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African elements in Saramaccan Maroon plant names in Suriname¹

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Abstract: The ancestors of the Saramaccan Maroons, who were brought as enslaved Africans to Suriname, used their ethnobotanical knowledge and native languages to name the flora in their new environment. Little is known about the influence of African languages on Saramaccan plant naming. We hypothesized that Saramaccan plant names were more influenced by Central African languages than found so far based on ethnobotanical research, mainly because data on the Central African region was scarce. We compiled a new database on Saramaccan plant names and compared these names with an unpublished plant name database from the Democratic Republic of the Congo and the earlier published NATRAPLAND database on Afro-Surinamese plant names to find comparable plant names for botanically related species in Africa. We further analyzed form, meaning, function, and categories of Saramaccan plant name components by means of dictionaries and grammars. In total, 39% of the Saramaccan plant names had an African origin, of which 44% were African retentions, 54% were innovations, and 2% were misidentifications with botanical links to Africa via other plant species. Most retentions were of Central African origin (62%). The Bantu language that contributed most to Saramaccan plant names was Kikongo, followed by West African Kwa languages. Plant names reveal important information on the African origin of the Saramaccans and deserve more scientific attention.

Key words: vernacular names, local names, Creole languages, transatlantic slave trade, DRC, Africa, Traditional Knowledge, ethnobotany.

Résumé : Les ancêtres des Marrons de Saramacca, qui ont été amenés au Suriname en tant qu'esclaves africains, ont utilisé leurs connaissances ethnobotaniques et leurs langues maternelles pour nommer la flore de leur nouvel environnement. On sait peu de choses sur l'influence des langues africaines sur la dénomination des plantes en saramaccan. Les auteurs ont émis l'hypothèse que les noms des plantes en saramaccan étaient davantage influencés par les langues d'Afrique centrale que ce que l'on a trouvé jusqu'à présent à partir de recherches ethnobotaniques, car les données sur la région d'Afrique centrale étaient rares. Ils ont compilé une nouvelle base de données sur les noms de plantes en saramaccan et ont comparé ces noms avec une base de données non publiée sur les noms de plantes de la République démocratique du Congo et avec la base de données NATRAPLAND publiée précédemment sur les noms de plantes afro-surinamaises afin de trouver des noms de plantes comparables pour des espèces botaniquement apparentées en Afrique. Ils ont ensuite analysé la forme, la signification, la fonction et les catégories des composants des noms de plantes en saramaccan à l'aide de dictionnaires et de grammaires. Au total, 39 % des noms de plantes en saramaccan avaient une origine africaine, dont 44 % étaient des rétentions africaines, 54 % des innovations et 2 % des erreurs d'identification avec des liens botaniques avec l'Afrique via d'autres espèces végétales. La plupart des rétentions étaient d'origine centrafricaine (62 %). La langue bantoue qui a le plus contribué à l'élaboration des noms de plantes en saramaccan est le kikongo, suivie des langues kwa d'Afrique de l'Ouest. Les noms de plantes révèlent des

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informations importantes sur l'origine africaine des Saramaccans, et méritent une plus grande attention scientifique. [Traduit par la Rédaction]

Mots-clés : noms vernaculaires, noms locaux, langues créoles, traite transatlantique des esclaves, RDC, Afrique, savoirs traditionnels, ethnobotanique.

Introduction

Plants play a vital role in traditional societies. Studying plant names, their structure, and their meaning is useful for documentation and plant classification purposes, but also for gaining a deeper understanding of the etymology of plant names (Berlin 1973, 1992) and the source domains or categories they belong to, such as animals, people, morphology, or habitat (Leyew 2011; Turpin 2013). Plant names can also provide information on where people historically came from and with whom they had contact or exchanged knowledge (Van Andel et al. 2014; Alcantara-Rodríguez 2016). Gaining a better understanding of their origin and meaning can contribute to the survival of local systems of biological knowledge, particularly in societies that undergo rapid cultural changes (Martin 2004). In this study, we focus on the origin, use, and social meanings of plants and their names among the Saramaccan Maroons in Suriname.

Between 1658 and 1825, the Dutch were responsible for disembarking at least 295 000 Africans, who originally came from Senegambia, the Windward Coast (Sierra Leone, Liberia, and Ivory Coast), the Gold Coast (Ghana), the Slave Coast (eastern Ghana to Benin), the Bight of Biafra (Nigeria and Cameroon), as well as Loango and Luanda (southern Gabon to northern Angola, now known as West Central Africa), to their plantation colony Suriname (Eltis and Richardson 2010). Some enslaved Africans were captured several hundred miles inland, while others came from places much closer to the coast where the Dutch had their fortified strongholds (Eltis and Richardson 2010). As people were taken from different coastal and interior areas, they belonged to numerous African ethnic and linguistic groups (Mintz and Price 1992).

At the plantations where they were set to work, new contact languages emerged as interethnic means of communication. They were relatively rudimentary and unstable in structure and had a limited vocabulary in the beginning of the contact setting. These languages formed a mixture of African and European languages, showing retentions as well as innovations, out of which the Afro-Surinamese Creole languages were born over the course of time (Smith 1987; Van den Berg 2007). The enslaved people who escaped from the plantations settled themselves in the tropical rainforest and are nowadays known as Maroons (Fig. 1).

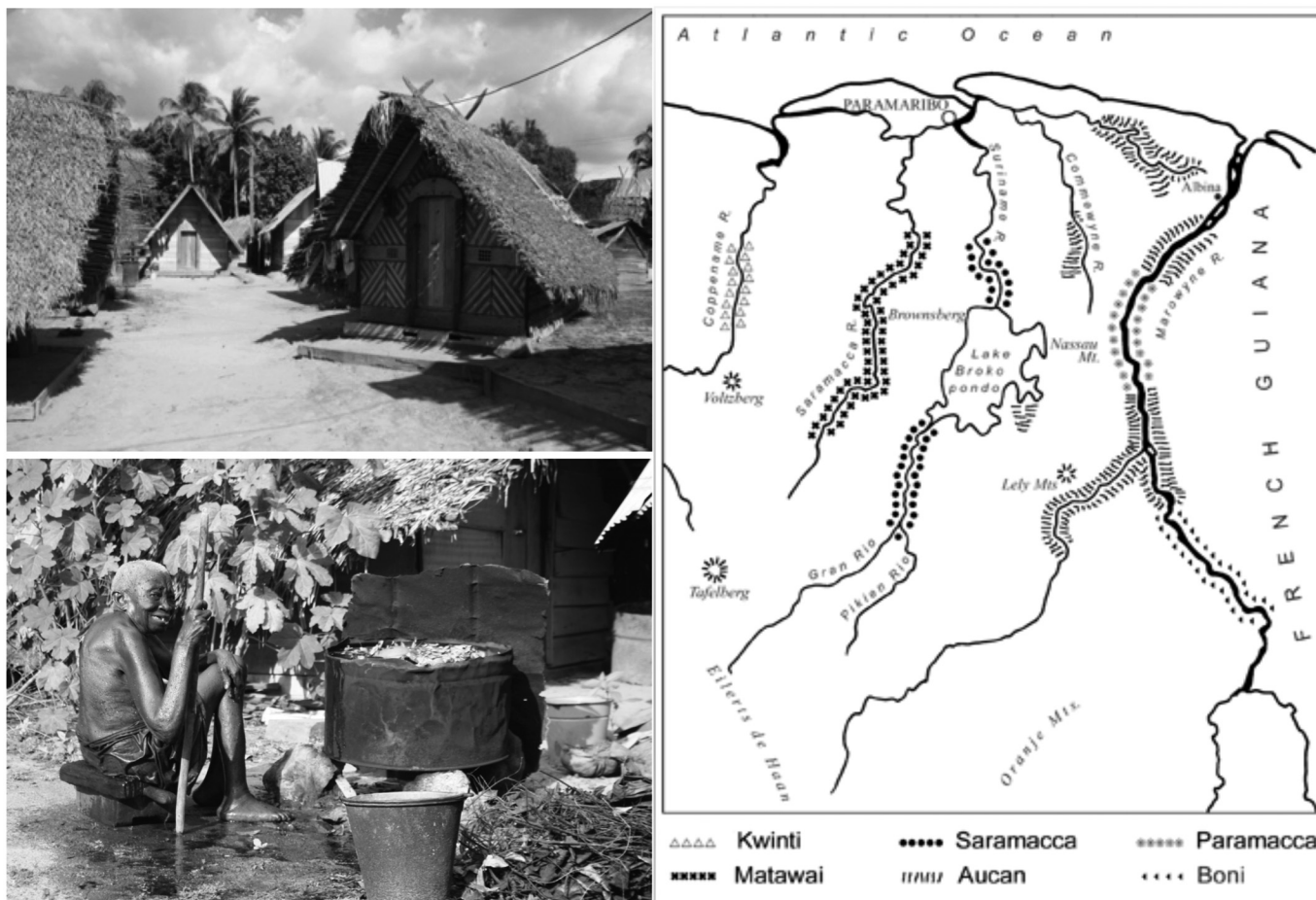
The 6 Maroon communities in Suriname (Saramaccan, Matawai, Ndyuka or Aucan, Aluku or Boni, Kwinti, and Paramaccan) all have their own distinct cultures and languages (Price 1973; Thoden Van Velzen and Van Wetering 1988). With approximately 83 000 people, the

