

Review of *Prunus africana* from Cameroon

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SUMMARY

Cameroon is the world's biggest exporter of *Prunus africana* bark, with most of the exported bark going to France and Spain, where it is used by the pharmaceutical industry. A quota of two million kilogrammes of bark was first established in 2005. Following a negative opinion formed by the SRG in December 2007, Cameroon reduced the quota to one million kilogrammes in 2008 and was left holding stocks of over 600,000 kilogrammes, as exporters were apparently caught unaware. Cameroon reportedly intends to reduce the quota further in 2008, to half one million kilogrammes.

Prunus africana has a widespread but fragmented distribution in Africa, it is considered globally Vulnerable and over-exploitation is regarded as the main threat to the species.

In Cameroon, *P. africana* is distributed mostly in the west of the country (provinces of Adamaoua, Littoral, West, North West and South West). Major declines have been reported in the country, and the spread of commercial exploitation to some areas is considered to be of serious concern.

P. africana is an important source of income for local people. Collectors as well as the general community have been reported to benefit through development projects. It has been estimated that in 2005 and 2006 between 1.5 and 2 million kg of *P. africana* bark were harvested annually, valued at approximately US\$ 0.5 million to producers, with an export value of US\$ 5.5 million. The value of *P. africana* in 1999 was estimated at US\$ 0.7 million to Cameroon and US\$ 200 million to pharmaceutical companies in consumer countries.

Currently nearly all the bark entering the international market is extracted from the wild. Bark extraction concentrates on isolated populations of the species in montane forest 'islands', which are becoming further isolated due to the destruction of most large, reproductively mature trees. There is considerable evidence, as reported by several authors, that *P. africana* is being over-exploited in all harvesting areas in Cameroon. Unsustainable harvesting techniques are also generally believed to be a major threat to *P. africana*. Moreover, there have been various reports of illegal harvest, lack of transparency and problems with enforcement and implementation. Some authors consider that declines in *P. africana* may have long term consequences for the health of threatened and decreasing montane ecosystems and their biodiversity, as well as for rural people.

There are no *P. africana* inventories for the whole of Cameroon and therefore it has been stated that it is not possible to establish an export quota on scientific grounds. A number of local inventories have been carried out, but some authors argue that even in some of those cases, the available sustainable harvest has been over-reported. A limited inventory in the NW and SW made in 2007 concluded that exploitation of *Prunus* is still possible in Cameroon.

Management plans for the sustainable use of *P. africana* were reported to be in place for the two main areas of distribution in the country - Mt. Cameroon region and North West province. However, levels of exploitation in both areas have recently been found to be unsustainable by some authors.

Cultivation of *P. africana* has been suggested as a possible solution to the current over-harvest of the species from the wild. Cultivation of the species began in the 1970s in some areas of Cameroon, but the majority of trees are not yet mature and most of the harvest is currently still from the wild.

Recommendations made in 2006 to Cameroon following the Significant Trade Review process included the establishment of a revised conservative quota based on the inventory of standing stock and on estimates of sustainable off-take, and the preparation of a management plan.

As a response, Cameroon halved their export quota and they reportedly intend to reduce it further in 2008. In addition, a proposal has been submitted to ITTO to fund a sustainable management plan, which will be based on inventories of their *P. africana* resource. Cameroon has also requested assistance from CITES and the EC so it can effectively meet the requirements of CITES. This request is now being addressed.

The EU formed a negative opinion at SRG 42 (December 2007) on imports of *P. africana* from Cameroon. At SRG 44 (April 2008), the negative opinion was maintained and the SRG agreed that the issue should be revisited at SRG 45, taking into account the conclusions of SC 57 and also the outcome of a workshop to be held in Kenya in September 2008.

At SC 57 (July, 2008) it was agreed to extend the deadline for the production of a *P. africana* management plan by most range States, including Cameroon, to the end of 2008.

DETAILED SPECIES ACCOUNT

SPECIES: *Prunus africana*

SYNONYM: *Pygeum africanum*

COMMON NAMES: African cherry (English), kanda stick (English), red stinkwood (English)

RANGE STATES: Angola, Burundi, Cameroon, Comoros, ?Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, ?Ghana, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Rwanda, Sao Tomé and Príncipe, Somalia, South Africa, Sudan, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

IUCN RED LIST: Vulnerable

PREVIOUS EC OPINIONS:

Current negative opinion for Cameroon first formed on 14 September 2007, last confirmed on 26 May 2008. Previous positive opinion for Cameroon first formed on 18 November 1998 and last confirmed on 18 December 2006.

Previous positive opinion for Democratic Republic of the Congo formed on 13 December 2004 and removed on 29 February 2008, which was preceded by a negative opinion formed on 1 July 2004 and a positive opinion formed on 27 January 1999.

