NON-DETREMENT FINDING REPORT FOR PRUNUS AFRICANA TRADE IN UGANDA, 2023 (PREPARED IN ACCORDANCE WITH CITES RES. 16.7)

1.0 Species biology and life history characteristics

Prunus africana is a species of the Rosaceae family, known under its trade/pilot name as Pygeum or African cherry. It is a montane tree species of the tropical Africa including the Côte d'Ivoire, Bioko, Sao Tome, Ethiopia, Kenya, Uganda, South Africa, Madagascar, Congo, the Democratic Republic of Congo, and Cameroon.

The mature tree is 10–25 m high, open-branched, and often pendulous in forest, shorter and with a round crown of 10–20 m diameter in grassland. It requires a moist climate, 900–3400 mm annual rainfall, and is moderately frost-tolerant.

The bark is black to brown, corrugated or fissured, and scaly, fissuring in a characteristic rectangular pattern. The leaves are alternate, simple, long (8–20 cm.), elliptical, bluntly or acutely pointed, glabrous, and dark green above, pale green below, with mildly serrated margins. A central vein is depressed on top, prominent on the bottom. The 2-cm petiole is pink or red. The flowers are androgynous, 10-20 stamens, insect-pollinated, 3–8 cm., greenish white or buff, and are distributed in 70-mm axillary racemes. The plant flowers October through May. The fruit is red to brown, 7–13 mm, wider than long, two-lobed, with a seed in each lobe. It grows in bunches ripening September through November, several months after pollination.

An extract, Pygeum, a herbal remedy prepared from the bark of P. africana, is used as an alternative medicine in patients with Benign Prostatic Hyperplasia (BPH).

Prunus africana exhibit complete bark regrowth and is known to be able to withstand complete bark removal. The ability to withstand bark damage offers the potential for sustainable harvesting of *Prunus africana* bark.

2.0 Species range

According to IUCN, *Prunus africana* is distributed in Montane Africa (to East and South Africa) and Madagascar. This species is one of Pan-African montane tree species. It is not remotely in danger of extinction, so long as some montane forest survives somewhere within its enormous range.

In Uganda, the tree is distributed across most of the country, but highest concentrations are in highland and medium altitude forests, mainly in mountainous parts of Uganda in the western, southwestern regions and on Mt. Elgon. Prunus Africana is found in Protected Areas like Bwindi Impenetrable National Park, Kibale National Park, Rwenzori Mountain National Park, Mt. Elgon National Park, Budongo, Bugoma, Kalinzu, Matiri, Itwara and Mabira Central Forest Reserves among others.

The tree also exists in substantial populations on private land around the Country, particularly in Hoima, Bundibugyo, Masindi, Kisoro, Kabale, Rubirizi, the Greater Bushenyi, Kasese, Kamwenge, Ntungamo, Kapchorwa, Kyenjojo, Mukono, Kagadi, Kakumiro and Kibale Districts.

3.0 Population status

Uganda has not conducted a comprehensive national survey to establish the population status of the plant throughout the Country. However, Forestry Sector Support Department (FSSD) has coordinated four successive inventories on private land in collaboration with National Forestry Resources Research Institute (NAFORRI), National Forestry Authority and the District Local Governments as follows;

(i) 2008 covering six Districts in Southern and Western Uganda. This established 22,768 mature trees of ≥30cm diameter at breast height (dbh)

(ii) 2010 covering more Red Stink Wood farmers in Southern, Western and Central Districts which established 30,086 additional mature trees of ≥30cm diameter at breast height (dbh)

(iii) In 2015, FSSD in partnership with Local Governments of the respective districts conducted a comprehensive inventory in 16 districts to document all standing *Prunus africana* trees in different age and dbh clusters. A total of 47,581 trees were recorded above 30cm dbh. The inventory recorded dbh cluster categories from below 10cm, (93,166 trees) and between 10cm and 29.9cm (61,904 trees). More database updating continues for all farmers who were missed during the total enumeration exercise.