Saramaccans are the largest Maroon community in Suriname and French Guiana (Price 2013). Together with Sranantongo, spoken by the descendants of enslaved Africans who remained in the coastal areas after the abolition of slavery in 1863, the Maroon languages are regarded as English-based Creole languages. Since Suriname was first colonized by the English in 1651, after which the Dutch took over in 1667, English had a major influence on the early development of the Surinam Creole languages (Smith 1987). After Sephardic Jews arrived from northeast Brazil, Essequibo (Guyana), and Europe (Livorno, Amsterdam), these languages were also influenced by the Portuguese (Arends 1999), particularly the Saramaccan and Matawai languages as their forefathers escaped from plantations owned by Portuguese Jews (Price 1983; Smith 1987). During and after their self-liberation, the Saramaccans had also been in contact with Indigenous communities and incorporated words from mainly Carib and Arawak origin in their language (Price 2010; Borges 2015). As a result, Saramaccan plant names are often a combination of African, European, and Indigenous words that reflect a creolization process that merged ethnobotanical skills from various geographical and cultural sources into a new Afro-Surinamese knowledge system (Mintz and Price 1992; Van Andel et al. 2014).

The African origins of the Surinamese Creole languages have been a topic of linguistic study since the end of the 19th century. Of all Surinamese Creole languages, Saramaccan has the highest percentage (5%) of African words in the basic vocabulary (Smith 1987, 1999). But if one turns to culture-specific words that are used in domains such as religion, food, and health care, the percentage of words that can be traced back to Africa is probably higher, as discussed by Huttar (1985) for Ndyuka, by Bilby (2000) for Aluku, and by Price (1975) for Saramaccan.

Huttar (1985) found 98 Ndyuka words of African origin including 16 plant species. Kwa and Bantu languages predominated, but various West Atlantic, Mande, and Gur languages also acted as sources. Smith (2015a, 2015b), who elaborated further on the works of Huttar for Ndyuka and Daeleman (1972) for Saramaccan, showed that the lexicons of the Afro-Surinamese languages were strongly influenced by Central African Kikongo (Bantu language group), West African Gbe languages such as Fon and Ewe (Kwa language group), and Akan languages to a lesser extent. In total, 185 words of Kikongo and 138 words of Gbe origin were found in the Afro-Surinamese languages, which included 18 Saramaccan plant names based

Fig. 1. Left: Saramaccan Maroon village Pikin Slee. Yeeye Haabo (deceased), Pikin Slee. The photographs were taken by C. Van't Klooster (2009). Right: Map of Suriname and the Maroon communities living in the interior. The drawing was made by Hendrik Rypkema of the Naturalis Biodiversity Center and has been reproduced with permission from the Naturalis Biodiversity Center.



on Kikongo and 6 on Gbe (Smith 2015c, 2015d). However, the Saramaccan plant names mentioned in the publications by linguists lacked botanical vouchers, which makes it difficult to link them to scientific plant names.

Van Andel et al. (2014), who traced the origin of Afro-Surinamese plant names linked to herbarium specimens, confirmed the significant role of Africans as agents in the spread of plant-related knowledge in Suriname, and calculated that 43% of the 673 plant names with an African origin could be linked to languages from Gabon, Congo, and Angola, which confirms that Central African languages had a major influence on Surinamese Creole languages. However, the linguistic and geographical origin of 167 Afro-Surinamese plant names (of which 84 are Saramaccan) compiled by Van Andel et al. (2014) still remained unsolved.

Recently, a database was made available with Central African vernacular plant names by the Meise Botanic Garden (MBG) in Belgium, with more than 55 000 vernacular plant name records in several dozen local languages, with corresponding botanical vouchers collected during the colonial period in the area nowadays known as the

Democratic Republic of the Congo (DRC). Since literature on vernacular plant names of the DRC is scarce, this database offered a new opportunity to trace previously unknown botanical links between Saramaccan and Central African plant names.

Saramaccan plant species, their uses, and their names reflect adaptive ethnobotanical knowledge systems that display both retention of traditional African knowledge and innovation. Our general aim is to fill the knowledge gap on the geographic origin of Saramaccan plant names and the Traditional Knowledge stored within these names. We have three research questions. First, what proportion of Saramaccan plant names have an African origin? Second, what is the contribution of Central African languages to Saramaccan plant names? Third, which manifestations of African heritage (e.g., references to animals, illnesses, plant characteristics, places) are found in Saramaccan plant naming?

As 14 647 enslaved Africans from Central Africa were brought to Suriname between 1665 and 1719 (Smith 2015a), we hypothesize that several of the Saramaccan plant names with unknown origins are linked to botanical

species in the DR Congo. Furthermore, we expect that the Saramaccans, with their oral culture, store all sorts of information in their vernacular plant names to help members of their society remember their traditional plant-related knowledge. The outcomes of this study will contribute to the preservation of Saramaccan heritage by revealing the cultural, historical, and environmental knowledge hidden in their plant names, and the African contribution to the formation of their language. This study will also add to the discussions on the cultural agency of enslaved Africans in the New World.

Methods

Data collection

Data on 678 Saramaccan plant names were extracted from the NATRAPLAND database published by Van Andel et al. (2014), based on Van't Klooster et al. (2003). We also included Sranantongo plant names from NATRAPLAND used by Saramaccans, unpublished names of rice varieties documented by Sally Price from the 1960s onwards, some names of rice varieties from Baumgart et al. (1998), and Saramaccan plant names from ethnobotanical studies conducted among Saramaccans in Suriname (Van't Klooster et al. 2016, 2018, 2019; Ruyschaert 2018) and French Guiana (Sauvain et al. 1988). After merging records with identical plant names for botanically related species, this resulted in a final database with 978 Saramaccan plant names.

Data analysis

For each Saramaccan plant name record, we provided the corresponding scientific name and family, the great majority based on voucher specimens present in the herbarium of Naturalis Biodiversity Center (L), which is in Leiden, the Netherlands. All vernacular names were checked for their latest spelling following the regulations of Saramaccan native, ethnolinguist, and second author V. Haabo, who is working on a new Saramaccan–Dutch dictionary and collaborated on a new orthography for Saramaccan (Price and Price 2015). A column with the original Saramaccan name as found in literature or specimen labels was kept for reference purposes. Since Saramaccan classification provides valuable insights as to how they conceptualize their environment, the complete plant names were kept in our database, whether they consisted of simplex words, compounds, or phrases. To investigate the cultural meaning embedded in the plant names, we analyzed the name components in terms of form and meaning and traced them back to their source languages, whether African, European, or Indigenous. We also consulted the online dictionaries on Languages of Suriname of the Summer Institute of Linguistics (SIL 2003), based on the work of linguists Naomi Glock and Catherine Roundtree in the 1970s.

