

VEGETATION IN EAST AFRICA

This refers to the plant life on the earth's surface. Vegetation include trees and grasses. Vegetation is normally in two types; natural vegetation which grows according to the physical and natural environment of the areas.

Artificial vegetation refers to the vegetation that has been planted by man.

The natural types of vegetation.

Equatorial / tropical rain forests, savannah vegetation (savannah woodland and savannah grassland), semi-desert, montane, mangrove (swamp vegetation). The dominant type of vegetation in East Africa is savannah woodland and savannah grassland. Most of the vegetation in East Africa is secondary vegetation after man's influence on the vegetation cover.

Draw a sketch map of East Africa showing the different vegetation types.

Factors affecting the distribution of vegetation in East Africa.

1. Climate. Areas with equatorial type of climate receive heavy and reliable rainfall ranging between 1000-3000mm per annum. Hot temperatures ranging from 24-29°C, high humidity of about 70% and a low temperature range of 3°C. This leads to the development of dense equatorial forests e.g. around lake shores of Lake Victoria, mountain slopes like Kilimanjaro, Elgon, Rwenzori, Kenya and along banks of rivers like Nile. The equatorial forests include; Mabira, Budongo, Bwindi, Kibale, etc.

Areas with savannah type of climate experience moderate humidity and moderate rainfall of about 750-1000mm and hot temperatures. This has attracted savannah vegetation e.g. in Uganda, and Central Tanzania.

2. Soil types. Areas which have fertile soils, volcanic soils lead to the growth of tropical rain forests e.g. on the slopes of mountain Kilimanjaro (Chagga province) etc. Also, areas covered by alluvial fertile soils such as around Lake Victoria and Lake Kyoga basin have attracted tropical rain forests. Areas with rain forests are usually swampy and flooding.

Areas with sandy soils have attracted poor vegetation cover such as the shrub and thickets because of the coarse and texture soil permeability and porosity e.g. the Turkana Land, Ankole- Masaka dry corridor, central Tanzania etc.

3. Relief. Highland areas and mountainous regions have different types of vegetation along their slopes i.e.;

- i. Between 0-1000mm above the sea level, savannah dry vegetation is dominant where savannah lies at the lowest point followed by savannah grassland finally savannah woodland.

- ii. Between 1000-2000mm above sea level, tropical rain forests are dominant.
- iii. Between 2000-3000mm above sea level temperate vegetation is dominant.
- iv. Between 3000-4000mm bamboo type of forest is dominant.
- v. Between 4000-5000mm heath and modland are dominant.

Areas which are low lying have arid climatic conditions which have influenced the savannah type of vegetation dominated by grass and scattered trees e.g. in the north parts of Uganda, North Eastern Uganda, Eastern Kenya and central Tanzania etc. areas that lie on the leeward side of the mountains (rain shadow) have arid and dry conditions which attract savannah vegetation e.g. Kasese region which is the rain shadow of mountain Rwenzori.

Diagram.

The map of east Africa showing the vegetation distribution.

4. **Drainage.** Areas which are well drained like highland areas, mountain slopes and gently sloping regions are occupied by forest vegetation e.g. slopes of mountain Elgon, Kigezi highlands and Kenya highlands however areas which are poorly drained like low lands and valleys have constantly flooded and attracted swampy vegetation e.g. the shores of lake Victoria and Kyoga, coastal areas of East Africa, river banks etc. areas with limited water bodies like deserts or semi deserts attract dry savannah vegetation or semi desert vegetation basically with shrubs and thickets this is mainly found in Karamoja region, Turkana land, Ankole- Masaka dry corridor etc.
5. **Biotic factors.** Areas which are infected with pests and have limited economic activities influence the growth of natural vegetation and these include national parks, game reserves e.g. Queen Elizabeth national park, Tsavo national park, Serengeti National park among others which are highly infested with tsetse flies. Insects like aphids, caterpillars, locusts, termites among others destroy surface vegetation. This influences the growth of semi desert conditions in areas such as Turkana land, Northern Uganda and central Tanzania.
6. **Human activities.** Areas that are densely populated attract various human activities like agriculture, urbanisation, industrialisation etc. this calls for destruction of vegetation and consequently influencing the growth of savannah vegetation. Areas that are sparsely populated have dense vegetation cover especially tropical rain forests such as Kibale, Kiboga, Mubende etc.
7. **Government policy.** The government can gazette areas for environmental protection such as national parks, forest reserves like Mabira forest reserve, Mt. Elgon forest reserve. However, the government can also lead to destruction of vegetation by gazetting areas for settlement, urbanisation and mining etc. e.g. Kirembe mines, Tororo, Namanve etc.