From the three inventories conducted outside Protected Areas, a total of 52,854 mature trees of ≥30cm diameter at breast height (dbh) have been established and all the owners of the trees registered for purposes of monitoring and tracing. However, the population is much more than this number as these inventories focused on harvestable trees only of ≥30cm dbh. Even then, the three inventories haven't covered the entire country or all farmers given the costs involved.

After the 2022 inventory the number of harvestable trees was established at 65,010trees that forms the basis for the new export quota computation.

4.0 Threats

According to IUCN, harvesting of bark for the European medicinal market is the largest threat to the conservation of Prunus africana. In Uganda however, *Prunus africana* is more threatened by conversion of private forests into agricultural land leading to indiscriminate cut down of trees to clear land for agriculture. Demand for timber and charcoal from the *Prunus africana* trees also puts pressure on the tree populations. It is believed that Charcoal and timber from this tree is of exceptionally high quality hence the demand. Sustainable trade of the plant in Uganda is an effective incentive for private landowners to keep the species on their land. As the planted trees increase, more naturally occurring trees are lost to land use change.

5.0 Historical and current species-specific levels and patterns of harvest

Uganda currently exports 252.5 tons annually, which is exclusively sourced from private forests and plantations.

In 2008 (covering Hoima, Kibaale, Kabarole, Kyenjojo, Mukono, & Bundibugyo districts), the inventory revealed 22,768 harvestable trees of dbh ≥30 cm upon which an annual trade quota of 75,893kg was set. In 2010 additional inventory in areas previously not reached (Covering Bundibugyo, Hoima, Kyenjojo, Kibaale, Kapchorwa & Mukono districts), recorded additional 30,086 harvestable trees of dbh ≥30 cm. Adding these to previously registered trees in 2008, upon which an annual quota of 100,287kg was set. This has brought national quota to 176,179 kg since 2011 to date. The inventory of 2015 was meant to make a fresh benchmark for the species. This, as already indicated established 47,581 mature trees of 30cm dbh and above, 61,904 trees between 10cm and 29.9cm while 93,166 trees were in the category below 10cm dbh. The findings from this inventory will provide a fresh approach to computation of the national quota where bark from each is computed on its merit not lumping up expected yield. The subsequent quotas will be based on additional trees enumerated every year.

The bark biomass was computed using the Uganda National Biomass model, 2002, where parameters were then fed into the model and wet biomass at merchantable height was estimated as Above Ground Biomass (AGB), then bark biomass computed as a function of above ground biomass and Bark Ratio for hardwoods (0.55) and later as dry bark mass by use of the specific gravity of the bark mass (0.45), and finally halved at a ratio of 1:2 for the 50% debarking weight. The bark biomass was then estimated using Jenkins Jennifer model, (Jenkins, et al., 2004) that estimates bark biomass in pounds at merchantable height as a function of the bark ration of 0.55 and specific bark gravity of 0.45. The tree-by-tree-inventory in the 20 districts including Mukono, Masindi, Hoima, Kibale, Kyenjojo, Kamwenge, Kabarole, Bundibugyo, Kasese, Rubirizi, Bushenyi, Mitooma, Kanungu, Rukungiri, Kagadi, Bunyangabu, Kabale and Kisoro yielded a bark biomass of **6,179,869.17kg** for various diameter classes, however, the oven dry for the mature recommended 30cm diameter bark mass (BM), is **2,343,478**kg which was estimated from the merchantable height from 65,010 trees producing an annual export quota of **290,005.50kg** as follows:

#	Diameter class (cm)	No. of trees	Biomass_at Merch_Height_kg	Bark_biomass (AGB*BR) (Kg)	OD_Bark (Merch_Bio*SBG) (Kg)	Half (50%) Debarking (Kg) (Export Quotas)
1	>30cm	**65,010**	**2,343,478.79**	**1,288,913.33**	**580,011.00**	**290,005.50**
2	>20and<30cm	78,250	3,034,676	1,669,072	751,082	375,541.09
3	>10and<20cm	45,040	301,367.80	165,752.19	74,588.51	37,294.25
4	<10cm	10,800	324,113.70	178,262.53	80,218.14	40,109.07

6.0 Management measures currently in place

Uganda's *Prunus africana* trade is deliberately restricted to privately owned forests and farmlands, strictly outside all protected areas. The provisional pilot exports (2005 to 2007) for extract trials, and all the exports under the 2008 and later 2010 set Annual Export Quotas, backed by homestead level privately community based individually owned domesticated tree stocks and privately owned natural forests, which people have been convinced to spare from use as firewood, herding/walking sticks, building and other timber/wood requirements. In partnership with Government, and the approved private investor, they reserve them for bark extraction for money.

