purposes, 35 for food, and 8 for both purposes **(Table 2).** The dual-purpose species are Albizia zygia, Conyza sumatrensis, Costus afer, Nauclea latifolia, Piper umbellatum, Pseudospondias microcarpa, Spondias mombin, and Tetracera potatoria. According to respondents, repeated fires have reduced the availability of medicinal and edible plants.

The expectations of the population living near the classified forest are numerous and varied. More than half of the respondents—66.11%—wish to benefit from economic and social development projects; 20.38% are requesting the allocation of agricultural land to the village of Yanamouda, and 13.41% are calling for the creation of a buffer zone where they can harvest medicinal plants, edible fruits, vines, and small timber for construction needs. To reduce fires, residents strongly desire the departure of herders who are often responsible for the fires and the establishment of firebreaks. Regarding the cause of the fires in Bonama, 92.37% of respondents identified herders as the perpetrators, claiming the fires were set to clear pastureland; in contrast, 7.63% of respondents cited fires from neighboring fields that spread into the forest.

3.4. Spatiotemporal Trends in Burned Areas in the Bonama Protected Forest

In 2023–2024, the pre-fire NBR ranged from -0.018 to 0 on bare ground (livestock tracks, Yanamouda rural trail) and from 0.3 to 0.519 on vegetation. After the fire, it ranged from -0.739 to 0 on bare ground and burned areas. The ΔNBR ranged from -0.13 to 0.951. The fires burned across 7,309.40 hectares, or 96.88% of the mapped area (Table 2; Figure 4). The unburned areas (235.33 hectares) correspond mainly to the low-lying areas bordering watercourses.

In 2024–2025, the pre-fire NBR ranged from -0.077 to 0 on bare soil and from 0.3 to 0.516 on vegetation; post-fire, it ranged from -0.273 to 0 on bare soil and burned areas. The ΔNBR for burned areas ranged from 0.101 to 0.679. The fires covered 7,032.94 hectares (93.22%) **(Figure 5).** The unburned area more than doubled (509.01 hectares), and 2.79 hectares showed regrowth.

Table 3: Areas by severity class (ΔNBR) in the Bonama Protected Forest

Class ΔNBR	2023–2024 (ha)	2023–2024 (%)	2024–2025 (ha)	2024–2025 (%)
High-gravity	37.95	0.50	0.73	0.01
High gravity	2,941.86	38.99	3,268.32	43.32
Moderate severity	3,420.93	45.34	2,014.93	26.71
Low gravity	908.66	12.04	1,748.95	23.18
Total burned	7,309.40	96.88	7,032.94	93.22
Unburned	235.33	3.12	509.01	6.75
Regrowth	0	0	2.79	0.04
Total	7,544.73	100	7,544.73	100

From one season to the next, the area affected by severe fires increased by 326.46 hectares, while the areas affected by moderate and high-severity fires decreased by 1,406.00 hectares and 37.22 hectares, respectively. These moderate- and high-severity burns combined covered 6,362.79 hectares in 2023–2024, representing 87.0% of the burned area, and 5,283.25 hectares in 2024–2025, representing 75.1%. No open water areas could be mistaken for burned areas, as the NDWI did not exceed 0 in any of the four images.

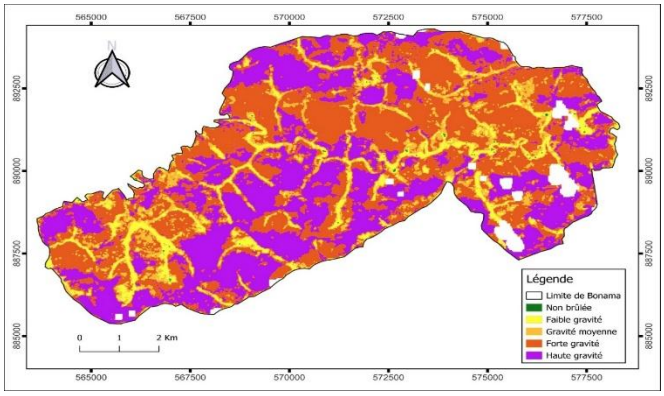


Figure 4: Fire severity classes (ΔNBR) in the Bonama Protected Forest, 2023–2024 season (Sentinel-2 images from November 6, 2023, and February 24, 2024)