Types of vegetation.

- Equatorial / tropical rain forest.
- Savannah vegetation/ savannah woodland/ savannah grassland/ dry savannah.
- Semi desert vegetation
- Montane vegetation
- Coastal mangrove vegetation.

1. Equatorial rain forest/ tropical rain forests.

This type of vegetation is commonly found on the slopes of mountains, areas in east Africa with this type of vegetation include; Mt. Kilimanjaro in Chagga province, the slopes of Mt. Kenya, Mt. Elgon, Mt. Rwenzori etc. they are also located in forest areas like Mabira forest, Budongo forest, Kibale forest, Bugoma forest, etc.

Tropical rain forests are located in areas with equatorial type of climate which receives heavy rainfall ranging from 1000-3000mm, high temperature ranging

from 25°C-30°C, high humidity of about 70% and low temperature range of about 5°C.

Characteristics of equatorial rain forest.

- Forests are thick and dense therefore they are concentrated and compacted implying that trees are close to each other this is because of high rainfall and fertile soils.
- Trees are mostly of hard wood type because of constant hot temperature that causes them to discharge a lot water. Also because of the long period the trees take to mature.
- The trees have a long gestation period, they take a long time to mature approximately 30-40 years. This is because they are of hard wood.
- Trees are very tall of approximately 30-60m because of the fertile soils and ability to compete for the sunlight.
- Trees are arranged in layers known as canopies and the first layer appears 90-100 feet, and the second layer appears between 100-150 feet, and the third layer between 150-200 feet because they are different tree species that grow at different times.
- The trees have broad leaves to influence a high rate of evapo-transpiration to reduce excessive water and to tap enough sunlight required for photosynthesis
- Forests are green throughout the year because they receive rainfall throughout the year and found in areas of fertile soils.
- Forests have limited under growth because of lack of sunlight and a lot of mulch from the dropped leaves.
- Trees grow small plants on their barks e.g. lichens and mosses because of being humid and having a lot of water.
- Trees have climbing plants known as lianas/ creepers intermingle the canopies to create darkness in the forest.
- Trees have thin barks for easy discharge of excessive water.
- Trees have buttress roots to support the enormous huge size and height.
- Trees have large sized trunks because of soil fertility in the areas.

2. Savannah vegetation.

Savannah vegetation is categorised in 3 groups which include;

(I) Savannah woodland. Which is dominant in central Uganda, eastern Kenya, in the Nyika plateau, central and southern Tanzania (Miombo woodland).

Characteristics of savannah woodland.

- The trees are mediumly tall ranging from 30-40m because of limited soil fertility and inadequate rainfall.
- Trees are umbrella shaped because of the broad space around them therefore giving them maximum expansion.

- Trees shade their leaves during the dry season in order to minimise/reduce the rate of water loss.
- Leaves are mediumly small to minimise the rate of water loss.
- Trees have a lot of undergrowth because of the excess light.
- Trees are mediumly of small size because of limited food supply and inadequate rainfall.
- Trees have thick barks to reduce the amount of water loss from plants.

(ii) SAVANNAH GRASSLAND

It is dominantly located in Northern Uganda, western Kenya, the Masai land of Kenya and Tanzania, western Uganda specifically Nyabususi.

CHARACTERISTICS

The dominant type of vegetation is grass.

The common grass species is elephant grass and spear grass.

The grass is tall of about 5~7 meters.

Grass dries up during the dry season

The area has scattered trees which are thorny.

Trees have small leaves especially the acacia to reduce water loss.

Grass have taproots to reach the water level and brittle leaves.

Trees have thick barks to store water.

Trees are short of approximately 20-30m.

Trees have hard wood.

(iii) DRY SAVANNAH VEGETATION

It is located in semi-arid areas of east Africa particularly north eastern Uganda (Karamoja), Pader, Kitgum, Northern Kenya (Turkana land), north eastern Kenya (Wanjiri, Marsabit, and Mandera), central Tanzania (Kondoa districts), the Ankole Masaka dry corridor.