Previous positive opinion for Equatorial Guinea formed on 18 November 1998, reconfirmed on 13 December 2004, and removed on 13 June 2005.

Previous positive opinion for Kenya formed on 27 January 1999, removed on 13 June 2005.

Previous positive opinion for Madagascar first formed on 27 January 1999, last confirmed on 26 September 2006 and removed on 29 February 2008.

Current negative opinion for the United Republic of Tanzania formed on 29 February 2008 and reconfirmed on 26 May 2008. Previous positive opinion formed on 13 December 2004.

TRADE PATTERNS

According to Cunningham *et al.* (1997) and Cunningham (2005), Cameroon is the world's biggest exporter of *P. africana* bark. The bark is exported dried, chipped or powdered mainly to Europe, where an extract from the bark is used to produce a drug for the treatment of benign prostrate hyperplasia (BPH) (Cunningham and Mbenkum, 1993). Cunningham (2005) reported that from two initial brand-name products in France and Italy to treat BPH, there were at least 40 brand-name products using *P. africana* bark extract. These are marketed directly in ten countries and globally through the internet. According to Njamnshi (2007) international demand for *P. africana* is currently 6,500 kg of extract annually and Cameroon supplied about half the world's total *P. africana* bark between 1972 and 2000, mainly to Europe for extraction. The CITES Significant Trade review of *P. africana* showed that Cameroon accounted for 70% of the species' trade to the EC (Cunningham, 2005).

Export Quotas

Cunningham (2005) considered that adoption of quotas based on thorough inventory and yield studies would provide a simple yet effective tool that could be implemented by importing countries in the EU.

Export quotas from 2005-2008 are given in Table 1.

Table 1. CITES Export quotas for *Prunus africana* from Cameroon and associated global exports, reported by importer and exporter. All quotas refer to kg of powdered bark.

	2005	2006	2007	2008
Quota	2,000,000	2,000,000	2,000,000	1,000,000
Exports reported by importer	1,809,589	1,292,904	-	-
Exports reported by exporter	1,698,164	1,497,500	-	-

Trade data

Schippman (2001) reported that commercial exploitation of *P. africana* started in 1972. In 1976, 10,000-50,000 kg of bark were exported according to Cunningham and Mbenkum (1993). Export figures presented by Cunningham *et al.* (1997) based on way-bill data averaged 1,500,000 kg annually in the late 1980s and increased to around 2,000,000 kg in the early 1990s. An exceptionally high figure of 3,900,000 kg was reportedly exported in 1990/91 despite an official ban on exports in force by the Cameroonian government (Cunningham *et al.*, 1997). These figures also include extract exports converted into corresponding bark volumes. Cunningham (2005) reported that extract yields are about 5 kg per 1,000 kg of bark (1:200).

According to importer data in the CITES trade database, between 2001 and 2006 EU bark imports from Cameroon varied between a maximum of 1,800,589 kg of bark in 2005 and a minimum of 218,000 kg in 2002, see Table 2.. France was the largest EU importer from 2001-2006, accounting for 2,855,944 kg of bark imports (56% of total direct EU imports). Imports to Spain were also important totalling 2,228,382 kg (43.7% of direct EU imports) during the period. The only other EU importer was Belgium which imported a total of 18,000 kg from 2001-2006 (0.3% of direct EU imports).

The EU also imported a significant amount of indirect exports originating in Cameroon, see Table 3. These comprised almost entirely bark extract. Indirect imports from Cameroon to the EU totalled 6,736.49 kg from 2001-2006, with a maximum of 1,781 kg in 2004 and a minimum of 350

kg in 2002. The large majority of the bark extract (6,003.49 kg, 89.2% of total indirect imports) was imported by France via Morocco.

Direct imports of *P. africana* bark to non-EU countries totalled 102,000 kg from 2001-2006 (2% of total direct bark imports from Cameroon). All were imported by Madagascar, see Table 4.

Table 2. Direct exports of *Prunus africana* from Cameroon to EU-27, 2001-2006. All trade was reported in kg from wild source for commercial purposes.

Importer	Term	Reported by	2001	2002	2003	2004	2005	2006	Total
Belgium	bark	Importer				5000	5000	8000	18000
		Exporter				10000	8000		18000
France	bark	Importer	199985	170000	315055	428000	921000	821904	2855944
		Exporter	50000	338000	234000	616500	963500	1022500	3224500
	extract	Importer				10			10
		Exporter							
Spain	bark	Importer	60000	48000	232147	588646	874589	425000	2228382
		Exporter	1740	208300	234000	795000	718000	390000	2347040
Subtotals	bark	Importer	259985	218000	547202	1021646	1800589	1254904	5102326
		Exporter	51740	546300	468000	1421500	1689500	1412500	5589540
	extract	Importer				10			10
		Exporter							

Table 3. Indirect exports of *Prunus africana* originating in Cameroon to EU-27, 2001-2006. All trade was in wild specimens.

