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Saamaka uwii: Saramaccan medical plant knowledge, practices and beliefs for local health care in Suriname

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Chapter 3

Herbal bathing: an analysis of variation in plant use among Saramaccan and Aucan Maroons in Suriname

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'Some young people do not know about the herbal baths anymore... This is a great loss for the people living in the interior but also for the rest of the world who can use them. We have to make sure this knowledge does not disappear.' (Toya Saaki, Saramaccan traditional knowledge holder, 2009)

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ABSTRACT

Background: Herbal baths play an important role in the traditional health care of Maroons living in the interior of Suriname. However, little is known on the differences in plant ingredients used among and within the Maroon groups. We compared plant use in herbal baths documented for Saramaccan and Aucan Maroons, to see whether similarity in species was related to bath type, ethnic group or geographical location. We hypothesized that because of their dissimilar cultural background, they used different species for the same type of bath. We assumed, however, that plants used in genital baths were more similar, as certain plant ingredients (e.g. essential oils), are preferred in these baths.

Methods: We compiled a database from published and unpublished sources on herbal bath ingredients and constructed a presence/absence matrix per bath type and study site. To assess similarity in plant use among and within Saramaccan and Aucan communities, we performed three Detrended Correspondence Analyses on species level and the Jaccard Similarity Index to quantify similarity in bath ingredients.

Results: We recorded 349 plants used in six commonly used bath types: baby strength, adult strength, skin diseases, respiratory ailments, genital steam baths and spiritual issues. Our results showed a large variation in plant ingredients among the Saramaccans and Aucans and little similarity between Saramaccans and Aucans, even for the same type of baths. Plant ingredients for baby baths and genital baths shared more species than the others. Even within the Saramaccan community, plant ingredients were stronger associated with location than with bath type.

Conclusions: Plant use in bathing was strongly influenced by study site and then by ethnicity, but less by bath type. As Maroons escaped from different plantations and developed their ethnomedicinal practices in isolation, there has been little exchange in ethnobotanical knowledge after the 17th century between ethnic groups. Care should be taken in extrapolating plant use data collected from one location to a whole ethnic community. Maroon plant use deserves more scientific attention, especially now as there are indications that traditional knowledge is disappearing.

Keywords: Herbal baths, medicinal plants, Suriname, Maroons, Saramaccan, Aucan, traditional knowledge, traditional medicine

BACKGROUND

Since ancient times, people have believed that bathing in a spring, sea or river resulted in physical and spiritual purification and thereby in the improvement of one's health. The ancient Greeks thought that certain natural springs or tidal pools were blessed by the gods and bathing in them would help to cure diseases (Paige and Harrison, 1987). In Christian baptism, pouring water is regarded as a symbol of transition and renewal in which a person makes the passage from physiological birth to social birth (Twigg, 2000). Early descriptions (297 AD) on Japanese culture refer to ritual baths after funerals for cleansing and purification (De Bary et al., 2001). Bathing can have many different meanings across cultures, varying from an individual act concerned with cleanliness and hygiene, to social acts related to rituals of purification and separation, or as a form of therapeutic practice (Twigg, 2000).

Ethnobotanical studies have reported on bathing as a form of medical treatment in many cultures worldwide, such as Africa (Olorunnisola et al., 2013; Diarra et al., 2015), Asia (Li et al., 2006; Zumsteg and Weckerle, 2007; Srithi et al., 2009), Europe (Pieroni and Giusti, 2002), South America (Bourdy et al., 2000; Valadeau, 2009) and the Caribbean (Van Andel et al., 2008; Ruysschaert et al., 2009; Van 't Klooster et al., 2016). Herbal baths seem to promote not only people's physical health but also their psychological well-being. However, people's motivations for the inclusion of certain plant species in specific types of herbal baths, and regional variation in herbal ingredients remain largely understudied.

Herbal baths form a major part of the traditional medical practices of the Maroons, descendants of escaped enslaved Africans who fought for their freedom and settled themselves in the tropical rainforest of Suriname (Van Andel et al., 2013; Van 't Klooster et al., 2016). Taken from different parts of Africa, their ancestors came from numerous ethnic and linguistic groups (Mintz and Price, 1992). Between 1658 and 1825, slave traders brought Africans to Suriname from many different regions and ethnicities in West and Central Africa, such as the Slave Coast (eastern Ghana to Benin), the Loango area (southern Gabon to northern Angola), Gold Coast (Ghana) and the Windward Coast (Ivory Coast, Liberia and Sierra Leone) (Eltis and Richardson, 2010; Van Andel et al., 2014). As a result of their distinct geographical origins, cultures and languages, enslaved Africans formed a heterogeneous group in Suriname (Van Andel et al., 2014). They brought along their own cultural heritage with values, knowledge and beliefs to the New World, where they became a new community and began to share a culture they themselves created (Mintz and Price, 1992). Since no names or origin of the enslaved Africans were registered upon arrival, linking the Surinamese Maroons to their African

heritage remains difficult (Hoogbergen, 1990).

Nowadays, six Maroon ethnic groups exist in Suriname (Fig. 1) with an estimated population of 127,000, which is 23% of the total population in the country (Price, 2013). The Saramaccans (pop. 58,000) and the Aucans (pop. 56,000) form the largest groups. Historically, these groups have not maintained extensive social contact with each other, as they settled among different major rivers separated by dense rainforest (Price, 1996; Van Velzen and Hoogbergen, 2011). They have lived quite isolated for centuries, which resulted in the development of their own cultures with own distinct languages (Saramaccan and Aucan), diet patterns and traditions (Price, 1975a).