Saramaccan plant names were compared with names in Indigenous and European languages in published

literature, etymological libraries, and databases (Fanshawe 1949; Smith 1987; Van't Klooster et al. 2003; Smith and Cardoso 2004; Courtz 2008; Van der Sijts 2010; Van Donselaar 2013; Van Andel et al. 2014; Harper 2020). For the African plant names, we used the JSTOR Global Plant database (2020), the compendium on useful plants of West Tropical Africa (Burkill 1985–2010), encyclopedias on local and scientific plant names (e.g., Quattrocchi 2002, 2012), the MBG database on plant species collected in the DR Congo, previous work on this database by Fundiko et al. (2015), and ethnobotanical literature for the DR Congo (e.g., Latham and Konda ku Mbuta 2017) and Angola (Lautenschläger 2018). Furthermore, we analyzed dictionaries on relevant Central and West African languages, such as Kikongo (Bentley 1895) and Fon (Segurolo and Rassinoux 2000). We also explored linguistic and historical studies for these areas (Vansina 1960, 1978; Mobley 2015; Smith 2015c, 2015d) to provide possible meaning and supporting evidence to the origin of the plant names.

We marked those Saramaccan plant names that showed morphosyntactic, phonological, or semantic similarities with African vernacular plant names for botanically related taxa. Additional information was added regarding the country of origin and language of the African vernacular plant name and references (voucher labels, literature). We solely added translations of plant name components found in African dictionaries when their form and meaning showed resemblance with a plant use or characteristic. All current scientific plant names were checked with the Plants of the World Online database (2020).

Surinamese plant species carrying a plant name of African origin provided evidence of the association with either botanically related African plant species or African plants with similar morphological features or uses. When it was unclear how the lexical item entered into the Saramaccan language, or when linguistic information provided extra information on the meaning of a plant name, we listed both the botanical and the morphological or semantic proof.

We checked the existing botanical links between Saramaccan and African plant names again and added etymological meaning to our database, a more likely geographic origin, or better botanical or linguistic proof. Percentages were calculated for the geographical and language origin of the Saramaccan plant names for which we found botanical proof in Africa.

We further analyzed general trends in Saramaccan plant naming (e.g., references to animals, plant morphology) for the African-based vernaculars in order to analyze how Saramaccan plant names were formed over time, following general theories on folk taxonomy (Berlin 1973, 1992; Martin 2004). We used the term mixed origin or hybrid compound for plant names with a combined African–European, African–Indigenous, European–Indigenous, Indigenous–Asian, or African–

European–Indigenous origin. To verify which languages and geographical regions in Africa had the largest influence on the formation of Saramaccan plant names, we used historical sources on the origin of the enslaved Africans in Suriname (Eltis and Richardson 2010) and compared these with the region of origin of the African plant names and lexical items embedded in Saramaccan plant names, as done by Alcantara-Rodríguez (2016) for Papiamentu plant species on Curaçao.

The African continent is believed to host one third of the languages spoken worldwide (Vossen and Dimmendaal 2020). These languages are generally classified into 4 language phyla known as Niger–Congo, Afro–Asiatic, Nilo–Saharan, and Khoisan, which can be further subdivided into respective families and subgroups that were used to trace the African languages that influenced Saramaccan plant names. To avoid multiple references made by the same or different authors for the same African language, and to use the modern spelling of these languages, we used the Ethnologue database (Eberhard et al. 2020). We followed the language group classifications of the Glottolog database (Hammarström et al. 2020). We did not intend to conduct a thorough linguistic semantic study on plant names, nor do we pretend to be complete in our list of Saramaccan plant names; our study has an explorative nature.

Results

Origin of Saramaccan plant names

Our final database contains all 978 Saramaccan plant names known so far in literature and their possible African, European, Asian, or Indigenous elements. A list with information on each Saramaccan plant name (e.g., its scientific name and family, its relevance in Suriname, its botanical relative in Africa, its local African name, and its relevance in Africa) is available in Supplementary Table S1².

Out of the 978 vernacular plant names, 639 (65%) contained European elements, 382 (39%) had African elements, 190 (19%) had Indigenous elements, and 4 (<1%) had elements of Asian origin. For the remaining 49 Saramaccan plant names (5%), the source of origin remained unknown. Further analysis revealed that 646 (66%) of the plant names contained elements of a single origin, while 283 (29%) contained elements of mixed origin, a combination of African, European, Asian, and (or) Indigenous elements, so the total percentage of recorded elements is higher than 100%. The 283 hybrid plant names consisted mostly of African and European languages ($n = 180$, 64%), although 23 combinations of African and Indigenous languages were present (8%). In some rare cases, such as “bandya-wata aluwau” (*Protium heptaphyllum* (Aubl.) Marchand), a fusion of African, European, and Indigenous elements was found. Here, “bandya” (meaning

riverside), is derived from “m-baansya” (a Kikongo term meaning side) (Smith 2015c), while “wáta” (meaning water) is derived from English or Dutch (Smith 1987). The lexical item “aluwau” is borrowed from the Carib word “arouaou”, which is used for the same plant species (DeFilippis et al. 2004). The tree *Protium heptaphyllum* grows on higher river banks, explaining the name “riverside aluwau” (Van Roosmalen 1985; Fern 2020). In 78 (28%) of the cases, the hybrid compound names were based on European and Indigenous elements. One name was based on Asian and Indigenous elements. These hybrid compound names reflect the process of creolization and the innovative way of creating new plant names, while at the same time maintaining links with the motherland, Africa.

The 382 Saramaccan plant names for which we found a possible African origin were divided into two main categories: names created by retention (based on botanically related species) and names created by innovation (referring otherwise to Africa), of which examples are presented in Table 1. While 168 vernacular plant names (44%) were based on African retentions, 206 Saramaccan plant names were based on innovation (54%), and 8 (2%) were so called misidentifications — plant names given to species that resemble other species with a botanical link to Africa. For example, the ferns *Lindsaea* sp. and *Adiantum fuliginosum* Fée are known as “biibiiuwii” by the Saramaccan. They were misidentified for *Triplophyllum funestum* (Kunze) Holttum (also known as “biibiiuwii”) in Suriname, which can be linked to the name “bilelele” (Tembo) in the DRC for *Triplophyllum pentagonum* (Bonap.) Holttum. For 81 retentions, we found additional linguistic proof for lexemes in African dictionaries and literature, further strengthening their African origin. The retentions suggest that the Saramaccan ancestors associated the plants in their new surroundings in Suriname with the flora of their African homeland and used partly or completely the same or similar African plant vernaculars to name them. The plant species for which we found botanical proof in Africa belonged to 49 different plant families, mostly Fabaceae followed by Poaceae, Moraceae, Piperaceae, and Malvaceae.

Geographical and linguistic origin of African-derived plant names

The Saramaccan plant names we linked to botanically related species in Africa (retentions) provide us with information on where the enslaved Africans originated. Out of 168 Saramaccan plant names with partial African origin, 104 (62%) suggest a Central African origin (Gabon, Congo, DRC, and Angola), while 22 (13%) came from Benin, 19 (11%) from Ghana, 20 (12%) from Ivory Coast, Liberia, and (or) Sierra Leone, 10 (6%) from Nigeria, 5 (3%) from Senegal, 1 (1%) from Togo, and 1 (1%) from Guinea. As some names were combinations of words from several

²Supplementary data are available with the article at <https://doi.org/10.1139/cjb-2021-0066>.

Table 1. Examples of Saramaccan plant names that strongly resemble African names for botanically related taxa (retentions).