When the bark and supporting origin-authentication documents are delivered at the sales and storage warehouse, and payment is done, the respective household is given a minimum of two free seedlings for every debarked tree, to plant; with the objective of increasing the population for more bark, and therefore more money or income in the future, but normally farmers request for more than ten seedlings.

A total of 940,000 tree seedlings have been distributed to farmers between 2015 and 2021 by both the Ministry of Water and Environment and Cudwell Industries Ltd. However due to failing rain seasons, the average survival percentage for tree establishment of different species over the past 5 years across the country has been around 65% after the first year of planting which is about 610,000 trees added since 2015. As these trees grow into the harvestable 30cm dbh range, we remain mindful of the fact that land use change has persisted and hence the need to maintain a conservative export figure until all the trees planted across the country have been mapped and capacity of farmers built enough to not only plant new trees but also conserve the already existing trees in their natural ecosystems on their land.

To improve on regeneration and protection of species in the wild, government together with the licensed company has over the last five years supported privately owned natural forests by developing Forest Management Plans, boundary opening, enrichment planting with *Prunus africana* to enhance its stocks and increase its growing area. Whereas the government and Cudwell through a Memorandum of Understanding had planned to support some identified income generating activities like bee keeping and crafts making in the Forest Management Planning process, as a way of promoting natural forest conservation as a competitive land use option, this was not possible after the market for the bark became inconsistent to support this kind of investment. Efforts are currently on to mobilize resources through proposals aimed at biodiversity conservation targeting our development partners. For areas where the land has already been converted especially for tea plantations farmers are being supported to establish rows of Prunus africana as a shed tree since the practice is already proven for coffee and cocoa in other districts as an economically viable enterprise, that provides multiple benefits for the ecological services including shed and leaf manure, household medical needs from the leaves, bark sales and lately voluntary carbon credit sales from local NGOs targeting indigenous tree species. With the coming into force of Article 6 of the Paris Climate Treaty, efforts to improve survival of trees on private land in collaboration with the farmers will yield more results

6.1 Average yield and harvesting parameters

The biomass estimation model of the National Biomass Study project (NBS Report, 2009) in the annex was used to estimate the biomass at a bole length (referred commonly as merchantable height; height from the ground to the first branch of the tree). The model was preferred since it is flexible to use to estimate biomass at a merchantable height, without the use of the height, and assuming the crown diameter is the same as the diameter at the merchantable height of a broken height. The model uses parameters such as dbh, the height of the tree, and crown diameter for estimating the total biomass of the whole tree. Since the purpose of this study was specifically to determine bark biomass at a merchantable height (bole length), then crown diameter was assumed at merchantable height and the latter was assumed to be the total height of the tree

Exploited trees are only those that are above 30 centimeters in diameter at breast height (30cm dbh). The minimum height at which the bark is removed from is one meter (1m) above the ground, up to the level of the first lateral branch. Only 50% of the bark is removed from this part (trunk) of the tree. Based on Knut, 1997, tree size in intervals of 20cm diameter classes are used as a basis for grouping. The parameters were then fed into the National Biomass Study model (NBS Report, 2002) and wet biomass at merchantable height was estimated as Above Ground Biomass (AGB), then bark biomass computed as a function of above ground biomass and Bark Ratio (0.55) and later as dry bark mass by use of the specific gravity of the bark mass (0.45) , and finally halved at a ratio of 1:2 for the 50% debarking weight

The bark biomass was then estimated using Jenkins Jennifer model that estimates bark biomass in pounds at merchantable height as a function of the bark ration of 0.55 and specific bark gravity of 0.45 (Jenkins, 2004).