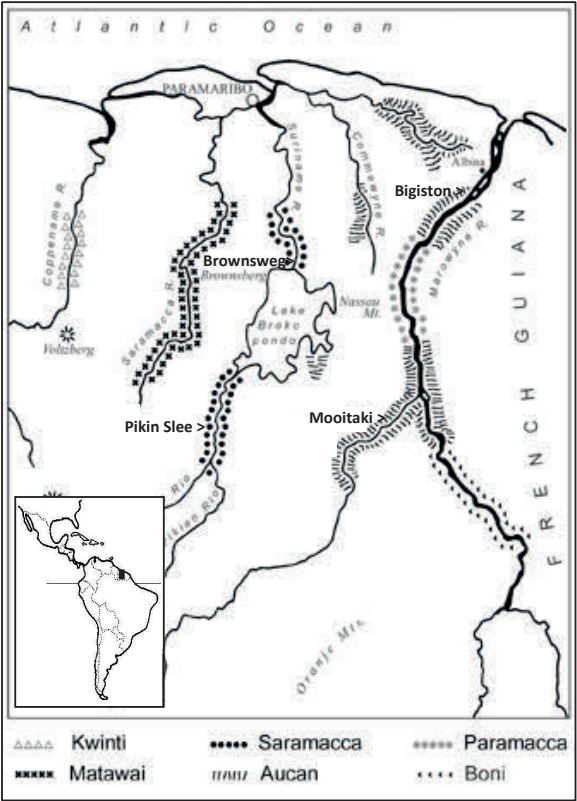


Figure 1 | Map of Suriname, with Maroon ethnic groups and research areas. Drawing by H.R. Rypkema, Naturalis Biodiversity Center.

Maroons are well known for their traditional medicine, which usually contain a mixture of plant ingredients. Plant species used in Saramaccan and Aucan Maroon herbal baths have been the subject of recent ethnobotanical studies (Van Andel et al., 2008; 2011, 2013; Vossen et al., 2014). Even Maroons, who migrated to the Netherlands after Suriname became independent in 1975, claimed that herbal baths were essential for their well-being and part of their cultural identity (Van Andel and Westers, 2010). The variation of herbal baths and their plant ingredients among and within their different Maroon groups have not been studied in detail. Because most studies were conducted in a single Maroon community and hardly any data exists for the smaller Maroons groups, it is not clear how representative these studies are for Surinamese Maroons in general.

In this study, we compared plant use in six commonly applied herbal baths that were documented among the Saramaccan and/or Aucan Maroons: baths for adult strength (Van 't Klooster, 2009; Van 't Klooster et al., 2016; Ruyschaert, 2018), baby strength (Ruyschaert et al., 2009; Van 't Klooster, 2009; Van 't Klooster et al., 2016; Vossen et al., 2014;), skin disorders (Van 't Klooster, 2009; Van 't Klooster et al., 2016; Ruyschaert, 2018), respiratory ailments (Van 't Klooster, 2009; Van 't Klooster et al., 2016; Ruyschaert, 2018), spiritual ailments (Groenendijk, 2006; Van 't Klooster, 2009; Van Andel et al., 2013; Van 't Klooster et al., 2016; Ruyschaert, 2018) and genital steam baths (Van Andel et al., 2008; Van 't Klooster, 2009; Van 't Klooster et al., 2016;). In these studies, the baths were mostly described for one specific Maroon community, but no comparison was made among different Maroon groups.

The ancestors of Saramaccan and Aucan Maroons escaped from different plantations, owned by either English or Dutch masters (Aucans) or Portuguese Jews (Saramaccans), in different periods of time. The Saramaccan community developed around 1690-1710, followed by the Aucan community after 1712 (Price, 1976; Smith, 2002). Their geographic separation and limited contact have probably led to distinct ethnobotanical practices. To investigate these differences, our research focused on four main questions: 1) How are the six herbal baths prepared and by whom? 2) Which plant species are used in these herbal baths? 3) How do these plant species vary between the Aucan and Saramaccan Maroons and within these groups? and 4) Is similarity in plant use related to the type of herbal bath, ethnic group or geographical location?

We hypothesized that Aucan and Saramaccan Maroons used different plant species for the same type of herbal baths. We anticipated that especially spiritual baths would show a low similarity in plant species, based on the symbolic meaning of the most plant ingredients, which is more related to specific Maroon cultural histories

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than to pharmacological content (Van Andel and Ruyschaert, 2011; Van Andel et al., 2013). However, we also hypothesized that plants used in genital steam baths would show a larger similarity, based on the selection of plant ingredients containing certain active substances preferred in these baths, such as tannins and essential oils (Van Andel et al., 2008; Van Andel and Ruyschaert, 2011). We expected differences in plant species to be determined by the type of bath (application) and by ethnicity (cultural preference). Finally, we expected to find the most overlap in plant species for the genital baths within the Saramaccan community.

The outcome of this research will contribute to the overall knowledge of traditional health care practices among the Aucan and Saramaccan Maroons and could form a basis for further assessment of the medical effectiveness of bath treatments and the therapeutic potential of medicinal plants in general. Analysing the variation of Maroon traditional medical knowledge will not only contribute to a better understanding of their cultures and their strong relationship with nature, but also verify how representative plant use documented in a specific village is for the entire ethnic group. Our outcomes will clarify whether plant use within an ethnic group is uniform or variable.

METHODS

Data collection

Data on plant species used in herbal bath treatments were retrieved from published ethnobotanical fieldwork studies among Suriname Maroons (Van Andel et al., 2008; Ruyschaert et al., 2009; Van Andel and Ruyschaert, 2011; Van Andel et al., 2013; Vossen et al., 2014; Van 't Klooster et al., 2016; Ruyschaert, 2018), and the original databases on which these studies were based, as these contain extra information on herbal baths (Table 1). We also added data from unpublished student reports (Groenendijk, 2006; Van 't Klooster, 2009).

During these studies, information was gathered through semi-structured interviews and plant collection trips. Research and collection permits were obtained from the Surinamese Forest Service department (LBB), and oral or written prior informed consent from participants and the respective village authorities. The purpose and nature of the research were explained to respondents before the interviews took place. All studies from which we used data followed the Code of Ethics of the International Society of Ethnobiology (ISE, 2017). Respondents knowledgeable on medicinal plants and their uses were identified through previous contact with community members and snowball sampling, and included laymen and traditional healers, males and females, young and older people. Other methods used were

informal (group) conversations, free listing, participant observations, household surveys and assignment techniques (Martin, 2004). Topics included plants used for health promotion, disease prevention and cure, their growth forms, local names, parts used, mode of preparation, route of administration, health concerns and knowledge transfer.

