Available from https://tipas.kew.org/site/yayu-forest/
[Accessed 16 June 2026]

Yayu Forest

ETHTIPA008

Country: **Ethiopia**
Administrative region: **Oromia (Regional State)**
Central co-ordinates: **8.46410 N, 35.82340 E**
Area: **1673km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Yayu Forest qualifies as an IPA under criterion A(i) due to the presence of the globally threatened species, Coffea arabica (EN), for which this site is of global importance. It supports the largest wild population of the species and is also its centre of origin, with a high genetic diversity.

Also of note is the presence of the widespread but globally threatened timber species, Prunus africana (VU). While this species does not trigger IPA status currently, it might in the future if stocks continue to decline. Herbarium vouchers also indicate the potential presence of two endemic species in the core of the IPA and a further six endemics and one near-endemic in its buffer region. While none of these are currently categorised as globally threatened on the IUCN Red List, and thus do not trigger IPA status, this may not always be the case.

Site description

Yayu Forest IPA is located in the Illubabor zone of Oromia Regional State, southwestern Ethiopia (Gole, 2003; Woldegeorgis & Wube, 2012). It matches the boundary of the UNESCO Yayu Coffee Forest Biosphere Reserve. Elevation ranges from c. 1090 m in its low river valleys to c. 2170 m in the more mountainous regions. Yayu is an ancient coffee forest, considered to be an important gene pool for and the origin of the endangered species, Coffea arabica (Gole, 2003; Davis et al., 2012). This IPA is thought to contain the largest wild population of the species (Gole et al., 2009).

In addition to Yayu's natural value and biological importance, it is a site of cultural significance, characterised by coffee ceremonies and a range of traditional land management practices (UNESCO, 2018). Yayu Forest contains many settlements, including the towns of Yayu, Huruma, Nopa and Supe (Gole, 2003; Beyene, 2014) and Yayu Coffee Forest Biosphere Reserve was identified as a Key Biodiversity Area (KBA) in 2011. The IPA also overlaps with the Yayu National Forest Priority Area (NFPA), designated in 1998. East of the IPA lies Sigmo-Geba Forest NFPA and KBA, and Gebre Dima NFPA is situated to the southwest, although the IPA does not overlap with these sites.

Botanical significance

Yayu Forest contains the largest wild population of the endangered Coffea arabica and is, therefore, an important site for the in-situ conservation of this species (Gole, 2003; Gole et al., 2009). In addition, the IPA likely contains the most genetically diverse, wild populations of this species, and these populations are also potentially the earliest and most direct descendants of its last diploid ancestors, alongside Coffea eugenioides, making it an important gene reserve (Gole et al., 2009).

Georeferenced herbarium vouchers confirm the presence of two further endemic plant species within the IPA's core boundary: Millettia ferruginea (LC) and Phyllanthus mooneyi (DD). A further six endemic species have been recorded within the IPA's buffer: Cirsium englerianum (LC), Clinopodium paradoxum (LC), Emilia serpentina (LC), Millettia ferruginea subsp. ferruginea (LC), Trifolium mattirolianum (LC) and Vernonia (Baccharoides) filigera (LC). The presence of a seventh near-endemic (Crassocephalum

macropappus) is also confirmed by a single herbarium voucher, although this species has also been recorded in Kenya and is not due to be assessed on the IUCN Red List imminently.

The globally threatened tree species, Dombeya longebracteolata (VU), was also recorded in Yayu Coffee Forest KBA assessment, but there are no herbarium vouchers to support its presence in the IPA. Further research is thus required, as this may be based on a misidentification. Also of note is the presence of the globally threatened medicinal timber species, Prunus africana (VU) (Gole, 2003), although the IPA is not thought to be a globally important site for this widespread species.