Exporter	Importer	Term	Units	Purpose	Reported by	2002	2003	2004	2005	2006	Total
Canada	Spain	extract	kg	T	Importer					10	10
					Exporter						10
Madagascar	France	bark	kg	T	Importer			3			3
					Exporter			3			3
		extract	kg	T	Importer		20		65	98	183
					Exporter		20	96		98	214
Morocco	France	extract	kg	T	Importer		1683	1731	1300	1289.49	6003.49
					Exporter		1683	1731	2631	1289.49	7334.49
Switzerland	Netherlands	extract	kg	-	Importer						
					Exporter		1				1
	Poland	extract	kg	T	Importer			50	30	110	190
					Exporter						
		-	-	-	Importer						
					Exporter		60	50	90		200
	Spain	extract	kg	T	Importer		350				350
					Exporter						
-	-	-	-	Importer							
				Exporter		150				150	
United States	United Kingdom	extract	flasks	T	Importer						
					Exporter					1736	1736
	bark	kg	T	Importer				3		3	
				Exporter				3		3	
	Subtotals	extract	flasks	T	Importer						
					Exporter					1736	1736
extract	-	-	T	Importer		350	1703	1781	1395	1507.49	6736.49
				Exporter			1703	1827	2631	1397.49	7558.49

Exporter	Importer	Term	Units	Purpose	Reported by	2002	2003	2004	2005	2006	Total
				-	Importer						
					Exporter	150	61	50	90		351

Table 4. Direct exports of *Prunus africana* from Cameroon to countries other than EU-27, 2001-2006. All trade was reported in kg of wild-sourced bark for commercial purposes.

Importer	Reported by	2001	2003	2004	2005	2006	Total
China	Importer						
	Exporter				8600	9000	17600
Madagascar	Importer		46000	9000	9000	38000	102000
	Exporter			18000	27	76000	94027
Morocco	Importer						
	Exporter				37		37
United States	Importer						
	Exporter	5000		12502.5			17502.5
Totals	Importer		46000	9000	9000	38000	102000
	Exporter	5000		30502.5	8664	85000	129166.5

CONSERVATION STATUS IN RANGE STATES

General Introduction

Prunus africana was reported to be a widespread Afromontane forest tree in mainland Africa, Madagascar and the islands of Grand Comore, Sao-Tomé and Fernando Po (Kalkman, 1965), but Cunningham and Mbenkum (1993) considered that its populations were isolated in islands of montane habitat. According to Cunningham (2005), *P. africana* populations are small and scattered in southern Africa, but larger in East Africa and prior to commercial bark harvest, large healthy populations occurred in West Africa, notably in Cameroon. Cunningham (2005) summarised the status of the tree in the species' range states. Angola: Vulnerable; Burundi: Data deficient, but may be threatened and in long-term decline; Cameroon: Vulnerable; DR Congo: Data deficient; bark harvest is opportunistic and unregulated; Equatorial Guinea: harvest considered unsustainable; Ethiopia: probably not threatened, subsistence use of bark only; Kenya: needs non-detriment assessment of current bark harvest by sole exporter; Madagascar: Vulnerable; Malawi: Vulnerable; Mozambique: Data deficient; Nigeria: Data deficient, small population may occur; Rwanda: Data deficient, populations probably secure unless commercial bark harvest starts; Sao Tomé & Principe: Data deficient, probably not threatened unless commercial harvest starts. South Africa: not threatened, but rare; Sudan: Data deficient; Swaziland: Endangered; Tanzania: Cunningham (2005) considered it Data deficient; Hall *et al.* (2000) mapped its distribution widely throughout the uplands; Uganda: not threatened; Zambia: Lower risk, not threatened, widespread but uncommon habitat; Zimbabwe: rare and restricted so small patches.

According to Cunningham and Mbenkum (1993) *P. africana* is a multiple-use hardwood species with local and international economic and medicinal value. The species is traded on the international market, for its bark which is the major source of an extract used to treat benign prostatic hyperplasia (BPH). Ingram and Nsawir (2007) reported that the extract is also a raw material for the burgeoning health, bio-product and diet supplement industry.

Traditionally in Africa *P. africana* is a medicine used to treat chest pain, malaria and fevers (Cunningham and Mbenkum, 1993) and as a medicine for cattle (Anon., 1996). The species has excellent timber for construction, furniture and household utensils (Marshall and Jenkins, 1994). *P. africana* is also used for erosion control by growing trees along contour ridges and shelter; to provide shade or shelter; and as a soil improver by using leaves as mulch and green manure (Anon., 1996).

The tree has to be some 15 years old before bark harvesting can take place (Burfield, 2006).