Table 1 | Sources of ethnobotanical data used in the analysis.

Ethnic group	Location fieldwork	Year	Data source	Nr. species in herbal baths	Nr. of respondents	Publication based on fieldwork
Saramaccan	Brownsweeg (Brokopondo Lake)	2005-2006	Fieldwork Ruysschaert	274	ca. 200	(Ruysschaert et al., 2009; Van Andel et al., 2013; Van Andel and Ruysschaert, 2001; Ruysschaert, 2018)
Saramaccan	Pikin Slee (Upper Suriname River)	2009	Fieldwork Van 't Klooster	69	20	(Van 't Klooster et al., 2016; Van 't Klooster, 2009)
Aucan	Bigiston (Marowijne River)	2006	Fieldwork Van Andel	87	3	Van Andel et al., 2008, 2013; Van Andel and Ruysschaert, 2011; Groenendijk, 2006)
Aucan	(Mooitaki Tapanahoni River)	2013	Fieldwork Van Andel and Vossen	39	25	(Vossen et al., 2014)

Interview questions were pre-tested with the help of bilingual Surinamese key informants to check whether the questions were framed in correct Sranantongo, Saramaccan or Aucan and pertinent to the research. Some interviews were recorded with a voice-recorder and transcribed in Saramaccan to be discussed with informants to verify answers. Plant species not immediately familiar to the researchers were collected as botanical vouchers, identified and deposited at the National Herbarium of Suriname (BBS, all specimens), Naturalis Biodiversity Center (L, except the Brownsweeg and Pikin Slee collections) and Ghent University (GENT, Brownsweeg collections only). The definitions of the different herbal baths were documented during fieldwork, and afterwards checked with the key informants for correct interpretation.

Data analysis

Since most data was collected in the Saramaccan area, we selected herbal baths that were frequently used at the two Saramaccan locations (Brownsweeg and Pikin Slee), and added the available data of the two Aucan locations (Mooitaki and Bigiston) for comparison. Each bath type should at least be used at two out of the four study sites to allow comparison. All plant species used in the six selected herbal bath

types (baby strength, adult strength, genital steam baths, skin disorders, respiratory ailments and spiritual ailments) are listed in Additional file 1 with corresponding information on vernacular names, scientific names, family and collection numbers (when available).

We constructed a presence /absence matrix in Excel with all recorded plant species in rows and the type of herbal bath and the four different Maroon villages as columns. We entered a 1 in the cells when a species was used in a particular bath type and a 0 if the species was not used in that type of bath (Additional file 2). All plants used in a certain herbal bath type (per location) were used as the sample unit in our analysis. Unidentified plants were excluded from our analyses. All scientific names were checked and updated by means of The Plant List (The Plant List, 2013). All Maroon plant names were checked and updated following the latest spelling rules (Van 't Klooster et al., 2003; Van Andel and Ruyschaert, 2011; Saamaka online dictionary, 2017).

To quantify similarity in herbal bath ingredients among the two Maroon groups (Saramaccan versus Aucan) and within these ethnic groups on village level, we utilized the Jaccard Similarity Index (Höft et al., 1999). This index is based on plant presence or absence in a community or in data sets, while relating the number of species in common with respect to the total number of species, expressed as $JI = (c/a + b + c)$, where c is the number of species in common, a is the number of unique species of community A and b is the number of species solely of community B. Similarity coefficients vary from a minimum of 0 (when the communities do not share any species) to 1 (when all plants used are identical). The outcome is often multiplied by 100 to obtain percentages.

To visualize the similarity in plant use between our Saramaccan and Aucan Maroon study sites and the six herbal baths types, we performed a Detrended Correspondence Analysis (DCA) on species level (Van Andel et al., 2012). We plotted the results of our DCA on the two main axes that caused the distribution of the data to visualize potential overlap and variation in plant use. To compare plant use within the Saramaccan population at the locations Pikin Slee and Brownsweeg, we plotted the results of another DCA analysis (with Saramaccan data only) to visualize potential overlap and variation in herbal bath ingredients. Finally, we plotted the results of a third DCA analysis to visualize overlap and variation among all four locations. All DCA analyses were performed in the program PC-ORD version 5.32.

To see whether differences in plant use between the two Maroon groups could be caused by differences in the occurrence in plant species between the study sites, we

first checked the ethnobotanical literature whether the species were used for other purposes by both Maroon groups, and if not the case, whether local names existed for these species in both Aucan and Saramaccan languages (Van 't Klooster et al., 2003), as this indicates species' occurrence in the specific Maroon territory. For species for which no ethnobotanical information existed for either Saramaccans or Aucans, we checked the geographical distribution in the floristic literature of Suriname and the Guianas (Pulle, 1932-1984; Görts-van Rijn, 1985-1996; Jansen-Jacobs, 1997-2011; Mota de Oliveira, 2012-2016) and online collection databases (Global Diversity Information Facilitation, 2017) to see whether they had restricted, patchy or wide distributions.

RESULTS

Herbal baths

Maroons use herbal baths for both physical and spiritual cleansing. They form an important aspect of their cultural practices and daily life. Some herbal baths are made for one person, others for more people or the whole village. Herbal bath preparations and applications may be very elaborate. It is common to have a mixture of leaves in water standing in a plastic tub or a big earthen or wooden dish in front of the house for days to be used many times by one or more family members by adding new water to it before pouring the mixture over the head and/or body with a calabash (*Crescentia cujete*). Aromatic plant species, such as *Campomanesia aromatica* and *Lantana camara*, are often added to baths for overall body refreshment and their agreeable smell.

Herbal baths are mostly taken in the village, but also in the forest, at the riverbank or in the river itself. They can include the use of rum, kaolin (*pemba*), magical objects and spiritual sayings. Baths are prepared by male and female laymen for family use only, but also by herbalists and spiritual healers. The latter are believed to possess magical powers and use ritual instruments to contact the spiritual world to find answers to the problems perceived. A spiritual healer (*obiaman*) is often consulted when self-treatment or biomedical cures do not have the desired result. Spiritual healers should be paid in the form of goods (*madyomina*), such as pieces of cloth, soft drinks or other valuables, to make the herbal bath work. Although this compensation system still exists, healers increasingly request cash payment for their services.