Characteristics

- the biggest part of land is bare with no vegetation cover.
- The dominant type of vegetation are thickets (shrubs and scrubs)
- Trees are very short of about 15-20m
- Trees are thorny
- Trees have very thick barks
- Trees have big tap roots which access water deep in the water table

- Trees store water in their trunks/stems to be used in the dry season.
- Leaves are waxy and powdery to reduce on the size of the stomata and minimize water loss.
- Grass is hard and brittle when mature and tender when young after burning has taken place.
- Trees are hard wood because of excessive hot temperature.

3.TEMPERATE (CONIFEROUS FORESTS) VEGETATION

This type of vegetation occurs between 2000-3000m above sea-level with the following characteristics.

Characteristics

- Trees appear in large/ big stands
- Forests are ever green throughout the year
- There is a lot of undergrowth especially grass and shrubs.
- Trees are soft wood in nature.
- Trees have thin barks that can easily discharge water.
- Trees are mediumly tall, approximately 30-40m
- Leaves are needle shaped and very small in nature in order to minimise water loss.
- Trees are cone shaped in order to allow easy snow flow
- The main species include, eucalyptus, pine, red cedar, hemlock.
- Trees have deep taproots to access water deep in the soil layers
- Stems produce a lot of wax

(i). BAMBOO

- Forests are ever green throughout the year.
- Forests have uniform tree species/pure stands
- There is no under growth
- Trees form one uniform canopy
- Trees are small sized in nature
- Trees are yellowish in nature
- Trees are hollow in nature
- Trees have elongated brittle leaves
- Many trees develop from the same stem/clusters
- Trees have fibrous roots
- Tree barks are smooth in nature
- Trees have soft wood
- Trees have inter-nodes

(ii) heath and moorland

- The dominant vegetation is heath/mushrooms.
- Trees store water in their stems e.g cactus
- Trees are scattered
- The biggest part of the land is bare rock at times covered by snow
- Rock surfaces are covered by algae because they are moist
- Other parts of the rock surfaces are covered by mosses and lichens
- Trees are thorny and very short
- Some parts are covered by thickets and shrubs
- Leaves are modified into thorns
- Most of the roots spread on the surface

4, MEDITERRANEAN VEGETATION

Occurs on the Mediterranean basin belt in southern Europe and north Africa. Western cape province of south Africa, west coast of trees California, central Chile,

Characteristics

- Much of the woody vegetation is hard leaved/sclerophyll type
- Leaves are generally small and dark green
- Some leaves are waxy for purposes of retaining moisture during summer months.
- Plants like grape vines have long taproots which is needed in tapping water deep in rock layers
- Some plants have fleshy fibrous roots which store water used during summer months
- Some trees have thick, rough barks which are used to store water in summer
- There are sweet smelly herbs and shrubs e.g., rosemary, thyme and lavender
- Trees are cone shaped especially pines to allow easy snow fall
- Some trees are short, flat topped e.g. cork oak
- Forests have mixed stand tree species mainly deciduous, coniferous, dwarf trees and tough grasses
- Short grasses are also common in Mediterranean grasslands of central California valley and south western Australia.

Conditions that favour Mediterranean vegetation

1. Climate

- Areas receive hot dry summers about 25°C. they receive cool moist winters of about 12°C

- Annual rainfall ranges from 500-700mm which is adequate for Mediterranean vegetation
- Onshore westerly winds blow in during winter influencing cyclonical rains

2. Soils

Mediterranean lands have ashy soils which are residual in nature. Limestone soils are also common which are porous and permeable that drain easily which influences trees to develop tap roots in order to access water deep in rock layers. Some Mediterranean areas have poor soils influencing the growth of shrubs and thicket.

3. Altitude

Mediterranean vegetation is mainly found along the coastal areas which are of low altitude influencing the growth of shrubs near the coast.

4. Latitude

Mediterranean vegetation is common between 30°Ns-40° N and also between 30 °s -40°s of the equator.

Areas with Mediterranean vegetation are located mainly on the western side of continents because of maritime conditions where air masses blowing from oceans depositing moisture along the coast.

Influence of human activities on natural vegetation

Logging/lumbering, overgrazing, urbanization, agriculture, settlement, road construction has led to extensive loss of forests leading to loss of natural plants giving way for secondary vegetation

NB Research on the disappearance of the natural vegetation in east Africa.

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