Suriname			Africa			
Plant name (original)	Species (family)	Significance (Caribbean/South America)	Significance	Plant name (language), country	Species (family) (retentions)	Reference with species
abenbele (abenbèlè)	<i>Pouteria</i> spp. (Sapotaceae)	The red mbele. <i>Pouteria</i> have red fruits	vè (Fon) = red (Smith 2015d)	mbele (Mba), DRC	<i>Gambeya africana</i> (Sapotaceae)	MBG database
boniboni uwii (boni boni udu)	<i>Maprounea guianensis</i> (Euphorbiaceae)	uwii (Sa) = weed (En) (Smith 1987)		mbunji (Kiyaka), DRC	<i>Maprounea africana</i> (Euphorbiaceae)	MBG database
kisangula (kisangula, kisangoloa)	<i>Maprounea guianensis</i> (Euphorbiaceae)		ngola (Lingala) = red (Divuilu 2005)	kisangula (Kikongo), DRC	<i>Maprounea africana</i> (Euphorbiaceae)	Arkininstall (1979)
komatisangu (komanti sangu)	<i>Senna occidentalis</i> (Fabaceae)	Kormantse = Ghanaian fort Coromantine	Kormantse = village in Ghana where Dutch slave-fort Coromantine was located. The “Koromantijners”, as the enslaved Africans from Kromantse were referred to, were known to be strong and profound in magic and herbal healing (Van Andel and Ruyschaert 2011)	insangi (Kikongo), DRC	<i>Senna occidentalis</i> (Fabaceae)	MBG database
lotauwii (lotawi)	<i>Erigeron bonariensis</i> (Asteraceae)	lota (Sa) = skin infection pityriasis versicolor with flaky discolored patches. Spots on skin (Smith 2015c). uwii (Sa) = weed (En) (Smith 1987)	lota (Yoruba) = skin disease, squamous skin disease (Smith 2015c). <i>Solanecio cydoniifolius</i> is used against sores (Burkill 1985–2010)	mulota (Lega-Mwenga), DRC	<i>Solanecio cydoniifolius</i> (Asteraceae)	MBG database
malembe toko (malèmbê tókò)	<i>Piper</i> spp. (Piperaceae)	<i>Piper</i> spp. are used in herbal bathing to calm down spirits (Van Andel and Ruyschaert 2011)	toko (Kikongo) = man (Bentley 1895), malembalemba (Kikongo) = going on well, comfortably (Bentley 1895). lembe (Lingala) = soft, relax (Fundiko et al. 2015)	lemba ntoko (Kikongo), DRC	<i>Piper umbellatum</i> (Piperaceae)	MBG database
manbaai (manbaaj)	<i>Strychnos</i> cf. <i>medeola</i> (Loganiaceae)			magboy (Zande), DRC	<i>Strychnos spinosa</i> (Loganiaceae)	MBG database
mayaya (majaja)	<i>Oryza sativa</i> (Poaceae)	Type of rice (white husks and grain). mayaya (Sa) = type of grass		ma-dyaadya (Kikongo), DRC	Several species of Poaceae	Smith (2015c)
mazikazika (masikásiká, masigasiga)	<i>Eleusine indica</i> (Poaceae)		ki-zika-zika (Kikongo) = a grass (Daeleman 1972)	masikasika/zikazika (Kikongo), DRC	<i>Eleusine indica</i> (Poaceae)	MBG database
mutene (mutene)	<i>Eugenia</i> sp. (Myrtaceae)	Most <i>Eugenia</i> spp. have flaky barks. The Surinamese species <i>Eugenia uniflora</i> has a peeling bark (Gilman 2014)	motende (Lingala) = carving (Divuilu 2005)	tendende (Luba-Kasai), DRC	<i>Eugenia malangensis</i> (Myrtaceae)	MBG database
tunbalobi (tunbalobi)	<i>Cordia</i> spp. (Boraginaceae)	lóbi (Sa) = love (En) (Smith 1987). <i>Cordia bahamensis</i> (West Indies) is used as a love potion (Quattrocchi 2012)	bu-ntumba (Kikongo) = belle femme, beautiful woman, ntumba (Kikongo) = jeune demoiselle (Smith 2015c)	kitumba (Talinga), DRC	<i>Cordia africana</i> (Boraginaceae)	Quattrocchi 2012

Table 1 (concluded).

Suriname		Africa	
Plant name (original)	Species (family)	Significance (Caribbean/South America)	Significance
wandyaa (waja, wanja, wandja)	<i>Sesamum indicum</i> (Pedaliaceae)	According to Marcgrave and Piso, sesame (<i>Sesamum indicum</i>) was referred to as “ganglia” by the Congo people and got introduced from Africa to Brazil by the Portuguese colonizers (Marcgrave and Piso 1648; Alcantara-Rodriguez et al. 2019). Introduced to Suriname via the Portuguese Jews or during African slave trade from Africa to Suriname	wangila wu Matebo (Kikongo) wangila (Kikongo), DRC
wangi (wangi, wandji)	<i>Bagassa guianensis</i> (Moraceae)	lukwandyi, lukwangi (Sa, 1778) = twigs of fallen tree, branch without leaves; bushes (Smith 2015c)	mbangi (Zande), DRC
			Species (family) (retentions) <i>Sesamum indicum</i> (Pedaliaceae) Latham and Konda ku Mbuta 2017
			Reference with species MBG database

Note: Sa, Saramaccan; En, English; DRC, Democratic Republic of the Congo; MBG, Meise Botanical Garden.

African languages, the total percentage is larger than 100%.

Out of the 168 retentions, 154 (92%) were based on languages belonging to the Niger–Congo phylum. Only three (2%) were part of the Afro–Asiatic phylum and 1 (less than 1%) belonged to the Nilo–Saharan phylum. We were unable to trace the language origin for the remaining 11 names (6%) due to a lack of information, such as an unclassified language in the MBG database. Within the Niger–Congo phylum (Fig. 2A), most of the Saramaccan plant name retentions belonged to the Atlantic language subfamily, which is the largest language group within that phylum, spoken by people in the coastal areas of Western Africa. The remaining languages belonged to Mande (e.g., Bambara, Mende, and Mandinka). In some cases, 2 possible retentions were found (belonging to different language families).

A closer look at the Atlantic language group (Niger–Congo phylum) shows that the Volta Congo sub-language group (Fig. 2B) scored the highest, of which the Benue–Congo languages (including Bantu) (Fig. 2C) were best represented, followed by Kwa languages (including the Gbe languages Fon and Ewe) and some languages belonging to the North Volta Congo such as Daagare, a Gur language spoken in Ghana. Within the Benue–Congo languages (Fig. 2D), most of the retentions were Bantoid, which can be divided into Northern Bantoid and Southern Bantoid languages. Only 1 vernacular (1%) belonged to the Northern Bantoid group of languages, while the rest were Southern Bantoid languages (99%), to which the Narrow Bantu languages that are spoken in sub-Saharan Africa belong. We found that most retentions within the Narrow Bantu group belonged to the Central Western Bantu languages (Fig. 2E) and were mainly Kikongoic (Fig. 2F), to which Kikongo — spoken from northwestern Angola to western DRC, southern Gabon, and the western part of the Republic of the Congo — belongs.

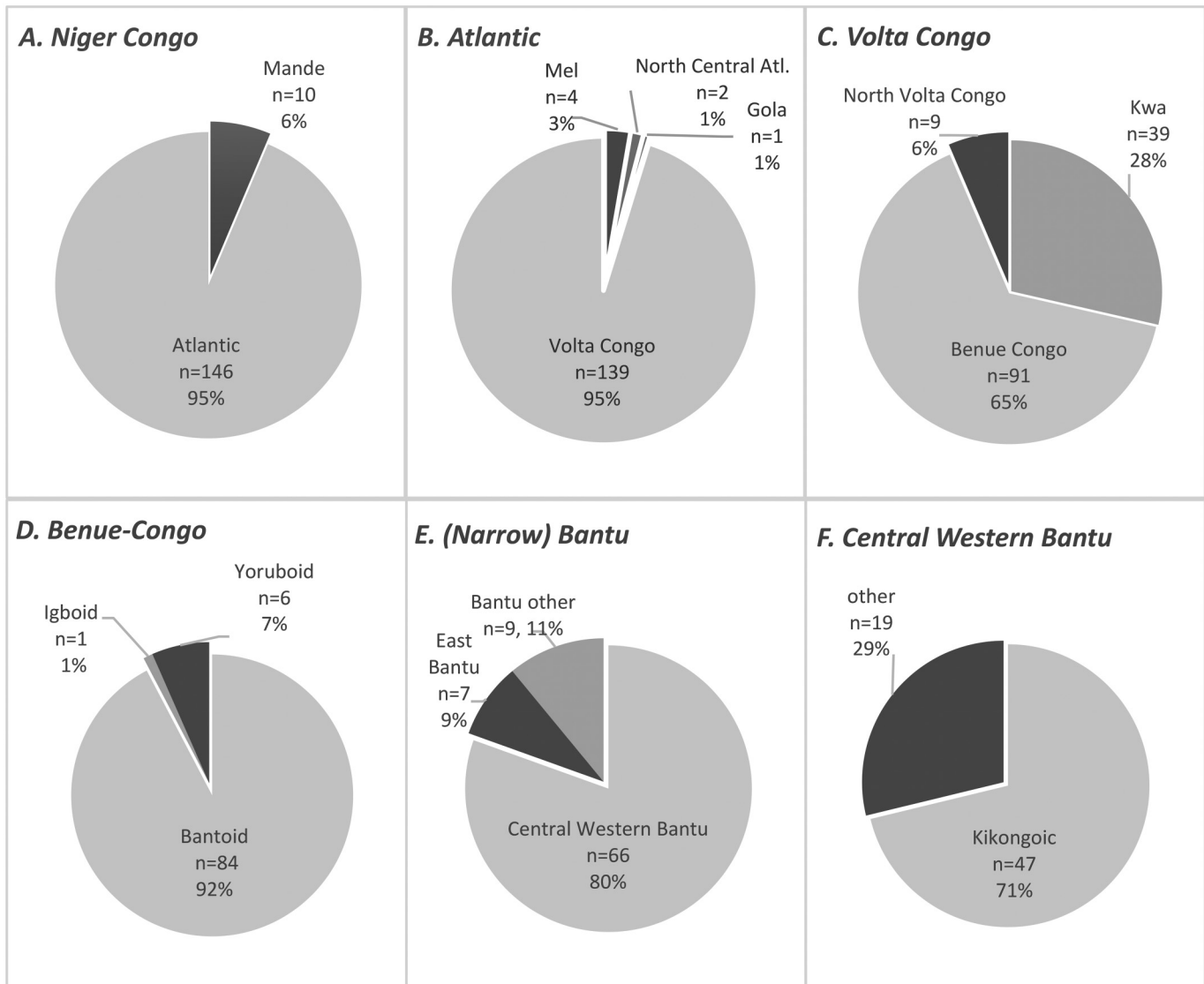
From the 168 scored retentions, 81 (48%) were Bantu and 47 (28%) were Kikongoic. Kikongo ($n = 37$, 22%) was the most prominent African language of all the Saramaccan retentions, although other languages were also recorded for this region such as Tembo, Lombo, Lingala, Luba-Katanga, Luba-Kasai, and Zande. The 60 botanical links with Saramaccan plant names found in the MBG database represented 21 languages (e.g., Villi, Zande, Luba-Kasai) out of the more than 200 languages that are nowadays spoken in the DRC (Muturzikiña 2011; Makomo 2012).