Adult strength

For Maroons, it is important to keep the body healthy and strong. Aucans refer to the strengthening baths as *taanga sikin uwii* and the Saramaccans as *taanga*

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sinkii uwii. These baths are used to give physical strength (*taanga* from ‘strong’) to the body (*sinkii* from ‘skin/body’), by the use of different plant leaves (*uwii* from ‘leaves/weed’). The treatment is also taken when people feel tired or suffer from back aches and other body pains due to heavy physical work. Men prepare these baths mainly at the start of intensive manual labour, like cutting new fields for their wives or making a new boat. Women, who are responsible for maintaining and harvesting the fields, use these strengthening baths on a regular or even daily base. Baths are often prepared in house yards for family use, by adding different plants (twigs and leaves of trees and lianas, shrubs and herbs) to a metal barrel filled with water placed on a wood fire to heat up before use (Fig. 2). The mixture is poured on top of the head with a calabash, often leaving remnants of leaves on the body, which should not be washed away for the medicine to work properly. No data have yet been collected on the plant ingredients of this specific bath among Aucans.



Figure 2 | Saramaccan bath for adult strengthening, Pikin Slee, 2009. Picture by C. Van 't Klooster.

Baby strength

Newborns are frequently bathed to improve their strength, to stimulate them being active and curious, and to start crawling and walking early. Mothers find this essential to be able to conduct their own daily activities. These baby baths, also known among Maroons as ‘waka snel’ (walk early), are prepared by boiling plants in small pots

after which the hot decoction is diluted with cold water to make it lukewarm. The ingredients may be boiled again for several days, before the plants are replaced by fresh ones. Baby baths contain other plant species than strengthening baths for adults. They are used until the child is old enough to bathe by itself.

Respiratory ailments and skin disorders

Physical ailments such as cough, colds and headaches due to blocked sinuses are treated by taking a facial steam bath, prepared by boiling a mixture of herbs in water. The steam is inhaled while hanging over a bowl with a herbal decoction, the head covered with a piece of fabric. Some patients take this bath while covering themselves completely with a sheet bending over a large bucket. Sometimes a whole house is filled with steam, like a sauna. The Saramaccans refer to this type of steam bathing as *suwa uwii* ('herbs for steaming/sweating'). Another type of herbal bath is used to treat skin conditions, varying from pimples, eczema and psoriasis to fungal infections. These baths, to which the Saramaccans refer as *bita* ('bitter'), consist of a single plant or a mixture of species with a bitter taste. The plants are boiled in water in small pots on the fire after which the cooled decoction is applied to the body with a calabash. No records exist for the Aucans on these two types of herbal baths.

Genital steam baths

A very frequently used herbal bath among Maroons is the genital steam bath. Women use plant decoctions to clean, heal, refresh but also tighten the vagina, or to enhance sexual pleasure. They prepare this bath in their backyard kitchens, which are separated from their main house. Plants are added to water and boiled. Women sit on a bucket and let the steam enter their vagina; afterwards they wash their genitals with the somewhat cooled decoction. Such cleansing baths are often taken on a daily base (in the morning), while baths to enhance recovery after delivery are taken in the first few weeks after giving birth. Saramaccans refer to these baths as *kete uwii* ('*kete*' from kettle, '*uwii*' from weed); *muyee uwii*, ('*muyee*' from woman) or *wasiwoyo uwii* (vaginal wash). Aucans know this genital bath also as *ketee uwii* and under the names *gogo uwii* ('bottom herbs') or *uma patu* ('*uma*' from woman, '*patu*' from pot).

Spiritual baths

In Maroon cultures, the spiritual world takes an important place in daily life. When an ailment cannot be cured by modern medicine or by self-prepared home medicines, it is said to have a supernatural cause, such as agitated water or forest spirits, ancestral spirits or witchcraft. In these cases, a spiritual healer or experienced family member needs to be consulted, who will reveal the supernatural cause and treat the person accordingly, often by a specific herbal bath. Spiritual baths are generally referred to '*winti wasi*' (Aucan) or '*obia uwii wasi*' or '*gadu uwii wasi*' (Saramaccan).

Spiritual baths have different names according to the causes targeted and type of spirits or gods (*gadu*) and magical powers (*obia*) involved. The herbal bath *limbo baka* (Saramaccan) is used to ward off evil, such as a *yooka* (malicious spirit of a deceased person) and magical poisons made and sent by people to harm someone. It is also used as protection to secure a safe travel or to attract luck or material welfare. *Limbo baka* literally means cleaning (*limbo*) one's back (*baka*) from bad spirits. This treatment can be taken individually or together with family members. Saramaccan healers make this bath in a big earthen or wooden dish (Fig. 3).



Figure 3 | Spiritual herbal bath *limbo baka*, placed on a banana leaf, Pikin Slee 2009. Picture by C. Van 't Klooster.

Persons who take this bath should stand barefoot on a banana leaf (*Musa* sp.), facing east for the best result. Circles of kaolin are sometimes drawn around the herbal bath to keep evil spirits out and show other villagers that this bath is related to *obia* (magical powers) or nature spirits like the air god *Komanti*. While taking the bath, the person has to apply water on the head and body with a small calabash. The bathing person and/or healer prays to the highest God, ancestral spirits and other gods to request for luck, good health and guidance. Bathing is often combined with spitting rum or water in different directions around the person.

Another bath is *wasi gadu*, ('wash gods'), which is often taking place on village level to ward off evil spirits or to honor good ones, frequently combined with ritual songs, prayers and offerings. Every village, family and related clan ('*lo*') has its own *gadu* that they need to take good care of. *Paati wasi* (Sa) is spiritual bath used to release a spirit that has a negative effect on one's wellbeing. It can also eliminate bad feelings caused by a traumatic experience. This spirit is often recognized as a deceased family member, not necessarily of bad intentions. If it affects the person negatively, it needs to be separated (*paati*) from the person by taking the herbal bath on a crossroad in a forest trail. Both the *paati wasi* and *limbo baka* treatments (on family level) can be finalized in the river with an additional washing, during which persons are hit on their back with a bundle of leaves to expel the spirits from their bodies.