Over-exploitation, chiefly for its medicinal properties for use in the West has led to rapid population declines and listing of the species as Vulnerable in the *World List of Threatened Trees* (Oldfield *et al.*, 1998). The species is also listed as Vulnerable in the latest IUCN Red List (World Conservation Monitoring Centre, 1998).

Cunningham and Mbenkum (1993) considered that although trade is a useful source of income for some African countries, it has had a devastating effect on wild populations as these are the sole source of *P. africana* bark.

CAMEROON

Distribution

According to Ingram and Nsawir (2007) the majority of *P. africana* populations are in three areas: in the North West in the Kilum-Ijim forests, South West around Mt Cameroon and Adamoua Provinces of Cameroon, where they have been extensively exploited for their bark since the 1980s. It is generally considered that Cameroon has some of the largest populations of *P. africana* (e.g. Ingram and Nsawir, 2007).

Domestic uses

According to Ingram and Nsawir (2007) in Cameroon *P. africana* is used traditionally for poles, hoe and axes handles, fuelwood, charcoal, medicine, as a bee-loving plant in honey production, in protecting water catchments, and as a boundary marker.

Status

Recent research (e.g. Ingram, 2007; Stewart, 2007) indicates that wild *P. africana* populations appear in major decline. The CITES Significant Trade Review (Cunningham, 2005) concluded the tree is Vulnerable. Cunningham (2005) reported that few large trees are alive in NW and West Cameroon and that the spread of commercial exploitation to the remote Adamawa plateau is of serious concern. Bellewang (2006) considered that the species was almost driven to extinction in certain parts of Cameroon including the entire Mount Cameroon region and was severely threatened in others.

Economic value

Ingram and Nsawir (2007) reported that as *P. africana* is an important raw material for the pharmaceutical industry, it has high economic value to Cameroon and is also a major secondary income source for forest-based communities. According to Ndam (2004) harvesters of *Prunus* around Mt Cameroon get approximately 70% of their annual cash income from this activity and 60% of households in the area are involved in *P. africana* harvesting and trade. In addition to revenues that accrue to individuals, the general community enjoys benefits through development projects such as water, roads, bridges and school projects.

Ingram (2007) reported that in 2005 and 2006 between 1,500,000 and 2,000,000 kg of *P. africana* bark was harvested annually, valued at approximately 260 million CFA (540,000 US\$) to producers (harvesters, community organisations and individuals), with an export value estimated at over 2,649 million CFA (5,470,000 US\$), based on an average export price of 660 CFA (1.34 US\$) per kg. Burgener (2007) reported that in 1999 the value of *P. africana* to Cameroon was estimated at over US\$700,000 and US\$200 million to the pharmaceutical companies in consumer countries.

Threats

The Afromontane forest 'islands' where *P. africana* occurs are generally above 1,500 -2,000 m altitude, and these areas have volcanic soils and a cooler highland climate with dense human populations (Cunningham *et al.*, 2002). He considered that clearing of forest for farming purposes was the primary cause of Afromontane forest destruction. Cunningham *et al.* (2002) considered that the limited distribution of the species means that demand for bark is focussed on a limited

area of forest. The small size of the forest “islands” has been further reduced by agricultural clearing. It is these remaining Afromontane forests that are the current focus of *P. africana* bark exploitation. Already isolated populations on montane “islands” are becoming further isolated due to the destruction of almost all large, reproductively mature trees from intervening “islands”. According to Cunningham and Mbenkum (1993) over-collection is also threatening the genetic distinctness and diversity of *P. africana* populations. Cunningham and Mbenkum (1993) concluded that felling or debarking and die-off of *P. africana* trees is an issue of local, national and international concern.

Cunningham and Mbenkum (1993) observed that access and resource use to certain forests such as around Mt Oku, NW Cameroon, were controlled under customary law, but traditional controls through local authorities were reported to have weakened with commercialisation of *P. africana* bark. Stewart (2001) considered that the dire state of the remaining populations of the tree in Cameroon appeared to be due to complex and inter-related social and economic factors. Cunningham (2005) observed that near Dschang, even enrichment plantings had been illegally exploited. By contrast, he noted that rights to harvest rights from private agroforestry production are generally respected.

Unsustainable harvesting techniques are generally believed to be a major threat to *P. africana*:

Cunningham (2005) reported that over the last 40 years *P. africana* bark harvest has shifted from subsistence use to large-scale commercial use for international trade. Currently all bark entering the international market is from wild harvest.

According to Ingram and Nsawir (2007) there are substantial differences in opinion between the regulators (Ministry of Forestry and Wildlife – MINFoF and National Forestry Development Agency which is the Cameroon CITES Scientific Authority - ANAFOR), exporters, forest users, researchers and development organisations on how to exploit *P. africana* sustainably and the quantities available for exploitation.