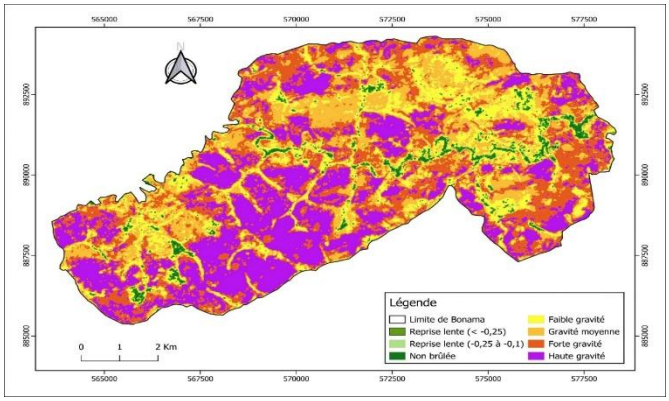


Figure 5: Fire severity classes (ΔNBR) in the Bonama Protected Forest, 2024–2025 season (Sentinel-2 images from November 5, 2024, and February 28, 2025)

The 2023–2024 map has an overall accuracy of 91.7% (66 out of 72 points correctly classified) and a Kappa coefficient of 0.89. The 2024–2025 map has an overall accuracy of 93.3% (56 out of 60) and a Kappa coefficient of 0.92.

4. Discussion

4.1. History of Forest Classification, Customary Land Rights, and Land-Use Conflicts

Between the classification project of the 1950s and the 2012–2013 demarcation, Bonama was cultivated and exploited for nearly sixty years. This situation is similar to that observed in the study conducted in the classified forests of the middle Ouémé River basin (Benin), where forest cover losses of 60 to 88 percent were observed between 1949 and 1998 despite their protected status, due to the absence of participatory management (Houndagba *et al.*, 2007). In Bonama, the presence of fourteen hamlets within the protected area prior to 2013 is part of the same process.

The claims of the villages south of the Kpôkôh River echo those described by Yeo *et al.* (2022) regarding the Dassioko Protected Forest (Ivory Coast), where the Godié of Kotrohou and the Néyo of Trépoint consider the forest part of their ancestral territory and identify sacred sites within it. In Bonama, the total lack of compensation for 110 indigenous families while herders remain within the protected area—fuels the discontent expressed by those surveyed. Traoré (2019) links the low level of compensation provided at the time of classification to long-standing land conflicts in western Côte d'Ivoire. In Bonama, the continued presence of herders could be explained by the mechanisms described by Amadou and Boutrais (2012) in W National Park, where transhumant herds enter protected areas in response to the degradation of pastures in their home territories.

4.2. Local Perception of the Importance of the Protected Forest

According to the results, 81.63% of residents recognize the importance of the classified forest. The order of importance cited is biodiversity, economy, research, climate, and water. These results align with the functions attributed to protected areas in Francophone Africa by Triplet (2009). In Benin, local residents recognize the ecological and medicinal functions of sacred forests (Agbo and Sokpon (1998); Juhé-Beaulaton and Nicolaï (2017)). The information campaigns conducted during the 2009–2013 boundary demarcation process may explain these results from Bonama.

The 88 useful species in Bonama exceed the 73 medicinal plant species found in the Wari-Maro Protected Forest in Benin (Yaoitcha *et al.*, 2015) and the 70 plant species recorded on the outskirts of protected forests in southwestern Ghana (Asigbaase *et al.*, 2024). However, this number is lower than the 134 species found in the Haut-Sassandra Protected Forest (Kouakou *et al.*, 2017), the 136 species in Mabira and Mpanga in Uganda (Asiimwe *et al.*, 2021), and the 259 species in the sacred forests of the Kankan region (Soumah *et al.*, 2026). This observed decline in Bonama,could be explained by the fact that the latter three studies cover multiple sites. The fact that some medicinal recipes are not disclosed to outsiders could also explain the reduction in the number of species cited.

In Bonama, no restoration efforts have been undertaken since 2013. This contrasts with the findings of Some and Kambire (2025), who highlight regular reforestation campaigns in the Bontioli wildlife reserves (Burkina Faso). These authors note the same flexible enforcement of penalties as in the case of Bonama. The expectations expressed by respondents in Bonama (development projects, an agricultural zone for Yanamouda, and a logging buffer zone) are consistent with maintaining the forest's status. Yeo *et al.* (2022) observed requests in Dassioko to maintain productive plantations within the forest.

4.3. Spatio-temporal trends in burned areas in the Bonama Protected Forest

The timing of fires in Bonama, between November and February, corresponds to the regional peak. Thirty-nine percent of annual fires in Côte d'Ivoire occur in January (Soro *et al.*, 2021). Garba *et al.* (2021), meanwhile, report that approximately 70% of fires in West Africa and the Sahel occur between December and February.

The burned areas in Bonama (96.88% and 93.22%) during the two successive dry seasons are very high. Dwomoh and Wimberly (2017) attribute the increase in burned areas in the degraded forests of Upper Guinea to the proliferation of forest edges and herbaceous layers. In Bonama, pre-fire NBR values (0.3 to 0.52 for vegetation) are characteristic of already open vegetation, and only low-lying areas escape the fire.