Most widely used plant species

In total, 349 plant species were used in the six herbal bath types. Table 2 shows the amount of species used per bath type for the different study sites. Due to the lack of data for Aucan baths, a comparison could not be made for all types. Of the 302 herbal bath species recorded among the Saramaccans, twelve were used in all of the six bath types (*Cecropia sciadophylla*, *Chromolaena odorata*, *Commelina erecta*, *Gossypium barbadense*, *Lippia alba*, *Lantana camara*, *Rolandra fruticosa*, *Siparuna guianensis*, *Stachytarpheta cayennensis*, *S. jamaicensis*, *Tilesia baccata* and *Unxia camphorata*). With exception of the cultivated *G. barbadense*, all these species are common in secondary vegetation. Thirteen species were used in five baths, 21 in four baths, 66 in two baths and 149 in just one type of bath. This means that 51% of the species (153 spp.) were used in more than one bath type. The fact that most species were recorded in Brownsweeg is probably a result of a larger research effort (e.g. time spent in village, data sampling design), a stronger research focus on bathing, and the much larger population size in comparison with the three other study sites.

Table 2 | Number of plant species used per type of herbal bath, Maroon group and study site.

Bath type	Saramaccan			Aucan		
	Pikin Slee	Brownsweeg	Total	Bigiston	Mooitaki	Total
Baby strength	26	101	116	-	33	33
Genital	26	149	160	45	-	45
Respiratory	16	49	56	-	-	-
Skin disorders	8	38	43	-	-	-
Spiritual	17	151	155	49	12	59
Strength adults	21	81	95	-	-	-
Total number of plant species per location*	69	274	302	87	39	115

* As species can be used in several types of herbal baths, this number is smaller than the sum of the species numbers for each bath type.

Out of 115 plant species used by the Aucans, only *Cyperus prolixus* was used in all three types of baths (baby strength, genital and spiritual). A total of 20 (17%) species were applied in two baths, while 94 species were used in a single bath type. The higher number of species recorded for Bigiston can be explained by the fact that the research in Bigiston focused more on ritual practices, while that in Mooitaki on baby baths. A number of 68 plant species (19% of the total) were used by both Maroon groups, of which 58 (16%) for the same type of herbal bath (Table 3). *Abuta grandifolia*, *Ertela trifolia*, *Inga stipularis*, *Ischnosiphon gracilis*, *Lueheopsis rosea*, *Nepsera aquatica*, *Philodendron hederaceum*, *P. perrottetii*, *Phthirusa stelis* and *Tripogandra serrulata* were commonly used in herbal baths by both Saramaccans and Aucans, but not for the same bath type.

Table 3 | Plant species used by both Saramaccan and Aucan Maroons in the same type of bathing.

Genital bath (28 spp.)	Spiritual bath (20 spp.)	Baby strength (17 spp.)
<i>Anacardium occidentale</i> *	<i>Begonia glabra</i>	<i>Arachis hypogaea</i> *
<i>Campomanesia aromatica</i>	<i>Campomanesia grandiflora</i>	<i>Campomanesia aromatica</i>
<i>Campomanesia grandiflora</i>	<i>Chromolaena odorata</i>	<i>Chromolaena odorata</i>
<i>Cecropia obtusa</i>	<i>Costus scaber</i>	<i>Eleusine indica</i>
<i>Cecropia sciadophylla</i>	<i>Cyathula prostrata</i>	<i>Gossypium barbadense</i> *
<i>Citrus aurantiifolia</i> *	<i>Eclipta prostrata</i>	<i>Handroanthus serratifolius</i>
<i>Clidemia hirta</i>	<i>Eleusine indica</i>	<i>Hiraea faginea</i>
<i>Copaifera guyanensis</i>	<i>Euphorbia thymifolia</i>	<i>Ischnosiphon puberulus</i>
<i>Cordia schomburgkii</i>	<i>Heliotropium indicum</i>	<i>Oryctanthus florulentus</i>
<i>Davilla kunthii</i>	<i>Indigofera suffruticosa</i> *	<i>Paspalum conjugatum</i>
<i>Eclipta prostrata</i>	<i>Ischnosiphon arouma</i>	<i>Paullinia pinnata</i>
<i>Euphorbia hirta</i>	<i>Justicia pectoralis</i>	<i>Portulaca oleracea</i>
<i>Gossypium barbadense</i> *	<i>Ocimum campechianum</i> *	<i>Rolandra fruticosa</i>
<i>Inga edulis</i> *	<i>Peperomia pellucida</i>	<i>Stachytarpheta cayennensis</i>
<i>Lantana camara</i>	<i>Piper bartlingianum</i>	<i>Trema micrantha</i>
<i>Lippia alba</i> *	<i>Scoparia dulcis</i>	<i>Vismia macrophylla</i>
<i>Mangifera indica</i> *	<i>Selaginella parkeri</i>	<i>Vouarana guianensis</i>
<i>Marlierea montana</i>	<i>Senna quinquangulata</i>	
<i>Melaleuca cajuputi</i>	<i>Stachytarpheta cayennensis</i>	
<i>Miconia lepidota</i>	<i>Uncaria guianensis</i>	
<i>Myrciaria floribunda</i>		
<i>Piper arboreum</i>		
<i>Piper marginatum</i> *		
<i>Psidium guajava</i> *		
<i>Siparuna guianensis</i>		
<i>Syzygium cumini</i> *		
<i>Vismia cayennensis</i>		
<i>Vismia guianensis</i>		

* Domesticated and cultivated species

Similarity in plant use

The similarity in plant use between the two Maroon groups, within the Saramaccan group (Brownsveg versus Pikin Slee) and within the Aucan group (Mooitaki versus Bigiston), is presented in Table 4. Generally, there was a very low similarity in plant use, varying between 3 and 16%. Saramaccan baths for respiratory ailments showed

the highest similarity in plant ingredients and often contained fragrant species such as *Citrus aurantiifolia*, *Cymbopogon citratus*, *Lantana camara* and *Siparuna guianensis*.