African heritage in Saramaccan plant names

References to animals

Saramaccan plant names refer to animals to express an ecological relationship between the plant and animal, or when there is a morphological association (plant looks like a part of the animal) (Supplementary Table S12). Morphological associations with 14 animal species

Fig. 2. Language families and subfamilies (presented in A–F) belonging to the Niger–Congo phylum contributing to Saramaccan retentions (%).



were made. Porcupines appeared most regularly; in “makayasubi” (*Chrysobalanus icaco* L.), “makaya” seems to be derived from the Hausa word “makaya” for porcupine (Robinson 1914), while “subi” (meaning to climb) stems from the Portuguese word “subir” (Smith and Cardoso 2004), referring to the spiny animal that climbs the small tree to eat its fruits (Plants for a Future Database 2020). Although the Hausa word “makaya” has lost its meaning in Saramaccan as a separate word for a spiny creature, the name “maka mbeti” (meaning spiny animal) is still in use for the Brazilian porcupine (*Coendou prehensilis*) (SIL 2003). The word “maka” was also used for other spiny or rough things like fishbones or the coarse “Osnabrugs linen” fabric (Blom 1786). Nowadays, the lexeme “maka” is used in all Afro–Surinamese languages as a suffix for plants with thorns or spines. For example, spiny lianas of the genus *Smilax* are known as “agbagomaka”,

in which “agbákò” means accident or misfortune in Yoruba (Church Missionary Society 1913). Since *Smilax* thorns can be harmful, the Saramaccan name warns about the misfortune these lianas can bring. Other Saramaccan vernacular plant names for spiny lianas are “aka(l)amaka (tatai)” for *Mimosa myriadenia* (Benth.) Benth. and *Senegalia tenuifolia* (L.) Britton & Rose, for which we found botanical links in Nigeria where spiny *Vachellia gerrardii* (Benth.) P.J.H.Hurter and *Vachellia hockii* (De Wild.) Seigler & Ebinger are referred to as “bakarkayaa”, and the spiny *Parkinsonia aculeata* L. is known as “bagaaauwar makka” in Hausa (Blench 2007). We also found that the Saramaccan vernacular “akaya”, the Papiamentu “kaya kaya” (in Curacao), and the Fon vernaculars “àkàyá” and “àkàyá asu” (Benin) are all used to name thorny *Cleome* species (De Souza 2008; Alcantara-Rodríguez 2016). The Fon names stem from

the Hausa word “makaya” or “kaya”, meaning thorn (Robinson 1914). The Matawai Maroon village Makaya Pingo, meaning spiny bush hog (*Tayassu pecari*) (ACT 2015), further supports our finding that the African lexeme “mayaka” found its way to Suriname.

Other African animals that feature in Saramaccan plant names are the antelope, “mboloko” in Lingala (Divuilu 2005), used for *Piper guineense* Schumach. & Thonn. in the DRC. Antelope is also used for *Piper* sp. in the Saramaccan vernacular “bookokindi” (meaning antelope’s knee), referring to the thick nodes on the stem. The Saramaccan name “pongo” has no meaning in Saramaccan but is given to *Cayaponia* lianas, of which the fruits are eaten by monkeys (Van Roosmalen 1985). The term “pongo” is a Kikongoic word for monkey, spoken in the Mayombe hills and derived from “mpungu” (Vili) or “yimpungu” (Kikongo) (OED 2020). The Twi word “nkra(n)”, referring to ants (Evangelische Missionsgesellschaft 1909), appears in the Saramaccan plant name “kantasi” (*Adiantum latifolium* Lam.) and “kantamasi” (*Palicourea violacea* (Aubl.) A.Rich.). Both names relate to “akantasi”, a malevolent spirit that lives in termite nests (Van Andel and Ruyschaert 2011). The lexeme “tasi” comes from the English thatch (Smith 1987), meaning to pile up leaves. In Saramaccan, the word “akantasi” refers to a termite hill. The Ghanaian capital Accra is named after the ant hills seen around the city (Akuamoah 2011). Other African animals that figure in Saramaccan plant names were described earlier by Huttar (1985) and Van Andel et al. (2014) for Ndyuka plant names, like the monitor lizard (*Varanus* sp.) known as “mbaambi” in Masangu, which lent its name to *Sabicea oblongifolia* (Miq.) Steyerl. being called “bambitongo” (meaning lizard’s tongue). The word “nzau” (Ndyuka), which is derived from “nzawu” (Kikongo) for elephant, is also a lexeme lent to various species in Suriname.

References to people and places

Vernacular plant names may also refer to African locations and ethnic groups. *Mansoa alliacea* (Lam.) A.H. Gentry is known as “agbonengetatai”, meaning liana of the Agbo people. The Saramaccan term “Agbo” is also used for one of their clans and probably derived from “àgbó” (Fon), a term referring to Abomey, the capital of the former Kingdom of Dahomey (Benin) that was previously referred to as Agbóme (Smith 2015d). A Saramaccan rice variety documented by Sally Price in 1967 as “akwiibi”, meaning small person, refers to the Kwinti Maroons. The Saramaccan used to call Kwinti “dee Akwiibinenge” (meaning the small people), as there were many people of short stature among the Kwinti. The term “akwiibi” might stem from “Ekwubi”, a common family name in Yoruba used in Nigeria.

The Portuguese introduced bananas and plantains (*Musa* spp., native to Asia) from Africa to Brazil, where

they then became known as “banana” (term from Guinea) and “bacoba” (from Angola) in the 17th century (Alcantara-Rodriguez et al. 2019; Van Donselaar 1989). The Bakuba may be the source for the vernacular name “bacoba” (Portuguese) and “bakuba” (Saramaccan) for sweet bananas that came into use in Northern Brazil and Suriname. Before 1525, the Portuguese came in contact with the Bushoong (an ethnic group that became the Bakuba after their migrations) in Mayombe (a transnational region in the southwest coast of Gabon, west of Congo-Brazzaville, west of DRC and Angola (Cabinda)), or on the banks of the River Congo (Vansina 1960). Trade in New World crops (e.g., maize, cassava) took place with the Bakuba via the Kongo Kingdom, which resulted in the Bakuba shifting to maize instead of cultivating bananas around their houses (Vansina 1978; Lowes et al. 2015). In the late 16th century, European merchants (mostly Dutch and Portuguese) founded the city of Boma on the Congo River estuary, 100 km from the Atlantic Ocean, which acted as a slave market and trading center. Nowadays, it is the second port of the DRC and forms an outlet for palm oil, bananas, and timber from the forests of Mayombe to the north (Edelson 2014; Encyclopaedia Britannica 2021). In the late 18th century, the majority of the enslaved Africans sold on the Loango Coast came from Mayombe and the Loango Kingdom north of the River Congo (Moblely 2015).