Miller and Thode (2007) showed that the absolute ΔNBR depends on pre-fire biomass. The decrease in maximum severity during the 2024–2025 dry season could be explained by the smaller amount of fuel left by the 2023–2024 fire, or by a difference in rainfall between the two years (Soro *et al.*, 2021).

The Kappa coefficients (0.89 and 0.92) indicate near-perfect agreement according to Landis and Koch (1977). However, Tanase *et al.* (2020) measured, across ten sites in tropical Africa, omission and commission errors of approximately 33% and 31%, respectively, for the detection of burned areas by Sentinel-2.

Ouattara *et al.* (2025) observed, across approximately 229,000 km² of savannas in Burkina Faso, Ghana, and Côte d'Ivoire, that about 65% of burned herbaceous or cultivated areas regain their productivity within one year, but that recovery is slower in woody "" formations. In Bonama, the 6,362.79 hectares that were burned with moderate or high severity in 2023–2024 were burned again the following season.

CONCLUSION

The management of the Bonama Protected Forest has been marked by a delayed demarcation (2012–2013), the eviction without compensation of approximately 110 indigenous families, and the continued presence of livestock herders within the protected area. Most residents recognize the importance of the forest (81.63%). They use 88 of its species for food and traditional medicine. They still engage in livestock raising, foraging, farming, hunting, and fishing there. Ninety-two-point three percent of respondents attribute the fires in the area to herders. These fires spread across more

than 93% of the mapped area in 2023–2024 and 2024–2025, with moderate and high severity levels predominating.

These findings highlight the importance of an agreement that considers the concerns of the local population, the equipment provided to field staff, and compensation for advisory committees. Annual monitoring of burned areas will allow for the assessment of their effects and the implementation of corrective measures.

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APPENDIX

No.	Species	Family	Use
1	*Aframomum alboviolaceum* (Ridl.) K.Schum.	Zingiberaceae	Food
2	*Aframomum exscapum* (Sims) Hepper	Zingiberaceae	Medicinal
3	*Aframomum longiscapum* (Hook.f.) K.Schum.	Zingiberaceae	Food
4	*Afromorus mesozygia* (Stapf) E.M.Gardner	Moraceae	Medicinal
5	*Ageratum conyzoides* L.	Asteraceae	Medicinal
6	*Albizia zygia* (DC.) J.F.Macbr.	Fabaceae	Edible/Medicinal
7	*Alchornea cordifolia* (Schumach. & Thonn.) Müll.Arg.	Euphorbiaceae	Medicinal
8	*Anthocleista djalonensis* A.Chev.	Gentianaceae	Medicinal
9	*Asparagus africanus* Lam.	Asparagaceae	Medicinal
10	*Aspilia africana* (Pers.) C.D.Adams	Asteraceae	Medicinal
11	*Bombax costatum* Pellegr. & Vuill.	Malvaceae	Food
12	*Bridelia ferruginea* Benth.	Phyllanthaceae	Food
13	*Ceiba pentandra* (L.) Gaertn.	Malvaceae	Food
14	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae	Medicinal
15	*Clerodendrum speciosissimum* Drapiez	Lamiaceae	Medicinal
16	*Cola lateritia* K.Schum.	Malvaceae	Food
17	*Conyza sumatrensis* (Retz.) E. Walker	Asteraceae	Edible/Medicinal
18	*Costus afer* Ker Gawl.	Costaceae	Edible/Medicinal
19	*Craterispermum laurinum* (Poir.) Benth.	Rubiaceae	Medicinal
20	*Deinbollia pinnata* (Poir.) Schumach. & Thonn.	Sapindaceae	Food
21	*Dialium guineense* Willd.	Fabaceae	Medicinal
22	*Dichrostachys cinerea* subsp. *africana* Brenan & Brummitt	Fabaceae	Medicinal
23	*Dioscorea hirtiflora* Benth.	Dioscoreaceae	Food
24	*Dioscorea sagittifolia* Pax	Dioscoreaceae	Food
25	*Dioscorea smilacifolia* De Wild.	Dioscoreaceae	Food
26	*Distemonanthus benthamianus* Baill.	Fabaceae	Medicinal
27	*Dracaena arborea* (Willd.) Link	Asparagaceae	Medicinal
28	*Elaeis guineensis* Jacq.	Arecaceae	Food
29	*Euphorbia heterophylla* L.	Euphorbiaceae	Medicinal
30	*Ficus glumosa* Delile	Moraceae	Food
31	*Ficus sur* Forssk.	Moraceae	Food
32	*Funtumia africana* (Benth.) Stapf	Apocynaceae	Medicinal