Tieguhong (2003) considered that the annual sustainable harvest level of *P. africana* has always been exceeded. Reasons include uncontrolled exploitation and illegal harvesting according to e.g. Bellewang (2006) and Ingram (2007). Stewart (2003a) and Ingram (2007) believed that inappropriate techniques and timing have contributed to poor health of surviving trees.

Illegal harvesters remove substantial amounts of the tree, for example MOCAP (2004) reported that in the Mt Cameroon area, the annual sustainable harvest level has been estimated at 209 tons, but each year over 500 tons are harvested, chiefly by illegal operators. Evidence from Ingram (2007) and MOCAP (2006) indicated that other factors causing unsustainable exploitation of *P. africana* are insufficient management, controls and enforcement in natural stands in Community Forests. (These are forests that are allocated for up to 25 years by the Cameroon government to a community (ies) near or in forest areas. The forest must be managed by a legally registered entity comprised of community stakeholders and forest user groups in a way that benefits the local population and ensures forest preservation).

Bellewang (2006) considered that weak institutional capacity to control exploitation and insufficient regeneration in the past are also threatening wild stocks.

Ingram and Nsawir (2007) believe that sustainable management of wild, forest-based *P. africana* can only be possible via a national inventory of stands, implementation of substantial regeneration measures (potentially linked to implementation and increased transparency

regarding the Regeneration Tax), enforcement of sustainable harvesting methods and long term monitoring.

Cunningham *et al.* (2002) considered that sustainable bark harvesting of remaining wild stocks of *P. africana* by local communities is unlikely in Cameroon because of the difficulty of implementing and enforcing conservation measures or developing local institutions to do so.

Ingram and Nsawir (2007) reported that bushfires devastate around 5-10 hectares of forest annually, which *P. africana* seedlings and mature trees cannot tolerate. Stewart (2007) considered that current levels of cattle and goat grazing result in zero natural regeneration.

Inventories

Ingram and Nsawir (2007) stated that there was a complete lack of scientific knowledge of the state and total amount of the resource of *P. africana* available in the wild and in a domesticated form, in any given year, and its location. According to Ingram and Nsawir (2007) the majority of inventories have been one off baseline studies performed by projects and perceptions of sustainable harvest have been over-reported.

However Ingram and Nsawir (2007) believed that local knowledge exists on locations of natural and planted stands. Buyers tend to be the most knowledgeable, but are reluctant to share this information for commercial reasons. Cunningham (2005) also noted that harvesters are travelling further and further to find mature trees to debark.

A limited inventory in the NW and SW was made in 2007 and concluded that exploitation of *Prunus* is still possible in Cameroon. Mt Oku was found to be the richest per unit area (3.35 stems/ha and 1 m³/ha of medium volume bark exploitable in the short term). Mt Cameroon has 1.66 stems/ha and 0.369 m³/ha of medium volume bark exploitable; Mt Manengouba has 1.00 stems/ha and 0.248 m³/ha of medium volume bark exploitable in the short term. While the replenishment for future harvests are safeguarded at Mt Cameroon and are adequate at Mt Oku, it is more or less compromised on Mt Manengouba, given the distribution of individuals by diameter class (Anon., 2008a).

Currently the government of Cameroon is working towards producing a complete *P. africana* inventory (see section on Cameroon's responses to CITES Plants Committee and SRG decisions).

Mt Cameroon

According to Cunningham and Mbenkum (1993) the Mt Cameroon region formerly supported the largest population of *P. africana* in Cameroon.

Njamnshi (2007) noted that in Mt Cameroon the first permit for commercial exploitation of *P. africana* was granted in 1976 to Plantecam, a large foreign company, and bark harvesters received an instable and insignificant price per kilo. In 1994 Plantecam commissioned a feasibility study executed by the forestry service to look into ways of legally involving villagers in *P. africana* in their licensed areas.

Ewusi *et al.* (1998) reported on conflicts between members of the Mt Cameroon communities (local *Prunus* harvesters) and workers of the forestry services, MCP and Plantecam Medicam because of the scramble to make maximum benefits from the *P. africana* trade. In response to the conflicts and illegal harvesting, the MCP facilitated the formation of two *Prunus* Harvesters Unions in Mapanja (in 1996) and in Bokwango (in 1997) and these became pilot communities. Bellewang (2006) reported that the unions' principal aim is to ensure sustainable exploitation of *P.*

africana while saving money for important development projects for individual members, their families and the entire community. Bellewang (2006) considered there had been increased awareness on the great need to conserve *P. africana*, harvesters received significantly more pay and socio-economic changes in the community were encouraging. Harvesting performance was monitored by joint teams of Unions, the MCP and MINEF (Ministry of Environment and Forests).