References to human body parts

Saramaccan folk taxonomy shows several examples of plant names of African origin referring to human body parts. The Saramaccan plant name “ndulundulu” (*Tanaecium bilabiatum* (Sprague) L.G. Lohmann) stems from the Kikongo word “ndulu”, meaning liver (Fundiko et al. 2015). The pods of *Tanaecium bilabiatum* are shaped like a liver and the plant is highly toxic (Lima et al. 2016). In the DRC, this vernacular is used for *Picralima nitida* (Stapf) T. Durand & H. Durand (Fundiko et al. 2015), of which the seeds are toxic to the liver (Sunmonu et al. 2014). In West Africa, *Picralima nitida* is used to treat jaundice and yellow fever, ailments that relate to liver problems (Erharuyi et al. 2014). The Saramaccan vernacular “degibonbo” is used for the Dilleniaceae lianas *Tetracera asperula* Miq. and *Davilla kunthii* A.St.-Hil. The name stems partly from “degi”, meaning fat or to consolidate (from “dik” in Dutch), and “bombo” meaning vagina (Bruyn 2002). In the DRC, “bombo” (Lombo) is used for the botanically related species *Tetracera rosiflora* Gilg. The Saramaccan use these rough-leaved lianas in genital steam baths to make the vagina swollen and tight, which gives a burning, scraping feeling during sexual intercourse (Van Andel et al. 2008). In many African cultures this practice of “dry sex” exists, but no botanically related species could be found in Africa with the same use.

References to habitat

Plant names can also refer to the locality where the plant grows, like *Pontederia crassipes* Mart., a water plant known as “tookoogbagba” in Saramaccan and as “togble”, “togwede”, or “gbà” in Fon in Benin (Akoègninou et al. 2006). In Fon, “togatogò” means in a circle, and “gbà” means swamp (Segurola and Rassinoux 2000). The Saramaccan forefathers probably named the plant after its circular leaves and its swampy habitat. The Saramaccan vernacular “azokopampa” is associated with *Sphagneticola trilobata* (L.) Pruski, a common species in open vegetation that spreads easily and is regarded as an invasive species in many countries (CABI 2020). In Kikongo, the term “azoko” means in many places, while “pampa” (no meaning in Saramaccan) means to act carelessly or thoughtlessly (Bentley 1895).

Morphological and organoleptic characteristics

Plant names also refer to life forms, the shape of specific plant parts, thorns, taste, color, exudate, or poisonous compounds. The Saramaccan vernacular “kobo” is given to *Caryocar microcarpum* Ducke, a fish poison plant, of which the leaves are crushed and thrown into the water to catch fish that come to the surface to breathe. The Saramaccan vernacular “(ma)kobo” (meaning fish) could stem from “(ma)kuba” (a Kikongo word meaning thornfish) (Smith 2015c) or from “koboma” (a Lingala word meaning to kill) (Fundiko et al. 2015). In the DRC, the vernacular “kobo” (Mangbetu) is used for *Spondianthus preussii* Engl., which is also known as fish poison (Neuwinger 2004). For the Saramaccan plant name “kisangula” (*Maprounea guianensis* Aubl.), we found that the same vernacular in Kikongo is used in the DRC for its botanical relative *Maprounea africana* Müll.Arg. (Arkininstall 1979). The lexeme “ngola” in Lingala means red (Divuulu 2005), and both species have red fruits. The vernacular “(be) sangaavu” (*Costus* spp.) is a retention of “nsangalavwa/nsangalavu” (Kikongo) for *Costus* in the DRC and Angola, where the prefix “be” is used to indicate a red-flowered *Costus*.

References to illnesses

The Saramaccans use many medicinal plants in their health care practices (Van't Klooster et al. 2016), and plant names often reflect their medical uses. In the plant name “kulakatanga” (*Piper* spp.), “kula” means healing or recovery in Saramaccan, which stems from “kula” (Kikongo, DRC), meaning to cast or to drive off, while “katanga” comes from “n-kátánga”, meaning cramp in both Kikongo and Saramaccan (Smith 2015c). The linguistic evidence provided by Smith (2015c) for the African origin of “kulakatanga” is supported by ethnobotanical data as Saramaccans use many *Piper* species to sooth body pain and stomachaches (Van Andel and Ruyschaert 2011). The species *Phyllanthus amarus* Schumacher & Thonn. or “aheni” is used by Saramaccans to break down kidney stones (Van Andel and Ruyschaert

2011), a practice also found in Africa for the same species (Eweka and Enogieru 2011). In Benin, the species is known as “ahin bishowo” in Yoruba (De Souza 2008), of which the Saramaccan “aheni” is derived. In Yoruba, “pahin keke” means to gnash, while “keke” means to be small (Church Missionary Society 1913). The Saramaccan name seems to stem from the Yoruba terms referring to the crushing of kidney stones.

Several Saramaccan plant names refer to “fiofio”, which means curse and refers to a magical disease related to a bug. Herskovits and Herskovits (1934) report that “fio-fio” is a brown bug or a spirit that brings sickness or death, and claim that “fiofio” is a Bantu word for a medicinal herb used by the peoples of Loango (Central Africa), but unfortunately they do not mention any scientific name. Our literature search revealed that the herb *Psorospermum febrifugum* Spach is known as “mfiofio” in Kikongo and is used against epilepsy, skin parasites, insect bites, and sand fleas in different parts of Africa (Burkill 1985–2010; Bum et al. 2005). In Suriname, the juice of “bobiofio” (*Struchium sparganophorum* (L.) Kuntze) is used against epilepsy and to treat the magical children disease “fiofio”, which is caused by arguing family members (Van Andel and Ruyschaert 2011). This corresponds to a remark by Herskovits and Herskovits (1934) that “fio-fio” could be an old Dahomean term meaning anger. In Suriname, several *Palicourea* species are used in rituals to calm down the angry Apunku spirit (Bantu origin). They are also associated with the malicious Akantasi spirit that lives in termite hills. When a provision ground is made near a termite hill, this can upset the Akantasi, who will take revenge on the family of the farmer. Akantasi's anger is expressed by little foam bubbles on the termite nest, which are caused by spittle bugs that live on tree roots growing in the fertile soil of the nest. The word “bobi” is derived from the English “bubby”, now booby for a woman's breast (OED 2020). The herb *Euphorbia hirta* L., known as “fiofio-uwii” by Saramaccans, is used in herbal baths to reduce the effect of “fiofio”, while *Nicotiana tabacum* L. or “boiofiofio” is sprinkled around the village to chase away angry spirits that cause illnesses (Van Andel and Ruyschaert 2011). Tobacco leaves are widely used in Suriname to suffocate botfly larvae in the skin, and the Saramaccan word “boi” refers to a boil or abscess.

References to supernatural beings

Spirits play an important role in Saramaccan daily life, and many plant species are associated with spirits. *Protium stevensonii* (Standl.) Daly, “(matu)mboomba” in Saramaccan, is a large tree that grows in lowland rainforests (Fern 2020). While “matu” means forest, derived from the Portuguese “mato” (Smith and Cardoso 2004), “bo(e)mba” refers to a goodhearted Maroon water god who dwells in rapids (Benjamins and Snelleman 1917). The name of this god seems to be derived from

“mbombo” or “bumba”, the creator god of the Bakuba people in the DRC. In their creation myth, “mbombo” was a white giant who ruled over the Earth in the beginning of time (Knappert 1979). Another source for the Surinamese water god “boemba” could be “mbumba”, a central mythic figure in Yombe cosmology (Mobley 2015).

