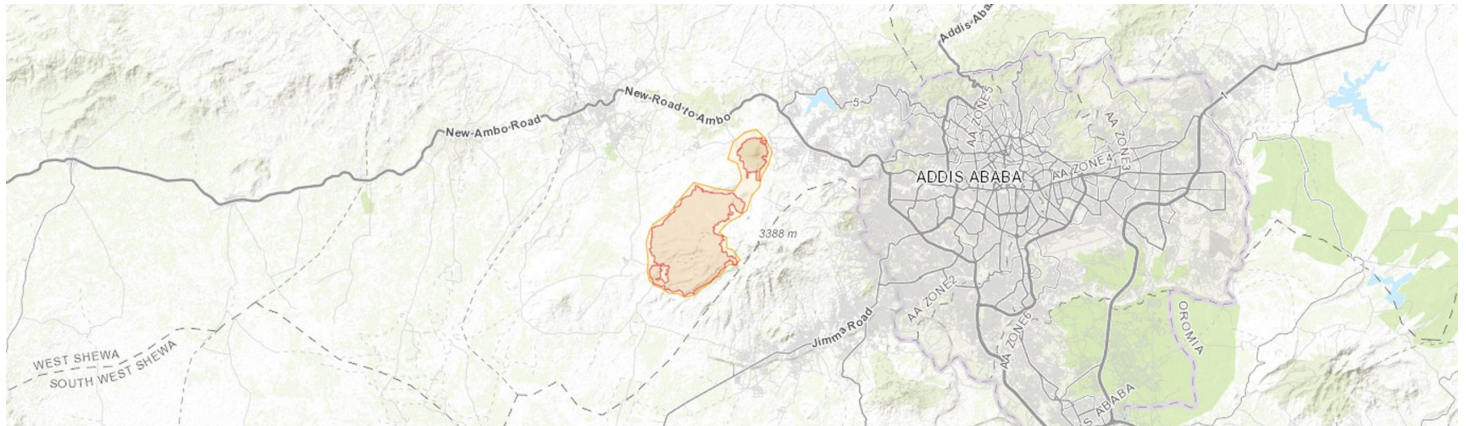


Menagesha-Suba Forest

ETHTIPA004



Country: **Ethiopia**

Administrative region: **Oromia (Regional State)**

Central co-ordinates: **8.97720 N, 38.55015 E**

Area: **35km²**

Qualifying IPA criteria

A(i), C(iii)

IPA assessment rationale

Menagesha-Suba Forest is an important remnant of the nationally threatened Dry Afromontane Forest, therefore qualifying as an IPA under criterion C(iii). It also qualifies under criterion A(i) due to the presence of the globally threatened species, *Chrysojasminum stans* (VU), *Gymnosporia addat* (VU) and *Hyparrhenia tuberculata* (VU). The site is threatened from unsustainable use and conversion of forest to agricultural land.

Also of note is the presence of the widespread but globally threatened timber species *Prunus africana* (VU), and the economically important timber species, *Juniperus procera* (LC, decreasing). These do not trigger IPA status but could in the future.

Site description

Menagesha-Suba Forest is situated approximately 20-30 km southwest of Addis Ababa, within the West Shewa Zone of Oromia Regional State. It lies within the Shewa floristic region, on the central Ethiopian Plateau. The Menagesha-Suba Forest is one of the few remaining extensive examples of the nationally threatened Dry Afromontane Forest in Ethiopia. The forest name derives from the nearby town and village, Menagesha and Suba respectively.

The IPA is comprised of two disjunct forest blocks; the smaller Menagesha Forest in the northeast of the IPA (399 ha) situated on a small volcanic cone, and the larger Suba Forest in the southwest of the IPA (3,096 ha) lying on the southern slope of Mount Wechacha, an extinct volcano (Sebsebe, 1988; Tekalign, 2019). These two mountainous regions are surrounded by low-lying plains that have been intensively farmed for centuries.

Menagesha-Suba Forest is thought to be the oldest preserved forest in Ethiopia (Tekalign, 2019). The original *Juniperus* forest was largely degraded from over-exploitation until the 15th century when Emperor Zera Yakob ordered the replanting of Menagesha-Suba Forest using seeds of *Juniperus procera* Hochst. ex Endl. from Wof-Washa Forest (Sebsebe, 1988).