Table 4 | Jaccard similarity coefficient to show the similarity in plant use between the Saramaccan and Aucan Maroons and within the Saramaccan and Aucan population.

Bath type	Saramaccan Pikin Slee versus Brownsweg	Aucan Bigiston versus Mooitaki	Saramaccan versus Aucan
Baby strength	0.09		0.13
Genital	0.09		0.12
Respiratory	0.16		
Skin disorders	0.07		
Spiritual	0.08	0.03	0.10
Strength adults	0.07		

When we plot the results of our DCA analysis, carried out for the three baths shared by the two Maroon groups, we see that plant species cluster by ethnicity rather than by type of herbal bath (Fig. 4). For both Maroon groups the genital and the baby baths are more similar in plant species than the spiritual baths, which confirm the results of the Jaccard index.

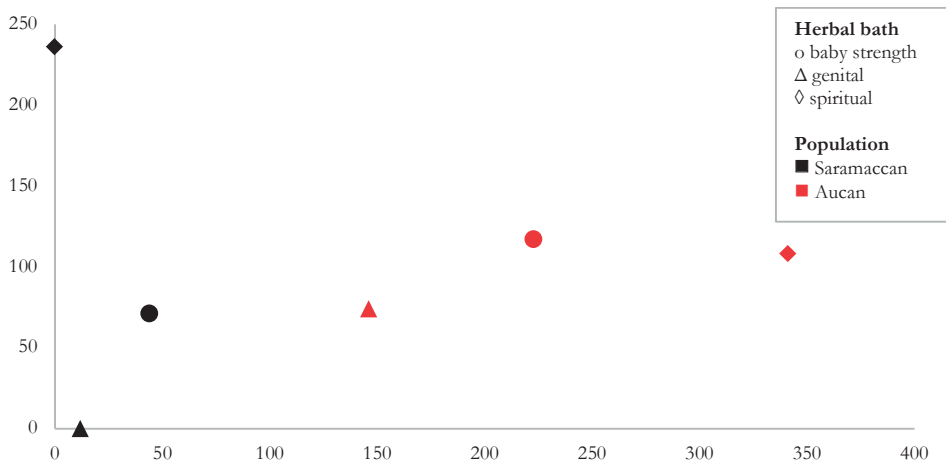


Figure 4 | DCA scatterplot showing similarity in bath use on species level (n=309). Data points indicate plant species used in specific baths by the two Maroon groups. The closer the data points, the greater similarity in plant species. Axes do not represent variables but serve to visualize variation and similarity in plant use.

When the herbal bath species are compared within the Saramaccan population, we see considerable differences between the locations Pikin Slee and Brownsweeg for the six types of baths they have in common (Fig. 5). All the baths for Brownsweeg seem to cluster to the left, while the baths for Pikin Slee seem to cluster to the right side in the figure. Baby baths and genital baths are more similar in species composition than other baths.

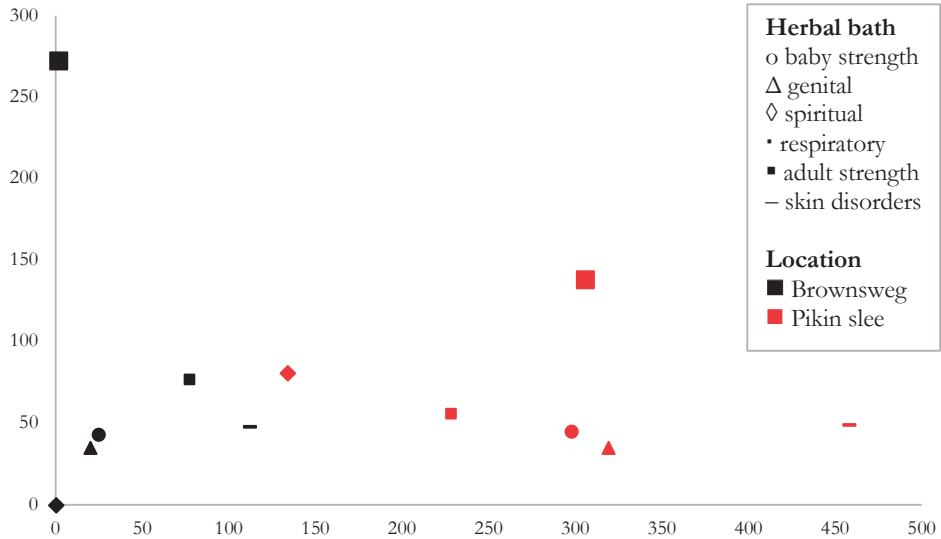


Figure 5 | DCA scatterplot showing similarity in herbal bath type use on species level (n=302). Data points indicate plant species used in specific baths by Saramaccan Maroons at two different locations. Clustered data points indicate similarity in plant species used. Axes do not represent variables but serve to visualize variation and similarity in plant use.

To determine the similarities in plant use between the Maroon locations separately, we plotted the baths for all four study sites (Fig. 6). Again, plants clustered according to geographical location rather than per herbal bath, and to a lesser extent by ethnic group, as all Aucan baths group to the left and all Saramaccan baths to the right. This could indicate that each Maroon community (study site) has adapted its plant use to the species that were locally available, based on knowledge generated over centuries of relative isolation.

When we compared our data with literature on Saramaccan and Aucan plant uses, we found that apart from the 68 shared bath species, 177 spp. (51%) of the plant species used in our analysis were used by both Maroon groups for a variety of purposes, indicating species occurrence in both locations (Additional file 1). For

the remaining 172 species, no additional Maroon vernacular names or plant uses were found to prove their existence in both areas. However, 29 of these species were common weeds or secondary forest plants, eight were common forest species and eight were known to be widely cultivated (e.g., *Terminalia catappa* and *Syzygium malaccense*), mostly known by their Sranantongo names, so these species have a high probability to occur in both Maroon areas. This would make it plausible that in total 64% (222 spp.) would occur in both places. Of the remaining 127 species, 35 spp. were not identified to species level or we had doubts about their identification by others, so comparison was not possible. For the residual 92 species, 15 species grow mostly in savanna areas that are close to the Saramaccan settlements, but far away from Aucan villages and three species (*Ocimum gratissimum*, *Hymenocallis tubiflora* and *Rhizophora racemosa*) were reported from Aucan areas only. The remaining 74 species (21%) were uncommon rainforest species (e.g., *Diospyros* cf. *cavalcantei*, *Pouteria engleri*) with patchy distributions. Due to the lack of detailed species distribution maps for rainforest trees in the interior of Suriname we could not verify whether these species occurred in both Maroon areas.