Species such as *Hyptis recurvata* Poit. and *Dianthera pectoralis* (Jacq.) J.F.Gmel. are known as “tone uwii”, meaning river god weed (Van Andel and Ruyschaert 2011). The Saramaccan use “tone” for people with mental disabilities and albinism (Herskovits and Herskovits 1936; Price and Price 1991); the term is based on Tonnein Toema, a god who punishes those who pollute the water (Benjamins and Snelleman 1917), described by Knappert (1979) as an African god in Bakuba mythology. The preparation of a magic herbal mixture (“tone obia”) to invoke the rapid gods to cause heavy rainfall and make rivers unnavigable helped the Saramaccan in the past to get rid of their enemies (Price and Price 1991).

West African gods also appear in Saramaccan plant names like “vodu-uwii” and “papa-uwii”, both used for *Dianthera pectoralis*. The Saramaccan word “vodu”, also known in Haiti as “voodoo” (Smith 2001), stems from “vodún” (Fon) or “vodú” (Ewe), the name of a snake god in Benin and Ghana (Smith 2015d), while “papa” means god in Fon (Benin). In Suriname, both “vodu” and “papa” refer to the *Boa constrictor* snake that is used by this god as its vehicle; however, “papa” can also refer to the “Papá” people, who came from the Popo region on the border of Togo and Benin (Van Andel et al. 2014). The species *Dianthera cayennensis* (Nees) Griseb., known by the Saramaccans as “apunku dangdang”, is botanically related to *Justicia ladanoides* Lam., known as “dangdang” (Chamba) in Nigeria (Burkill 1985–2010). The name “apunku dangdang” relates to the Saramaccan forest spirit A(m)punku, whose name is based on the god “nzambi ampungu” among the Kikongo (Bentley 1895), in which “m-púungu” (Kikongo) means powerful (Smith 2015d).

References to sound

Onomatopoeia has been recognized as a major lexical class in West African languages (Dingemans 2018). The term refers to the process of creating a word that phonetically resembles the sound that it describes. We found 14 possible onomatopoeia among the 978 Saramaccan plant names. Several *Crotalaria* species and the palm *Astrocaryum vulgare* Mart. are known in Saramaccan as “tyotyoty”, which means to pound, referring to the sound made when clothes are beaten on rocks when washed by hand. In the Ivory Coast, the vernacular “tio” (Mandinga) is used for peanuts (Burkill 1985–2010), while in the DRC, “itotjo” (unclassified language) is used for *Dioclea reflexa* Hook.f. The seeds of both Fabaceae species are used in the manufacturing of soap or shampoo in Africa (Jide 2010; Geetha et al. 2013; Yaradua and Shah

2018). In Brazil, *Astrocaryum* seeds are used as an ingredient in shampoos, soaps, and conditioners (Pinto 1963; Fern 2020). So far, we have no ethnobotanical evidence that *Crotalaria* spp. or *Astrocaryum sciophilum* (Miq.) Pulle (“muumuu” (Saramaccan) from “murumuru” (Carib)) are used for this purpose by the Saramaccans, although their vernacular names refer to such a use. Another example is the Saramaccan vernacular “waaalutu” given to *Coccoloba uvifera* (L.) L., based on the English “root” and the onomatopoeia “waaa”, which means to separate or disperse as *Coccoloba uvifera* has large spreading roots that fortify riverbanks as they hold back the soil.

Other features in Saramaccan plant naming

Some plant species carry several different African-based Saramaccan names. The large tree *Balizia pedicellaris* (DC.) Barneby & J.W.Grimes is not only known as “be azau” (meaning red elephant), a Saramaccan innovation, but also as “powkondyo”. In Saramaccan, “konyo” means massive. Some Saramaccan plant names are fusions of two lexemes meaning the same thing but derived from different linguistic origins. For example, in “apaku pesi” (*Canavalia brasiliensis* Mart. ex Benth.), the lexeme “apaku” stems from “akpaku” (Fon) and “pesi” from pea (English), both meaning bean (Segurola and Rassinoux 2000; Smith 1987).

Saramaccan plant names often start with a word-initial “a”, like in “abenbele” (translated as “the red nbele”), a name given to a *Pouteria* species that stems from “mbala” (Mba), which is given to *Gambeya africana* (A.DC.) Pierre in the DRC. The word “akandauwii” is derived from “kanda” meaning candle, and refers to candle weed (Smith 1987), while “amiomio”, the Saramaccan term for *Ricinus communis* L., is based on “myonmyon”, the Gun name (Benin) for the same species (De Souza 2008). In the Gbe languages, “a-” is a noun class prefix, indicating a word class (Aboh and Smith 2015), but in Saramaccan word-initial “a-” has lost this function and it is not considered a prefix.

Another feature of Saramaccan is the dropping of the Kikongo “n-” prefix in plant names. For example, “nkengezi”, meaning razor-edged grass (Bentley 1895), became “kengeesi” for the sharp-leaved *Scleria secans* (L.) Urb. in Saramaccan. Kikongo words like “nsafu”, meaning foulness (malodorousness, stinkyness), became “safu” in “safukali” (*Guarea* spp.), and “nkisi”, meaning holy or sacred, became “kisi” in “kisima” (*Humiria balsamifera* var. *floribunda* (Mart.) Cuatrec.) in Saramaccan.

Discussion

African retentions

Our data show that 39% of the Saramaccan plant names have partial African origin and that they reflect a complex of retentions and innovations. Our findings support the suggestions of Price (1975), that the African contribution in Saramaccan could be up to 50%. Food, health care, and religion are highly culture-specific

domains, so in contact settings this is where retention due to transfer is more likely to occur. Out of the 678 Saramaccan plant names recorded in the database from Van Andel et al. (2014), 84 remained unknown, for which we tried to find botanically related species in Central Africa. For 64 of these, we found African elements in 28 names, 29 had European elements, 13 had Indigenous elements, and 2 had Asian elements. Still, for 48 Saramaccan plant names, we could not trace a source language.

The Saramaccan plant names for which we found botanical links in Africa were mostly (62%) from Central African origin, which is a much higher percentage than the 43% calculated by Van Andel et al. (2014) for all Afro-Surinamese languages together. The higher links to Central Africa can be explained by the newly added MBG database of Congolese plant names, which led to 60 previously unknown retentions of Saramaccan plant names. We also found 9 additional retentions in literature sources for this area (e.g., Lautenschläger et al. 2018). Our findings correspond with our expectation that (West) Central Africa has substantially influenced the Saramaccan language. While most of the African-based Saramaccan plant names belonged to the Niger-Congo phylum, we also found some retentions of Hausa plant names (Afro-Asiatic phylum) due to the Hausa trade in enslaved Africans and kola nuts (particularly *Cola nitida* (Vent.) Schott & Endl.) via their ancient caravan routes from the Sahel to the West African coast (Isichei 1997).

The strong influence of Bantu languages (mainly Kikongo) in the formation of Saramaccan plant names corresponds with the findings of Smith (2015a). Kikongo (Bantu) was the most prominent African language influencing Saramaccan retentions. This large contribution of Kikongo can be explained by the fact that this language was spoken in areas where the Dutch colonizers purchased their slaves from e.g., Malembo, Cabinda (Voyages Database 2021).

Most languages for the Saramaccan retentions belonged to the Bantu group, followed by Kwa, which can be explained by the fact that from 1675 to 1719, most enslaved Africans in Suriname were Eastern Gbe and “Kikongo-speaking” people from the Slave Coast and Loango Kingdom. After 1720, when the Gold Coast (Ghana) became the main supplier of African captives, more Akan-speaking people were taken to Suriname (Eltis and Richardson 2010; Smith 2015a). However, the Saramaccan community was formed between 1690 and 1710 (Price 1983), long before the arrival of the Akan-speaking people. As a result, the number of Akan-retentions in Saramaccan plant names was much lower, as were the number of Akan lexical items found by linguists (Smith 2015a). As mentioned by Huttar (1985), many languages outside Kwa and Bantu should be taken into consideration as possible sources for the Maroon languages in

Suriname. Indeed, for some plant names, we found a botanical relative in less expected language groups such as Mande (e.g., Bambara, Mandinka, or Mende) or Gur (Daagare or Ntcham), spoken in Ghana and Benin.