Gole (2003) recorded three additional Ethiopian endemics or near-endemics in the area: Clematis longicauda (also present in N. Yemen), Liparis abyssinica (EN) and Vepris dainelli (LC). There are no supporting herbarium vouchers for these species within the IPA, so further fieldwork is required, particularly as Yayu's botanical diversity is poorly understood at present, especially for non-woody taxa. There is also a herbarium voucher for Scadoxus nutans (VU) approximately 18 km south of the IPA within Yayu NFPA, which contains more intact forest. Further surveys are thus needed to confirm the presence of this threatened species inside the IPA.

Habitat and geology

Yayu Forest is characterised by transitional forest, consisting of a mosaic of habitats and species from Moist Evergreen Afromontane forest and Guineo-Congolian lowland rainforest vegetation, within the Eastern Afromontane Biodiversity Hotspot (Gole, 2003; UNESCO, 2018). Riverine forest vegetation is extant throughout the IPA, fringing its many permanent rivers and streams. The core area of the IPA is dominated by transitional forest and Coffea arabica plantations, while the buffer areas are dominated by a mosaic of land use types, including agricultural land, industrial areas, settlements and wetlands (Gole et al., 2009).

Gole et al. (2008) recorded 220 plant species, representing 73 families, in Yayu Forest. The most abundant trees within the upper canopy are Albizia grandibracteata, Blighia unijugata, Celtis africana, Diospyros abyssinica and Trichilia dregeana, while the lower canopy is dominated by Clausena anisata, Coffea arabica, Dracaena fragrans and Psydrax parviflorus subsp. parviflorus (Gole, 2003). Characteristic lianas include Combretum paniculatum, Landolphia buchananii, Loeseneriella africana, Paullinia pinnata and Tiliacora funifera, while Gymnosporia gracilipes, Justicia betonica, Justicia schimperiana, Phyllanthus ovalifolius and Searsia ruspolii are the typical shrub species (Gole, 2003).

Gole (2003) also identifies three plant community types within Yayu Forest: 1) Coffea arabica community type, with indicator species of Coffea arabica, Gymnosporia gracilipes and Paullinia pinnata; 2) Argomuellera macrophylla community type, found on steep slopes and at lower altitudes than the Coffea arabica community type; and 3) Dracaena fragrans community type, indicated by Dracaena fragrans, Vepris nobilis and Phoenix reclinata. Both the Argomuellera macrophylla and Dracaena fragrans community types are more characteristic of the transitional forest and dry lowland Guineo-Congolian forest vegetation than the Coffea arabica community type (Gole, 2003). Three coffee forest types exist, namely undisturbed natural forest, managed coffee forest and coffee plantations (Gole, 2003).

The lithology of the area is generally characterised by Precambrian basement rock, overlain by Mesozoic marine strata and a range of Tertiary rocks (Gole, 2003). The basement rocks are exposed by the Geba river valley and its tributaries, and Yayu Basin is also known for its coal and oil-shale bearing rocks (Wolela, 2010). Soils are predominantly ferrisols from volcanic parent material and nitisols (Gole, 2003; Jones et al., 2013). Acrisols, vertisols, and cambisols have also been reported (Gole, 2003).

Rainfall is unimodal with the wet season running from May to October (Gole, 2003). Yayu is considered a high rainfall area with mean annual rainfall ranging from 1,625 mm to 2,100 mm (Senbeta, 2006; Gole et al., 2008; Mulatu & Getahun, 2018). The mean annual temperature lies between 20 C and 23.76 C (Gole, 2003; Mulatu & Getahun, 2018).

Conservation issues

Yayu Forest was designated as an NFPA in 1998, covering over 150,000 ha of forest (Gole et al., 2009). Concurrently, approximately 10,700 ha of forest was designated as a coffee gene reserve, known as the Geba-Dogi Forest Coffee Conservation Area (Nischalke et al., 2017; Beyene et al., 2020). The coffee gene reserve and part of the Yayu NFPA became incorporated into the Yayu Coffee Forest Biosphere Reserve (BR) when it was established in 2010. The main aim of the BR is to conserve wild Coffea arabica genetic resources and biodiversity, while supporting communities and encouraging sustainable forest product use. The Yayu Coffee Forest Biosphere Reserve fully overlaps with the IPA, providing site protection.