6.2 Techniques for harvesting

A Panga/machete is used to cut/slice the bark, which is then peeled off taking care not to remove the cambium layer, in two longitudinal quarters on opposite sides of the trunk. Two quarters are left intact, from which the bark re-grows to cover the exposed part. A cow dung-soil mixture is smeared on the debarked part to prevent any fungal infections and speed up the healing process. Recovery of bark usually takes 4-5 years. Despite the recovery of 4-5 years after de-barking, a tree is only re-visited for bark removal 9 years later. In case of very tall trees, a ladder is used to reach the higher levels of the first lateral branch and only 50% of the bark is removed in order to ensure sustenance of the regeneration opportunity. This process is supervised by the District Forest Officers who have also continuously trained farmers and private company agents on the process of debarking.

6.3 Traceability

The land owners/farmers, on whose land the trees are debarked, are all registered with the respective District Forestry Officer(s) (DFOs) and also with the Government concessioned company/ investor, Cudwell Industries Ltd and copies of which are also shared with Forest Sector Support Department, the plants CITES Scientific Authority focal point in the Ministry of Water and Environment. The registration includes ownership, location of the land (Sub-county,

Parish and Local Council One at the village level), and the number of trees on each individual parcel of land. The investor has a store in each district for the extracted bark. Before debarking, each land owner signs a "consent form", witnessed by the village Local Council chairperson, for debarking with Cudwell Industries Ltd; and is assisted and monitored by the respective District Forestry Offices. Information regarding the amount of bark collected from each farmer is also recorded for monitoring and accountability purposes. Only farmers with trees covered under the inventory, with GPS coordinates for proof of ownership and location are cleared for sale. This is done with the help of the District Forest Officers.

In addition, the office of the CITES Management Authority keeps records of all Exports in file, as well as in the compilation of the CITES annual report. The export permits are written in compliance with CITES Resolution Conf. 12.3 (Rev. CoP14), in particular Section (VIII), regarding permits and certificates for species subject to quotas. CITES permits are strictly issued based on recommendation of the Scientific Authority.

6.4 Enforcement

Farmers who sell bark are registered with the District Forestry Office, which monitors their activities with the help of local Forest Rangers at Sub County level. A representative of the District Forestry Office observes each debarking. In each district there is a storekeeper and one agent responsible for buying the bark who is accountable for the good and bad practices.

Before shipment, every cargo is inspected by a representative of the CITES Scientific Authority (also the Competent Authority of Government in charge of forestry) for plants of wild origin and of customs. The same representative also samples trees in the field in order to monitor the District Forestry Office's outputs. At the point of exit from Uganda, the same representative makes a final inspection to ensure that the goods inspected in the field are the same destined for export before endorsing the export permit. A phytosanitary check is also made by the Ministry responsible for Agriculture, which gives a phytosanitary certificate, when satisfied with the sanitary standards of the product.

The Customs Department gives clearance if what is stated in the export documents corresponds to the tonnage verified in the cargo. All key border posts are properly manned and the Customs authorities ensure that the export of any bark without the necessary documentation is intercepted; illegal dealers are arrested and prosecuted under national laws.

7.0 Population monitoring

Regular inventories are conducted in Uganda to monitor the populations of the species. In 2008, 2010, 2015 and 2022, inventory of privately owned *Prunus africana* stocks were carried out, outside Protected Areas. The inventories focus on verifying trees above 30 centimeters diameter at breast height (30cm dbh), which are suitable for harvesting of bark, the next category between 10cm and 29.9 as well as below the 10cm to allow for projections on future production. The inventories carried out so far, are strictly limited to privately owned land outside Protected Areas. This is because; Uganda does not permit exploitation of the species from the Protected

Areas as a way of ensuring their sustenance and preservation in the wild. For ease of monitoring, only one company has so far been cleared to trade and are fully liable for both the good and bad practices.

8.0 Conservation status

According to IUCN Red list, Prunus africana is classified as **Vulnerable**; and the plant is listed in CITES appendix II.