Menagesha-Suba Forest is designated as a National Forest priority Area (NFPA), Important Bird Area (IBA), and Key Biodiversity Area (KBA).

Botanical significance

Dry Afromontane Forests once covered an extensive area of the Ethiopian Highlands but have been reduced to remnant fragments. Menagesha-Suba Forest is one of the best and most extensive remaining examples of this nationally threatened habitat on the central Ethiopian plateau.

Menagesha-Suba Forest is a key locality for three globally threatened, Ethiopian Highlands endemic species: *Chrysojasminum stans* (VU), *Gymnosporia addat* Loes. (formerly *Maytenus addat*; VU) and *Hyparrhenia tuberculata* Clayton (VU). Additionally, there has been a recent record of the endemic tree, *Acacia negrii* Pic.Serm. (currently NT, but a priority for reassessment as it is likely to be globally threatened). Tilahun et al. (2011) recorded 16 endemic species in the smaller Menagesha forest alone.

Two globally threatened species, *Carex monostachya* A.Rich. (VU) and the Ethiopian endemic *Indigofera rothii* Baker (EN), were recorded in the KBA assessment, however this appears to be incorrect. [requires further investigation]

Also of note is the widespread but globally threatened medicinal timber species, *Prunus africana* (Hook.f.) Kalkman (VU), present within the forest. However, this IPA is not thought to be a globally important site for this widespread species. *Juniperus procera* (LC, but decreasing globally) is the dominant species within the forest and a highly economically important tree species in Ethiopia.

Habitat and geology

Menagesha-Suba Forest is one of the few remnant Dry Afromontane Forests in Ethiopia, dominated by *Juniperus procera* and *Olea europea* subsp. *cuspidata* (Wall. & G.Don) Cif. (Sebsebe, 1988). It is floristically similar to the nearby Chilimo Forest IPA (Bekele, 1993).

The topology of Menagesha-Suba Forest is characterised by rolling hills and mountainous terrain of the extinct volcanic cone of Mount Wechecha and nearby smaller volcanic cone, dissected by rivers and streams (Sebsebe, 1988; Tekalign, 2019). The surrounding areas are characterised by plains comprised of an intensive agricultural mosaic including agroforestry, cropland, and rangeland. Rock types within the IPA and surrounding area vary from white, coarsely porphyritic trachyte to green, often porphyritic trachyte (Sebsebe, 1988). The volcanic bedrock on which the IPA lies is thought to date back to the upper Pliocene (Eshetu et al., 2004). Soils are predominantly chromic luvisols (reddish clay-sand), derived from the trachyte rocks (Sebsebe, 1988; Eshetu & Högberg, 2000). Nitisols have also been reported (Eshetu et al., 2004; Jones et al., 2013). Soil pH has been found to range from 5.2 to 7.3 (Wubet et al., 2003).

The forest has its lower boundary at 2255 m and upper limit at 3075 m. Higher elevations of the forest are occupied by *Juniperus procera*, *Hagenia abyssinica* (Bruce) J.F.Gmel, *Olea europea* subsp. *cuspidata*, *Erica arborea* L., and smaller trees and shrubs such as *Myrsine melanophloeos* (L.) R.Br. ex Sweet and *Rosa abyssinica* R.Br. ex Lindl. (Tilahun et al., 2015; Tekalign, 2019). *Afrocarpus gracilior* (Pilg.) C.N.Page (*Podocarpus gracilior*) dominates at lower elevations and in sheltered valleys (Sebsebe, 1988). *Prunus africana* is scattered throughout the forest (Tekalign, 2019). Overall, the four most dominant species within the forest are *Juniperus procera*, *Afrocarpus gracilior*, *Olea europaea* subsp. *cuspidata*, and *Olinia rochetiana* A.Juss. (Sebsebe, 1988; Bekele, 1993). Sebsebe (1988) recorded 29 shrub, 14 tree, 16 herb, 11 fern, 10 liana, five epiphyte, three sedge, and two grass species. A recent floristic survey of the Menagesha component of the Menagesha-Suba Forest reported over 200 species representing 182 genera and 76 families, with Asteraceae being the most diverse family (Tilahun et al., 2011).

The IPA also contains plantations of exotic species, namely

Cupressus lusitanica Mill., *Eucalyptus camaldulensis* Dehnh., *Eucalyptus globulus* Labill., *Pinus radiata* D.Don, and *Pinus patula* Schiede ex Schltld. & Cham., and plantations of the indigenous *Juniperus procera* (Sebsebe, 1988; Tekalign, 2019).