Yayu Coffee Forest BR (167,021 ha) is divided into three zones (Gole et al., 2009). The core zone comprises undisturbed natural forest with high concentrations of Coffea arabica. The main focus of this zone is in-situ coffee conservation across 27,733 ha, and forest use is prohibited. The buffer zone (21,552 ha) consists of managed coffee forest, wherein some economic activities, such as sustainable resource collection, are permitted. The transition zone (117,736 ha) contains a mosaic of cropland, pastureland, grassland, wetland and urban habitats, interspersed with rural settlements and forest fragments. This zone is the most accessible and resource use is much more flexible, with agriculture being one of the main activities. The IPA core consists of the core and buffer zones of the BR, while the IPA's buffer is synonymous with the BR's transition zone.

A range of research projects have been undertaken in the Yayu Coffee Forest BR, including the "Conservation and use of wild populations of Coffea arabica in the montane rainforests of Ethiopia" (CoCE) project, which principally aimed to conserve the genetic diversity of wild Coffea arabica (COCE, 2008; UNESCO, 2018). Also of note was a Darwin Initiative project, “Mainstreaming biodiversity conservation and climate resilience at Yayu Biosphere Reserve”, co-run by the Royal Botanic Gardens, Kew, HiU Coffee and Union Hand-Roasted Coffee between 2015 and 2018. It focused on increasing coffee quality and thus household incomes, while preserving biodiversity across five Yayu cooperatives; reducing or stabilizing land use conversion; and reducing the vulnerability of farmers to climate change (Davis, 2018).

Illegal logging, encroachment from agriculture, and unsustainable coffee management are key threats to Yayu Forest's biodiversity. Traditional coffee management hampers the regeneration of other plant species and is detrimental to species richness, primarily due to the clearing of understory and thinning of canopy trees (Gole, 2003). Prunus africana (VU) and Vepris dainelli (LC), for instance, were found to have completely disappeared from managed areas of the forest (Gole, 2003). Over 20,000 tonnes of coffee are produced annually from within the BR (Gole et al., 2009). Approximately 2,142 ha of forest, analogous to 2.21 percent of the BR's total forest cover, was cleared between 2005 and 2013, largely within what are now the buffer and transition zones (Beyene, 2014). That said, rates of tree cover loss have reportedly slowed since the designation of the BR in 2010, although deforestation may instead be displaced to surrounding areas (Beyene, 2014). Districts surrounding the Yayu Forest have been identified as coffee growing priority areas and are moving towards intensive coffee production (Keno & Debelo, 2019).

Reports from local communities suggest that despite the restrictions, encroachment from agricultural land, coffee plantations, and illegal logging persist (Beyene, 2014; Keno & Debelo, 2019). Two key drivers of forest loss are a lack of BR awareness and villagization, where people, typically from nomadic groups or rural communities, are resettled in planned, communal villages, causing increased population pressure (Beyene, 2014). The human population living in the transition zone almost doubled between 2010 and 2016, putting pressure on resource availability (Keno & Debelo, 2019). A range of illegal activities have been reported inside the BR, including illegal entry, fuelwood extraction, charcoal production, bushmeat hunting, livestock grazing and logging (Fukensa et al., 2018). Interviews with 212 locals revealed mixed perceptions of the Reserve, with just over half recognising the benefits of the BR in local development, income generation, community participation and environmental protection, and just under half expressing concerns about conflicts of interests, the erosion of community rights and a lack of awareness (Keno & Debelo, 2019).