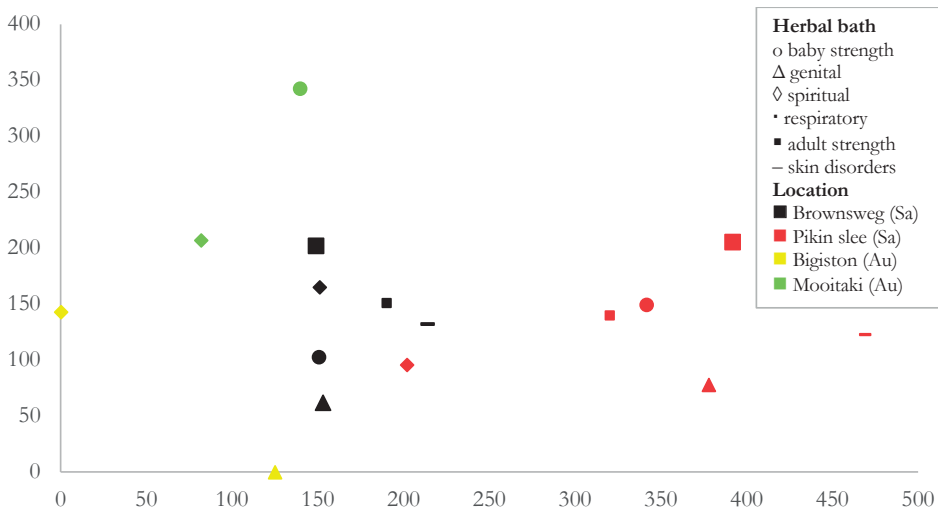


Figure 6 | DCA scatterplot showing similarity in herbal bath type use on species level (n=349). Data points indicate plant species used in specific baths by Saramaccans and Aucans at four locations. Clustered data points indicate similarity in plant species used.

DISCUSSION

Variation in plant use among the Aucan and Saramaccan Maroons

Our results show a large variation in plant use for herbal bathing among the four Maroon communities. This is partly in line with our hypothesis that plant use differs among Maroon groups as they had little opportunity for ethnobotanical exchange in the past centuries. We expected to find more similarity in genital baths, assuming that these plants would be selected on their pharmacological effect instead of their supposed symbolic or cultural meaning. This was the case to a certain extent (a similarity of 12%), as many of these baths contained species with essential oils (e.g., *Campomanesia aromatica*). Therefore, our hypothesis should be accepted, although the species overlap in baby baths was slightly higher (13%). Plant use was more strongly associated to ethnicity (Aucan or Saramaccan) than to type of bath. Both Maroon groups seem to use the same plant species for different treatments. For example, *Eclipta prostrata* is used by Aucans in bath for protection against bullets, while Saramaccans use it together with *Attalea maripa* in body scarification for aesthetic purposes (Van Andel and Ruyschaert, 2011).

The difference in plant use between Saramaccan and Aucan Maroons could be explained by the fact that their forefathers escaped from different plantations, with either, English, Dutch or Portuguese Jewish plantation owners, in different periods of time. While the Saramaccan community developed around 1690-1710 during the second wave of Maroons escaping the Portuguese Jewish plantations, the Aucan community was formed only after 1712, when Suriname was attacked by French admiral Cassard, which led to a new wave of runaways (Price, 1976; Smith, 2002). The two Maroon groups have settled along different rivers in the tropical rainforest, where they had to adapt to new surroundings. For centuries they had little contact, caused by the impenetrable stretches of forest between the rivers and by mutual distrust, and thus the exchange of ethnobotanical knowledge was limited (Price, 1996; Van Velzen and Hoogbergen, 2011). After a relative short stay at the plantations surrounded by people of mixed African origin, the runaways escaped per plantation into the interior (Price, 1976). In order to survive in the rainforests full of unknown species, Maroons had to rely largely on their own African knowledge to survive with little opportunities to exchange information with Indigenous and other Maroon groups (Van Velzen and Hoogbergen, 2011).

Van Andel et al. (2012) showed in their study on plants used in bitter tonics across the Atlantic that enslaved Africans in the New World had to reinvent their aphrodisiac mixtures in their new living environment. They used their knowledge and the local flora that was available to them. Enslaved Africans in Suriname searched for

similar plants that they remembered from their homeland, but succeeded in this only for a small number of plant species. Instead of limiting themselves to their previously known plant species, they searched for new species to replace the African ingredients in their herbal treatments (Vossen et al., 2014). This is also illustrated by the fact that Maroons have used many African plant names to name botanically related species in Suriname (Van Andel et al., 2014).

A recent study conducted by Tareau et al. (2017) on medicinal and cosmetic plants used by urban youngsters in French Guiana also showed that bathing formed an important way of administering herbal medicine. Most of the medicinal baths reported in our study correspond with the therapeutic functions of baths reported by Tareau et al. (2017). However, baths related to adult strength were not reported for French Guiana, although there are several Saramaccan communities in that country. Probably, baths for strength seem not that important for the French Guianese youth, reflecting their life styles in more urban settings.