33	*Gloriosa superba* L.	Colchicaceae	Medicinal
34	*Gongronemopsis latifolia* (Benth.) S.Reuss, Liede & Meve	Apocynaceae	Medicinal
35	*Harrisonia abyssinica* Oliv.	Rutaceae	Medicinal
36	*Harungana madagascariensis* Lam. ex Poir.	Hypericaceae	Medicinal
37	*Holarrhena floribunda* (G. Don) T. Durand & Schinz	Apocynaceae	Medicinal
38	*Impatiens irvingii* Hook.f. ex Oliv.	Balsaminaceae	Food
39	*Imperata cylindrica* (L.) P.Beauv.	Poaceae	Food
40	*Ipomoea aquatica* Forssk.	Convolvulaceae	Food
41	*Justicia flava* (Vahl) Vahl	Acanthaceae	Food
42	*Landolphia dulcis* (Sabine) Pichon	Apocynaceae	Food
43	*Landolphia heudelotii* A.DC.	Apocynaceae	Food
44	*Maesobotrya barteri* (Baill.) Hutch.	Phyllanthaceae	Food
45	*Manniophyton fulvum* Müll.Arg.	Euphorbiaceae	Medicinal
46	*Mareya micrantha* (Benth.) Müll.Arg.	Euphorbiaceae	Medicinal
47	*Microdesmis puberula* Hook.f. ex Planch.	Pandaceae	Medicinal
48	*Milicia excelsa* (Welw.) C.C.Berg	Moraceae	Medicinal
49	*Mitragyna stipulosa* (DC.) Kuntze	Rubiaceae	Medicinal
50	*Momordica charantia* L.	Cucurbitaceae	Medicinal
51	*Morinda chrysorhiza* (Thonn.) DC.	Rubiaceae	Medicinal
52	*Morinda morindoides* (Baker) Milne-Redh.	Rubiaceae	Medicinal
53	*Musanga cecropioides* R.Br. ex Tedlie	Urticaceae	Medicinal
54	*Myrianthus arboreus* P. Beauv.	Urticaceae	Food
55	*Myrianthus libericus* Rendle	Urticaceae	Food
56	*Nauclea latifolia* Sm.	Rubiaceae	Edible/Medicinal
57	*Newbouldia laevis* (P.Beauv.) Seem.	Bignoniaceae	Medicinal
58	*Nymphaea* sp.	Nymphaeaceae	Food
59	*Parinari excelsa* Sabine	Chrysobalanaceae	Medicinal
60	*Parkia bicolor* A.Chev.	Fabaceae	Food
61	*Pennisetum purpureum* Schumach.	Poaceae	Medicinal
62	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae	Medicinal
63	*Picralima nitida* (Stapf) T. Durand & H. Durand	Apocynaceae	Medicinal
64	*Piper guineense* Schumach. & Thonn.	Piperaceae	Food
65	*Piper umbellatum* L.	Piperaceae	Edible/Medicinal
66	*Pseudospondias microcarpa* (A.Rich.) Engl.	Anacardiaceae	Edible/Medicinal
67	*Psorospermum guineense* (L.) Hochr.	Hypericaceae	Food
68	*Pycnanthus angolensis* (Welw.) Warb.	Myristicaceae	Medicinal
69	*Raphia hookeri* G.Mann & H.Wendl.	Arecaceae	Food
70	*Raphia vinifera* P. Beauv.	Arecaceae	Food
71	*Rauvolfia vomitoria* Afzel.	Apocynaceae	Medicinal
72	*Ricinodendron heudelotii* (Baill.) Pierre ex Heckel	Euphorbiaceae	Food
73	*Scleria secans* (L.) Urb.	Cyperaceae	Medicinal
74	*Solanum erianthum* D.Don	Solanaceae	Medicinal

75	*Solanum torvum* Sw.	Solanaceae	Medicinal
76	*Spermacoce verticillata* L.	Rubiaceae	Medicinal
77	*Spondias mombin* L.	Anacardiaceae	Edible/Medicinal
78	*Strophanthus hispidus* DC.	Apocynaceae	Medicinal
79	*Tetracera potatoria* Afzel. ex G. Don	Dilleniaceae	Edible/Medicinal
80	*Thaumatococcus daniellii* (Benn.) Benth.	Marantaceae	Food
81	*Trachyphrynium braunianum* (K.Schum.) Baker	Marantaceae	Food
82	*Trema orientale* (L.) Blume	Cannabaceae	Medicinal
83	*Triplochiton scleroxylon* K.Schum.	Malvaceae	Food
84	*Triumfetta pentandra* A. Rich.	Malvaceae	Food
85	*Triumfetta rhomboidea* Jacq.	Malvaceae	Food
86	*Vitex doniana* Sweet	Lamiaceae	Food
87	*Xylopia aethiopica* (Dunal) A.Rich.	Annonaceae	Medicinal
88	*Zanthoxylum zanthoxyloides* (Lam.) Zepern. & Timler	Rutaceae	Medicinal