Within the Benue-Congo language group, to which the Bantoid languages belong, Igbo and Yoruboid languages such as Yoruba were also present. An analysis of the online Voyages Database showed that before 1675, enslaved Africans in Suriname were not only captured from Central Africa but also from Nigeria and spoke a great variety of languages including Ijo, Igbo, and Igbo languages (Smith 2015b). Although it remains unclear how these languages might have influenced the Afro-Surinamese languages, we found one possible retention based on an Igbo plant name. Fortes-Lima et al. (2017) showed in their genetic analysis of Maroon individuals from Suriname and French Guiana (including 19 Saramaccan individuals) that most of their DNA was shared with people from Benin and Nigeria. The Maroon admixture profiles closely matched that of present day Fon, Bariba, Yoruba, and Esan peoples. This could explain the Fon and Yoruba influence we found in Saramaccan plant names; however, their sample size ($n = 107$ for all Maroons) was small and cannot be representative for all Maroons in Suriname and French Guiana.

Several languages that are spoken in the interior of the DRC also contributed to the Saramaccan plant names, such as Zande, Tembo, and Luba-Katanga, and Luba-Kasai. This confirms the conclusion of Eltis and Richardson (2010), that enslaved Africans were captured hundreds of miles inland by traders and took months to reach the coastal areas where they were sold to the Europeans (Mobley 2015). The Europeans obtained their captives mainly via traders controlling the interior slave market and only documented the place where they bought their enslaved individuals (Mobley 2015).

African innovations

For 206 Saramaccan plant names with a possible African origin, we did not find any botanically related species in Africa, but found similar African words in dictionaries, historical, and linguistic literature. This shows that enslaved Africans used words of their own lexicon to give new names to Surinamese plants they were not familiar with, based on their color, shape, growth form, habitat, or uses. We found that 74 of these innovations were influenced by Bantu languages (of which 62 were influenced by Kikongo) and 84 were influenced by Kwa languages (of which 59 were influenced by Fon), while the rest related to other smaller language groups. These numbers can be biased as variations of one word can occur in different languages belonging the same language group: the Saramaccan word “vodu” (meaning snake god) could stem from “vodún” (Fon) or “vodú” (Ewe), both meaning god (Smith 2015d).

European influences

Although we focused on the African legacy, we acknowledge the dominance of European languages in Saramaccan plant names, two thirds of which had European elements. Our results are slightly different to those of Van Andel et al. (2014), who found that only 53% of the Saramaccan plant names could be linked to a European lexical item. The higher European influence in our data analysis (65%) was partly based on our inclusion of prefixes (black, white, big, small), as they contain important information for Saramaccan plant classification and identification. Removing prefixes from our analysis led to a decrease in European influence. We also added new Saramaccan plant name records for rice varieties, of which 41 (59%) had European terms in their names. We also found some new European influences in plant names recorded earlier by Van Andel et al. (2014). Still, the high proportion of European lexical elements in both studies show that plant naming by enslaved Africans and their descendants in Suriname was strongly influenced by the languages spoken by the English, Dutch, and Portuguese plantation owners. For Papiamentu plant names in Curaçao, Alcántara-Rodríguez (2016) also found a strong European influence: most lexical items were of Spanish and Portuguese (56%) or Dutch (25%) origin, followed by Taino (20%) (Indigenous), while only 12% had African elements, much less than in the Maroon context. This can be explained by the fact that the Surinamese Maroons lived much more isolated in the rainforest than the people of African descent in Curaçao. Owing to the fact that they were isolated for centuries, the Maroons in Suriname and French Guiana have the highest proportion of African genetic ancestry (98%) of any African-American population found so far (Fortes-Lima et al. 2017), which clearly had an effect on their plant naming process.

Indigenous influences

During and after Saramaccan people escaped from the plantations, they were in contact with various Indigenous communities from whom they learned plant knowledge, cultural practices, and words that can still be seen in Saramaccan plant names. Less than one fifth of the Saramaccan plant names are of Indigenous origin, and of these names, most are of Carib and Arawak origin. Some Saramaccan plant names stem from other Indigenous languages outside Suriname: the “kadyu” (*Anacardium occidentale* L.), comes from the Tupi cajú (Brazil), where it is used for the same species (Alcántara-Rodríguez et al. 2019). This Tupi name (and probably the domesticated cashew as well) came to Suriname via the Sephardic Jews that were thrown out of Dutch Brazil (Van Donselaar 2013). The Saramaccan plant name “(a)wassai” for *Varronia schomburgkii* (A.DC.) Borhidi is derived from “yawatai”, a Wayapi name given to the botanically related *Cordia nodosa* Lam. in French Guyana (DeFilipps et al. 2004). The Saramaccan name

“kwaytaka nang(r)a” (frog nail) given to *Dolichandra unguis-cati* (L.) L.G. Lohmann, seems to be an innovation based on “kwataka”, a Wayapi word used for the frog *Boana calcarata* (Grenand 1989). The nail (“nagra”) or hand of the frog resembles the trifid tendrils of the liana that, in turn, look like small, hooked claws. The influence of Indigenous languages that we found in Saramaccan plant names (19%) was stronger than suggested earlier by Price (2008), who argued that less than 10% of Saramaccan came from Indigenous languages.

Ethnobotanical source domains

The Saramaccan plant names contain all sorts of cultural information and are often fusions of words belonging to various domains. This practice is present among traditional cultures around the world (e.g., Turpin 2013; Fundiko et al. 2015). Because the Saramaccan have an oral culture, plant names help them to classify their natural surroundings, safeguard their cultural knowledge, and remember certain aspects related to the plant's morphology, habitat, or use. Huttar (1985) found that different African languages were used for various semantic domains in the Ndyuka language. While the Kwa etymon was prominent in the food domain, Bantu predominated in the domains of flora and fauna, and both contributed evenly to the domain related to body parts. The contribution of Kwa and Bantu words could be further investigated for the Saramaccan semantic domains of food and body parts, but its dominance in the natural world was also evident in our study.

Limitations of this study and future research

The answer to the question of how and which African languages influenced Saramaccan plant names is a complex one. Some words have survived, while others have not, or have not been documented yet, or were overlooked by us and previous scholars. Those words that did survive have often been transformed, making an analysis on their origin interesting but challenging. Sounds do not always correspond with spelling conventions across languages, and spelling rules change over time. Many of the plant names in African languages remain still undocumented, and dictionaries or word lists prepared by missionaries scarcely include terms related to the religious, spiritual, and sexual domain. The lack of dictionaries and ethnobotanical research in Central Africa may have created a bias in the language sources and plant names we found so far. We detected relations with Saramaccan plant names and the Congolese Lingala language. Lingala was used as a trade language and was not originally spoken by enslaved Africans in that region (Meeuwis 2019). Many vernacular names in African languages have yet to be linked to reliable botanical specimen data, and more research on Saramaccan plant names is needed to complete our database. Apart from Irvine (1961) for Ghana and Fundiko et al. (2015) for the DRC, etymological studies on African

plant names are very scarce. Most ethnobotanical studies and dictionaries do not provide translations for vernacular plant names. Furthermore, a word can enter a language via language contact in a direct manner or indirectly, passed on from one language to another via borrowing. The Saramaccan often borrowed words from Sranantongo into their lexicon (Good 2009). We are therefore unable to provide a definite answer to the question of the African source of Saramaccan plant names.

Our study showed that ethnobotanical research can add valuable information to the existing linguistic and historical studies on the origin of the enslaved Africans in the New World. Linguists and historians often document plant names in a way that is not useful to botanists, who need scientific names to contextualize them, while botanists often document plant names with errors as dictionaries for checking names were often unavailable. Vouchering of plant names when doing ethnobotanical research is crucial to be able to unambiguously link local names to scientific names. Therefore, multidisciplinary research in Africa and the Americas is needed; collaborations with universities and the involvement of native speakers as researchers is highly recommended. Finding evidence for the African legacy of Afro-American plant names is far from finished, but so far, it has shown the adaptive capacity of humans in a new, challenging environment.

Competing interest statement

The authors declare there are no competing interests.

Contribution statement

C.K. and T.V.A. conceptualized the study. P.S. compiled the MBG database made available for this study. C.K. compiled the Saramaccan plant database, conducted the analysis, and drafted the manuscript. All authors (except P.S.) gave input and feedback on the analysis. All authors have read and approved the final manuscript.

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