Large scale investment projects are being conducted within the IPA, including the Yayu Fertilizer Complex which consists of two Urea and one DAP fertilizer plants, a coal mine and a power station (Tadesse, 2015; Keno & Debelo, 2019). It is expected to produce 300,000 tons of Urea, 250,000 tons of DAP fertilizer, 20,000 tonnes of ethanol, and 90 MW of electicity, using 9.2 million tons of coal generated from the on-site coal mine (Tadesse, 2015; Abiye, 2019). The completed complex will cover 54,000 m2 and provide jobs for 35,000 workers (Tadesse, 2015). The construction of the complex and potential job opportunities has led to the establishment of small towns within the IPA (Keno & Debelo, 2019). The post-construction impacts on the IPA are unclear, although the increasing population size is likely to exert pressures on biodiversity.

Site assessor(s)

Eden House, Royal Botanic Gardens, Kew

Joe Langley, Royal Botanic Gardens, Kew

Iain Darbyshire, Royal Botanic Gardens, Kew

Sebsebe Demissew, Addis Ababa University

Sileshi Nemomissa, Addis Ababa University

Ermias Lulekal, Addis Ababa University

IPA criterion A species

SPECIES	QUALIFYING SUB-CRITERION	≥ 1% OF GLOBAL POPULATION	≥ 5% OF NATIONAL POPULATION	1 OF 5 BEST SITES NATIONALLY	ENTIRE GLOBAL POPULATION	SOCIO-ECONOMICALLY IMPORTANT	ABUNDANCE AT SITE
Coffea arabica L.	A(i)				–	✓	Abundant

IPA criterion C qualifying habitats

HABITAT	QUALIFYING SUB-CRITERION	≥ 5% OF NATIONAL RESOURCE	≥ 10% OF NATIONAL RESOURCE	1 OF 5 BEST SITES NATIONALLY	AREAL COVERAGE AT SITE

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Montane Forest	–	Major
Forest - Subtropical/Tropical Moist Lowland Forest	–	Major
Artificial - Terrestrial - Arable Land	–	Major
Artificial - Terrestrial - Plantations	–	Major
Wetlands (inland) - Permanent Rivers, Streams, Creeks [includes waterfalls]	–	Major
Artificial - Terrestrial - Urban Areas	–	Minor

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Forestry	–	Major
Nature conservation	–	Major
Agriculture (arable)	–	Major
Agriculture (pastoral)	–	Unknown
Extractive industry	–	Minor
Residential / urban development	–	Minor

Threats

THREAT	SEVERITY	TIMING
Residential & commercial development - Housing & urban areas	Medium	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	High	Ongoing - increasing

THREAT	SEVERITY	TIMING
Energy production & mining - Mining & quarrying	Unknown	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting	High	Ongoing - trend unknown
Residential & commercial development - Commercial & industrial areas	Unknown	Ongoing - increasing
Agriculture & aquaculture - Wood & pulp plantations - Small-holder plantations	High	Ongoing - increasing

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Yayu Coffee Forest Biosphere Reserve	UNESCO Biosphere Reserve	protected/conservation area overlaps with IPA	1673
Yayu National Forest Priority Area	National Forest Priority Area	protected/conservation area overlaps with IPA	945

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Yayu Coffee Forest KBA	Key Biodiversity Area	protected/conservation area overlaps with IPA	945

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Site management plan in place	UNESCO Yayu Coffee Forest Biosphere Reserve is part of the Man and the Biosphere (MAB) programme. The Biosphere has three main functions: 1) conservation of wild Coffea arabica; 2) economic and human development; and 3) logistic support for research, monitoring, education and information exchange (Beyene, 2014; Dejene, 2018).	2010	–

Bibliography

Senbeta, F. 2006. **Biodiversity and ecology of Afromontane rainforests with wild (Coffea arabica L.) populations in Ethiopia. Ecology and Development Series 38.**.

Abiye, Y. 2019. **Morocco's fertilizer giant to take over Yayu fertilizer complex.**.