Ndam (2004) reported that the GTZ-Mount Cameroon Project (MCP) project had been working with villagers to promote the sustainable management of *P. africana*. Villagers were involved in monitoring the forest to guard against poachers of the tree and to help ensure, for legal harvest, that only a part of the bark is removed.

A Mt Cameroon inventory in 1999/2000, funded by GTZ/DFID and conducted by ONADEF and the University of Reading reported that the 1999/2000 inventory advised on 300 tons (eg. Njamnshi, 2007).

Njamnshi (2007) reported that after the 1999-2000 inventory, Plantecam found the sustainable yearly quota unproductive for the company and closed. In 2000 following Plantecam's closure the Mount Cameroon Prunus Management Common Initiative (MOCAP) evolved from the Bokwoango and Mapanja *P. africana* unions. MOCAP's objectives are the sustainable exploitation and regeneration of *Prunus*; socio-economic improvements of local communities; promotion of savings and loans schemes, re-enforcement of illegal exploitation control and monitoring of forest resources exploitation in collaboration with MINEF.

Plantecam used trained harvesters who followed harvesting regulations which were generally believed to be sustainable. Half of the tree trunk bark, a quarter from opposite sides of the trunk was harvested on a five year rotation (Cunningham and Mbenkum, 1993; Cunningham *et al.*, 2002; Stewart 2001). However in the opinion of Cunningham (2005) studies carried out by Stewart (2001, 2003a,b) showed that sustainable harvesting is unlikely to be achieved. Based on detailed research and matrix population modelling, Stewart (2001) found that exploitation of large *P. africana* trees is unsustainable and leads to population decline. He concluded from matrix population modelling that *P. africana* growth rates are most sensitive to death or low survival rates of the large trees producing the most seed. Harvest can only be sustainable if the large, seed producing trees are conserved, not harvested (Stewart, 2001). According to Cunningham (2005) with commercial bark harvest, the opposite scenario generally occurs; bark harvesters focus on the largest trees. He further observes that this easily occurs in remote forests or rough terrain where controls over harvest are limited by few forestry staff and funds. Stewart (2001) considered that management scenarios suggest harvest can be sustainable if seedlings and small saplings are planted in the forest and actively managed, although large-scale plantations may be the only feasible option to meet market demand.

According to Ingram (2007) AFRIMED accounted for 75% of *P. africana* exports from Cameroon in 2005 and for 70% in 2006. AFRIMED used destructive harvesting techniques including completely debarking mature and immature trees and tree roots and tree-felling for block 8 on Mt Cameroon (MOCAP, 2004) and consequently AFRIMED was suspended from harvesting in July 2004.

North West Province

Currently the NW Province is a major source of *P. africana*. Forests include Kilum and Ijim and also forests around Mt Oku.

Ingram and Nsawir (2007) reported that unsustainable harvesting techniques (stripping entire trees or felling) had resulted in die-offs of between 13-50% of natural stands, especially mature seed producers in Kilum-Ijim.

Cultivation

Cunningham (2005) believed that at best wild harvest is a short-term measure and that a transition to agroforestry or plantation production *was* needed for *P. africana*. He reported that cultivation is currently taking place on a small scale in Cameroon. Ingram and Nsawir (2007) considered that further promotion of domestication, plantations and individual planting of *P. africana* is critical to counter decreases in wild stocks and maintain its economic value.

Cunningham *et al.* (2002) also reported that rural farmers in the NW started planting the tree as early as 1977, although most cultivation has taken place since 1990 with support from local and international NGOs. An estimate of 3,500 farmers in the NW were already planting *P. africana* (Cunningham *et al.* 2002, Anon., 2008a).

According to Ingram and Nsawir (2007) stands planted by ANAFOR, its predecessor ONADEF and the Rural Forestry and Agroforestry Project reforestation project, have tended not to have been monitored until harvestable age nor were their available sustainable harvestable quantities evaluated. Most were monitored in their first few years of planting. The result is a lack of data on plantation locations and harvestable quantities in any given year. Ingram (2007) considered a conservative estimate to be over 120,000 saplings planted in at least 273 ha in Cameroon since 1976.

Shanley *et al.* (2002) considered that cultivation in buffer zones around high conservation value sites could help restore degraded habitat. This could link to increased consumer and corporate awareness in “clean, green” products and in forest product certification in Europe and North America.

One of the conclusions of a Problems Analysis Workshop held in Cameroon in November 2007 was that a great effort is being made to establish plantations through personal, communal and NGO initiatives and in the near future the production of *P. africana* from farming systems would be far more important than wild production. In various areas the cultivation of *P. africana* is being carried out using traditional techniques. The majority of *P. africana* planted are not yet harvested but some will be matured soon (Awono *et al.*, 2007).