The climate of Menagesha-Suba Forest is classified as tropical alpine (Tekalign, 2019). Rainfall is bimodal with a long wet season running from mid-June to September, and a short wet season from April to May (Eshetu et al., 2004; Duguma et al., 2009). The mean annual rainfall ranges from 1,017 mm to 1,225 mm (Teketay, 1997; Eshetu et al., 2004). Mean annual temperatures range from 11°C to 22°C (Bekele, 1996). Daily temperatures as low as 2.4°C have been recorded in Holeta town (Bekele, 1993).

Conservation issues

Menagesha-Suba Forest has been heavily degraded and exploited for the last five centuries (Sebsebe, 1988). Shortage of land for agriculture, poor land productivity, and lack of other forested areas have led to the overexploitation of the site (Duguma et al., 2009; Duguma et al., 2019). Duguma et al. (2009) reported that 1000 m³ of charcoal derived from the forest is sold at local markets annually. Increasing populations have caused a rising demand for forest products; settlements in the neighbouring Holetta watershed are thought to have increased from 4,752 ha to 10,563 ha between 1984 and 2006 (Feyissa et al., 2014). Another factor affecting Menagesha-Suba Forest is resource governance issues; forest policies implemented by the last three administrations have been drivers in both forest cover gain and loss (Duguma et al., 2019; Tekalign, 2019), and governance over the forest has led to conflicts between local communities and the forest administrations (Tekalign et al., 2018).

In the late 1930s forest cover was thought to be less than 1,000 ha, but by the 1960s it was thought to have increased to ca. 3,000-3,500 ha. This was followed by a period of decline and by 1988 the forest extent had fallen to 2,720 ha, before increasing again to 3,590 ha by 1998 (Sebsebe, 1988; Duguma et al., 2009; Duguma et al., 2019; Tekalign, 2019). The current estimate is ca. 3,495 ha, of which 2,350 ha comprises of indigenous forest and 1,150 ha of plantation forest (Tekalign, 2019). Satellite imagery taken between 1984 and 2019 shows that the forest has increased in some areas and decreased in others, often with patches inside the forest being cleared (Google Earth, 2021). Deforestation from the middle of the forest area is likely from plantation cutting for income (Tekalign, 2019).

Menagesha-Suba Forest is thought to be the oldest state forest in Ethiopia. In ancient times the original *Juniperus* forest had been devastated due to agricultural conversion to support the growing populations from Addis Ababa, Menagesha, Holeta, and Sebetta (Eshetu et al., 2004). This is supported by evidence from soil analysis which suggests long periods of cultivation or grassland were present before the current forest (Eshetu & Högberg, 2000). In the 15th century, Emperor Zera Yakob ordered the reforestation of

the Menagesha area using *Juniperus procera* seeds sourced from Wof-Washa forest northeast of Addis Ababa, and declared Menagesha-Suba as a crown forest (Sebsebe, 1988; Eshetu & Högberg, 2000). This is supported by the findings of Sertse et al. (2011), which showed that the *Juniperus procera* populations of Menagesha-Suba and Wof-Washa are not significantly different genetically.

The first forest regulation was introduced by Emperor Menelik II in 1888 by royal decree; he employed guards to protect the forest and banned the cutting of trees without prior permission (Sebsebe, 1988). During Emperor Menelik's reign, exotic *Eucalyptus* spp. were introduced as a fast growing source of fuelwood and construction material (Tekalign, 2019).

In 1900, forest utilization was granted to a German industrialist who established a sawmill within the forest, resulting in a large decline of forest cover (Sebsebe, 1988). An estimated 150-200 m³ of timber was exported monthly from the Menagesha sawmill (Logan, 1946, in Bekele, 1993). During the Italian occupation (1936-1941), over 1,000 ha of mainly *Juniperus procera* was cut down and a railway was constructed to facilitate timber export (Tekalign, 2019). In 1949, Emperor Haile Selassie ordered the establishment of a tree nursery, and suspended the operation of the sawmill in the mid 1950s (Tekalign, 2019). In 1956, the Ministry of Agriculture initiated a reforestation programme of Menagesha-Suba Forest (Sebsebe, 1988). During the Derg regime, the forest became strictly protected under the 1975 land reform (Tekalign, 2019). Menagesha-Suba Forest was designated as a National Forest Priority Area (NFPA) in 1981.