Beyene, D.L. 2014. **Assessing the impact of UNESCO biosphere reserves on forest cover change. The case of Yayu Coffee Forest Biosphere Reserve in Ethiopia. MSc Thesis.**.

Beyene, A.D., Mekonnen, A., Hirons, M., Robinson, E.J.Z., Gonfa, T., Gole, T.W., & Demissie, S. 2020. **Contribution of non-timber forest products to the livelihood of farmers in coffee growing areas: evidence from Yayu Coffee Forest Biosphere Reserve.**. Journal of Environmental Planning and Management, Vol 63(9), page(s) 1633-1654

COCE 2008. **Conservatuion and use of wild populations of Coffea arabica in the montane rainforests of Ethiopia: project overview.**.

Davis, A.P., Gole, T.W., Baena, S., & Moat, J. 2012. **The Impact of**

Climate Change on Indigenous Arabica Coffee (Coffea arabica): Predicting Future Trends and Identifying Priorities.. PLoS ONE, Vol 7(11), page(s) e47981

Dejene, Z. 2018. Yayu Coffee Forest Biosphere Reserve Management Plan. Oromia Environment Forest and Climate Change Authority and Oromia Forest and Wildlife Enterprise..

Fukensa, T., Tesfahunegny, W., & Mekonnen, A. 2018. Impact of human activities on biosphere reserve: A case study from Yayu Biosphere Reserve, Southwest Ethiopia.. International Journal of Biodiversity and Conservation, Vol 10(7), page(s) 319-326

Keno, E.T., & Debelo, D.G. 2019. Attitudes and Perceptions of the Local Community towards Yayo Coffee Forest Biosphere Reserve, Ilu Abba Bora Zone of Oromia National Regional State.. Ethiopian Journal of Science and Sustainable Development, Vol 6(1), page(s) 79-90

Key Biodiversity Areas 2021. Key Biodiversity Areas Factsheet: Yayu Coffee Forest Biosphere Reserve.

Mulatu, T. & Getahun, A. 2018. Diversity of anurans in forest fragments of southwestern Ethiopia: The case of the Yayu Coffee Forest Biosphere Reserve (YCFBR).. Amphibian & Reptile Conservation, Vol 12(2), page(s) 30-40

Nischalke, S.M., Abebe, M., Wondimagegnhu, B.A., Kriesemer, S.K., and Beuchelt, T. 2017. Forgotten Forests? Food Potential of Ancient Coffee Forests and Agroforestry Systems in the Southwestern Ethiopian Mountains, Seen Through a Gender Lens.. Mountain Research and Development, Vol 37(3), page(s) 254-262

Tadesse, F. 2015. Fertilizer Factory Construction Resumes after 10 Months..

UNESCO 2018. Yayu Biosphere Reserve, Ethiopia..

Woldegeorgis, G. & Wube, T. 2012. A survey on mammals of the Yayu Forest in southwest Ethiopia.. Ethiopian Journal of Science, Vol 35(2), page(s) 135-138

Gole, T.W. 2003. Vegetation of the Yayu forest in SW Ethiopia: impacts of human use and implications for in situ conservation of wild Coffea arabica L. populations. PhD Thesis..

Gole, T.W., Borsch, T., Denich, M., & Teketay, D. 2008. Floristic composition and environmental factors characterizing coffee forests in southwest Ethiopia.. Forest Ecology and Management, Vol 255, page(s) 2138-2150

Gole, T.W., Senbeta, F., Tesfaye, K., & Getaneh, F. 2009. Yayu Coffee Forest Biosphere Reserve Nomination Form..

Wolela, A. 2010. Sedimentation, organic maturity, and petroleum potential of the Oligocene–Miocene oil shale deposits, Yayu Basin, southwestern Ethiopia.. AAPG Bulletin, Vol 94(5), page(s) 643-663

Davis, A. 2018. Mainstreaming biodiversity conservation and climate resilience at Yayu Biosphere Reserve.