There are currently some constraints to *P. africana* cultivation. The Cameroon government reported that producers do not receive information from researchers on how to establish plantations for bark production. The method of collection and handling of seeds used to establish plantations do not take into consideration the need to maintain genetic diversity of the species (Anon., 2008a).

Some cultivation studies have been carried out in Cameroon. These include the Mt Cameroon Project and International Centre for Research in Agroforestry (ICRAF) gene-bank production study. The Limbe Botanic Garden through the Darwin Initiative has conducted nursery practices for seedling identification in the forest. The ICRAF has carried out domestication of *P. africana* using generative and vegetative techniques (Anon., 2008a).

The Conservation Technology Department of the Limbe Botanic and Zoologic Garden (LBZG) in collaboration with ICRAF and the Cameroon Development Corporation has conducted experiments for the best conditions for germinating *P. africana* seeds and has used this research to

initiate several plantation trials. The first ever plantation of *P. africana* was established (3 ha in Moliwe) as a result of the LBZG propagation programme. Currently there are 4,000 ha of *P. africana* plantations in the NW Province (Anon., 2008a).

Biodiversity International is working with the Institute of Agricultural Research (IRAD) to address the importance of conserving the genetic diversity of *P. africana* (Anon., 2008a). The collaboration includes analysis of the role of *P. africana* genetic diversity in improving its adaptability in plantation forestry. Dawson and Powell (1999) assessed the genetic variation of *P. africana* in Cameroon from four sites. Muchugi *et al.* (2005) also studied the tree's genetic variation in Cameroon.

Cunningham (2005) recommended that CITES takes steps towards legal recognition of legitimate growers to avoid wild harvested products being sold under the guise of legally produced stocks.

Other research

The Institute of Ethnobotany, Florida, USA is examining the effects of grazing, fire and harvesting on *Prunus* (Ingram and Nsawir, 2007).

National regulations

The management of forest resources in Cameroon is the responsibility of MINEF. Ingram and Nsawir (2007) reported that *Prunus* harvesting and export have been regulated as a 'Special Product' since 1994, through a system of annual, non-renewable, tonnage based permits for dried bark harvested each year from provincial zones allocated by auction and quotas. Permits are granted by an Inter-Ministerial Committee, based on technical reports from Provincial Chiefs of Forestry which should provide a "reasoned recommendation" of the species, quantities, exploitation areas and harvesting modalities. *Prunus* seized after having been illegally harvested (without a Simple Management Plan or without a permit) is auctioned at a public sale. The buying price is usually below the current market price. The buyer, who does not need a permit, pays the Treasury and an addition 12% of the buying price to MINFoF division making the seizure. A "Regeneration Tax" of 2% of the quota value is payable to the Government, by permit holders. Since 2006, regeneration is the responsibility of the ANAFOR. Felling of trees without special permission is illegal. Burgener (2007) reported that MINEF has identified the tree as one of the six most important Non-Wood Forest Products in Cameroon that needs to be promoted for socio-economic development.

Significant Trade Review Recommendations

The CITES Plants Committee made the following recommendations at their 16th meeting in July 2006:

Generic level: Recommendations at the International level

No time limit

All Range States to implement a harvest quota with a return harvest period of no less than eight years for one harvest but not for return harvests.

All Range States to implement a harvest system that limits bark removal so as to enhance the survival of trees from one harvest event to the next.

Within 3 months:

The Management Authorities of the Range States should report to the Secretariat their proposed actions to implement the provisions of Article IV, and how the Scientific Authority determines that levels of export are not detrimental to the populations concerned.

The Management Authorities of the Range States should report to the Secretariat the actions proposed in their management plans to train resource harvesters in techniques that will conserve the resource.

Within 1 year:

The Working Group recommends that the Secretariat liaises with the Range States to organise a workshop for all range states that will compile a work programme for the full implementation of points 1 to 5 (in document PC16 Doc. 10.2.1 Pg. 13).

The Management Authorities of the Range States should report to the Secretariat the results of their actions to implement the provisions of Article IV, and how the Scientific Authority determines that levels of export are not detrimental to the populations concerned.

Cameroon

Within 3 months:

In consultation with the CITES Secretariat and the Chair of the Plants Committee, review their current export quota and establish a conservative reduced quota for export of *Prunus africana* parts and derivatives.

Clarify whether they have a working facility to process and export extract, in addition to bark and powder and inform the Secretariat of what parts and derivatives they plan to export (bark, powder, extract).

Within 1 year:

To complement work already carried out on Mount Cameroon, in other areas subject to harvest, carry out a inventory of standing stock, establish estimates of sustainable off-take, taking into account the need to conserve large seed producing trees, and establish a scientific monitoring system of the harvested and unharvested *Prunus africana* populations.

Establish a revised conservative export quota based on the inventory of standing stock and the estimates of sustainable off-take.