Menagesha-Suba Forest was first delineated in 1984. An area of 9,557 ha was designated as state forest; this included conversion of agricultural land belonging to the local communities into state-owned plantations (Sebsebe, 1988; Tekalign, 2019). These plantations were created not only to increase forest cover and a sustainable source of timber but to create a buffer between the indigenous forest and local communities (Duguma et al., 2009; Tekalign, 2019). Under this regime, forest cover increased but there was little regard for the local community, and hundreds of people were displaced (Duguma et al., 2019). Use of the forest was restricted, with the exception of minor fuelwood collection. These rules were reinforced by the law, resulting in intense conflicts and court proceedings (Duguma et al., 2019).

When the Derg regime ended in 1991, local communities started to utilize the forest unsustainably, resulting in a reduction of forest cover. In 2007 the Menagesha-Suba NFPA was transferred to the administration of Oromia Forest and Wildlife Enterprise (Tekalign, 2019). In 2009, despite the presence of a forest management office and guards, illegal logging of trees including *Cupressus lusitanica* and *Juniperus procera* was evident (Duguma et al., 2009). Tekalign (2019) reports that participatory forest management (PFM) was attempted between 2011 and 2013, supported by Gesellschaft für Internationale Zusammenarbeit (GIZ), but failed due to

disagreements between beneficiaries and the PFM.

In 2015, a ten year project known as the Oromia Forested Landscape Programme (OFLP) started. The project is one of the national REDD+ pilots in Africa, aiming to reduce net greenhouse gas emissions from forest cover change and to improve the enabling environment for sustainable forest management and investment in Oromia Regional State (OFLP, 2017). The project encompasses all forests in the Oromia Regional State, however the direct implications for Menagesha-Suba Forest is unknown.

Deforestation and the topology of the area make Menagesha-Suba Forest prone to erosion. In some areas the soils have been reduced and bare rock exposed (Sebsebe, 1988).

The IPA is encompassed by the Menagesha-Suba NFPA, Menagesha-Suba State Forest Important Bird Area (IBA), and Menagesha-Suba State Forest Key Biodiversity Area (KBA). The IBA was designated in 1996 under criterion A3 based on the occurrence of 27 threatened bird species; however, these are now all classified as Least Concern (LC) under the IUCN Red List (BirdLife, 2021). In 2001, the forest was designated as a KBA; triggered by the presence of *Carex monostachya* (VU) and *Indigofera rothii* (then VU, now EN) (Key Biodiversity Areas, 2020). However, the records of these species at this site are likely to be erroneous, though further investigation is needed.

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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
<i>Gymnosporia addat</i> Loes.	A(i)	✓	✓	✓	—	—	
<i>Prunus africana</i> (Hook.f.) Kalkman	A(i)	—	—	—	—	—	
<i>Chrysojasminum stans</i> (Pax) Banfi	A(i)	✓	✓	✓	—	—	
<i>Hyparrhenia tuberculata</i> Clayton	A(i)	✓	✓	✓	—	—	

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
Dry Afromontane Forest	C(iii)				2350

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Montane Forest	—	Major
Rocky Areas	—	Minor
Artificial - Terrestrial - Plantations	—	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Forestry	—	Major
Harvesting of wild resources	—	Minor
Tourism / Recreation	—	Major

Threats

THREAT	SEVERITY	TIMING
Agriculture & aquaculture - Wood & pulp plantations - Agro-industry plantations	High	Past, not likely to return
Biological resource use - Logging & wood harvesting - Intentional use: large scale (species being assessed is the	High	Ongoing - trend unknown

THREAT	SEVERITY	TIMING
target) [harvest]		
Biological resource use - Logging & wood harvesting	High	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Menagesha-Suba	National Forest Priority Area	protected/conservation area overlaps with IPA	—

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Menagesha-Suba State Forest IBA	Important Bird Area	protected/conservation area overlaps with IPA	—
Menagesha-Suba State Forest KBA	Key Biodiversity Area	protected/conservation area overlaps with IPA	—

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Site management plan in place	In 2007 the forest was transferred to the Oromia Forest and Wildlife Enterprise; management largely seems to focus on plantation management, guarding the forest from exploitation, and tourism. Specifics on their management are unknown.	2007	—

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