The Management Authority should collaborate with the Management Authority of Nigeria to enhance the monitoring of trade in *Prunus* between Cameroon and Nigeria.

Provide a timetable to carry out peer reviewed ecological studies and appropriate population modelling of *Prunus africana* in order to establish a long term management plan for the sustainable use of this species.

Within 2 years:

The Management and Scientific Authority should report the final version of the long term management plan and progress made against that plan, to the Secretariat.

(Anon., 2006).

Cameroon responses to SRG decisions and Significant Trade Review Recommendations 2007-2008

The Netherlands Development Organisation (SNV) and Centre for International Forestry Research (CIFOR) organised a Problems Analysis Assessment of Impacts and Status of the *Prunus africana* chain Workshop in Bamenda, Cameroon on November 22-23 2007. Summaries of presentations made at the workshop have been included in this review. ANAFOR is party to the *Prunus* Platform.

At the 44th meeting of the SRG on 26 May 2008 a negative opinion was maintained, although it was recognised that a pragmatic solution should be found. At the meeting, representatives from France explained the use of *P. africana* bark in the pharmaceutical industry. The SRG agreed that the issue should be revisited at the next meeting, taking into account the conclusions of the 57th meeting of the Standing Committee as well as the outcome of the September 2008 Kenya Workshop.

At the 57th Standing Committee meeting (14-18 July 2008), Cameroon strongly reiterated its commitment to the sustainable management of *P. africana*. Cameroon reported that the Scientific Authority CITES Flora works within ANAFOR. Activities undertaken had included drafting a five-year action plan and producing a funding application to the International Organization of Tropical Timbers (ITTO) for institutional capacity building of the Scientific Authority for Flora for conservation and management of *Prunus*. Cameroon again pointed out the current technical and institutional difficulties faced by their Scientific Authority and the problems in carrying out scientific activities (Anon., 2008a). Results of a 2007 *P. africana* inventory in the NW and SW Provinces were presented (see Inventories section). Cameroon also presented a scientific review of *P. africana* in Cameroon covering past and current research issues and recommended that increased ecological and biochemical is needed to manage the species (Anon., 2008a). In addition Cameroon gave a presentation on the management of *P. africana* in the country and concluded that a lifting of the current suspension of trade of *P. africana* in the EU was necessary to stop the misery in rural villages where products of the species had been the main source of income and to restore valuable revenue to the country, which would help to finance part of the inventory activities which are required by CITES. Cameroon requested an extension of the deadline of 31 December 2008 for the production of a *P. africana* management plan to June 2009 and assistance with capacity building for bodies in charge of CITES Cameroon (Anon., 2008b).

The Standing Committee has already agreed to extend the reporting deadline for most range states, including Cameroon, to the end of 2008. This allows feedback from the September 2008 *Prunus africana* workshop. Although Cameroon had originally requested extension to mid-2009, they finally accepted the end of year deadline. The September 2008 *Prunus africana* workshop is taking place just a week before the next SRG (SRG 45).

Summary of Cameroon actions in response to Significant Trade Review Recommendations and SRG decisions

Cameroon has made considerable efforts to meet the Significant Trade Review recommendations.

Cameroon halved their *P. africana* export quota to 1,000,000 kg of bark for 2008 and it is reliably reported that they intend to reduce it further this year, to 500,000 kg. Cameroon has pointed out that until it is able to make adequate inventories of its *P. africana* resources, it is unable to establish export quotas 'on a clear and non-revisable basis' as requested by the EC.

A proposal has been submitted to ITTO to fund a sustainable management plan, which will be based on inventories of their *P. africana* resource. The Cameroon Scientific Authority is party to the newly formed national *Prunus* Platform which is seeking solutions to current problems including how to take stock of the country's *P. africana* resource at a reasonable cost. An interim assessment of the resource in the three main areas for the species in Cameroon has just been made and results are available.

Cameroon is currently making an inventory of private plantations of *P. africana* and results are now available for the NW. An inventory of stocks of products available in shops and verification of their compliance with the rules in force is also underway.

Cameroon has requested assistance from CITES and the EC in capacity building for their Scientific Authority so it can effectively meet the requirements of CITES. This request is now being addressed.

Cameroon has requested the EU suspension on *P. africana* imports be removed. Cameroon expressed concern that the continuation of a ban on *P. africana* imports will not only cause more hardship amongst impoverished rural communities who depend on the bark harvest as a major income source, but will also discourage them from further cultivation of *P. africana* and could lead to increased unsustainable harvesting practices.

Cameroon exporters, who were caught unawares by the EU ban on *P. africana* imports first imposed in September 2007, were left holding stocks of 648,000 kg of bark. Cameroon requests that the suspension on EU imports is lifted, at least to allow export of these stocks.

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