Herbal bath treatments seem to have evolved over time, not only during the enslavement period, but especially after the formation of independent communities in the isolated forests. Since the runaways that formed the current Aucan and Saramaccan communities came from different plantations, and lived in geographically isolated areas without roads, they had little opportunity to share their plant use knowledge gained during and after the period of enslavement. Therefore, the current overlap in plant species could be a result of a more recent knowledge exchange. A comparative analysis between data of Van Andel and Havinga (2008) and our data showed that 69% (47 of the 68) of the plant species used by both Maroon groups are nowadays sold on markets in Paramaribo. It is plausible that exchange is currently taking place at the markets, where hundreds of Maroon women sell their herbal medicine to city-dwelling Maroons of different ethnicities. From Paramaribo, Maroons transfer their newly acquired knowledge to the forest communities when visiting their family in the hinterland. For example, the aromatic tree *Melaleuca cajuputi*, originally from Australia, was introduced to eastern Suriname via French Guiana. It has become invasive along the Marowijne River close to Albina, and is known locally as Albina uma (Au). This tree, originally planted by Catholic nuns in French Guiana for its essential oil, became popular in Suriname for its *Eucalyptus*-like scent to treat symptoms of cold and bronchitis. Nowadays, the leaves of this tree are sold in Paramaribo to use in genital steam baths for their refreshing smell. The Saramaccans also know this plant under the name Albina uma, which shows that exchange of knowledge among Maroons takes place in Paramaribo (Van Andel and Ruysschaert, 2011).

Variation in plant use within the Saramaccan ethnic group

Our results clearly show that plant use within the Saramaccan group is also location specific, as Saramaccan bath ingredients differed substantially between the two study sites. The plant species in baby baths and genital baths showed a stronger similarity than the other baths, but overall there was little overlap between Pikin Slee and Brownsweeg. Our research findings support earlier studies by Van Andel et al. (2013) and Van 't Klooster et al. (2016) that showed that many plant species used in herbal baths were not bath-specific, as most of them were used in more types of baths. Brownsweeg and Pikin Slee are surrounded by similar tropical rainforest vegetation (Van Andel et al., 2009), although near Pikin Slee the primary forest is more extensive. However, since most species used occur in secondary forest or open vegetation around villages, the variation in plant use could not be justified by differences in vegetation alone.

The explanation for the dissimilarity in plant use between the two study sites can probably be found in the social structure of Maroon culture. Although the Saramaccans have a common cultural background, the Upper Suriname River area, where Pikin Slee is located, has been characterized as very traditional and the center of Saramaccan cultural traditions (Terborg, 2001). Not only in geographical but also in social sense, this area has been quite isolated (Terborg et al., 2005). Traffic between Brownsweeg and Pikin Slee still takes several hours by bus and boat, limiting the amount of ethnobotanical knowledge exchange.

Maroon societies, with their own paramount chief and local government, are characterized by a matrilineal relationship structure with social units called matriclans (*lo's*) and matrilineages (*bees*). While the first Saramaccan clan was formed in 1690 (Smith, 2001), nowadays approximately twelve clans are in existence. Their social identity, rights to land and associated resources, and social obligations are all determined by these *bees* and secondarily to these *lo's* they belong to (Thoden van Velzen, 1990). It was recently shown that knowledge of plant species is generally widespread, but the details of the processing and administration methods is often kept within family groups (Van 't Klooster et al., 2016). Furthermore, restrictions in plant use do exist for certain matrilineages, families or even for a whole village. This could explain the difference in plant use within the Saramaccan community and between the two Maroon groups, although the plant species themselves occur mostly in both localities.

Although a number of studies have been conducted among Maroons in neighboring countries like French Guiana (Fleury 1991; 1996) and Brazil (Albuquerque, 2001; Voeks and Leony, 2004; Franco and Barros, 2006; Monteles and Pinheiro, 2007;

Barosso et al., 2010; Crepaldi and Peixoto, 2010; Gomes and de Ferreira Bandeira, 2012; Mota and Dias, 2012; Oliveira et al., 2015; de Santana et al., 2016; Zank and Hanazaki, 2017), publications on medicinal plant uses and knowledge held by traditional Maroon communities in primary forests are still scarce. A recent study by De Santana et al. (2016) conducted among the Afro-Brazilian Salamina community living in an isolated region of Bahia, reported a considerable amount of medicinal plant knowledge. However, little plants were used from the surrounding old-growth tropical forests. The large number of cultivated exotics and weedy plants found by De Santana (2016) was also reported in other publications on Maroon communities (Gomes and de Ferreira Bandeira, 2012; Zank and Hanazaki, 2017). Zank and Hanazaki (2017) suggest that the focus on disturbance species reflects the environmental conditions and history of the Brazilian Maroon region. The Surinamese Maroons still have access to primary rainforest, although they also make use of domesticated plant species such as mango or cotton leaves and cultivate some wild species in their home gardens (Van Andel and Havinga, 2008). To get a better overview in the differences and similarities in Maroon plant use, further research should be conducted among Maroons that live in remote, forested areas in the Guianas and Brazil, using similar methods and sample efforts at all study sites. This type of research will gain more insights in shared cultural knowledge than is now possible with the scarce information currently available for Suriname. These data could then be compared to Maroon studies in deforested or urban communities in these countries.

Limitations of this study

Because of the differences in scientific approach, data collection methods and sampling effort at the study sites in Suriname, hard claims on shared ethnobotanical knowledge cannot be made. For such claims, it is essential that the same research methods are used at each study site, so that a cultural consensus model could be developed as showed by Reyes-Garcia et al. (2003). The differences in research methods at the two Saramaccan locations may have influenced the number of recorded plant species per bath type in our comparative study. The larger sampling effort in Brownsweeg probably gives a more complete representation on plant use. We are aware that our body of data on Aucan plant use is much smaller and thus less representative. The current data is therefore not sufficient to assess cultural knowledge on population level, especially for the Aucans. Data from Bigiston were mainly retrieved from one traditional healer (Groenendijk, 2006), although his knowledge was quite extensive. There is a substantial group of Aucans living along the Cottica River near the coast, where no ethnobotanical research has been carried out so far. More research among Aucans would probably yield more used species and somewhat higher Jaccard indices. However, since almost half of the 115 species used by the Aucans in our study were not used by the Saramaccans, differences in

plant use between the two groups are certainly visible. For the other four Maroon groups (Kwinti, Paramaccan, Boni and Matawai) almost no data exist on medicinal plant use.

CONCLUSION

Our study on herbal bathing practices and plant ingredients showed little similarity between Saramaccan and Aucan Maroon groups, even when the same bath types were examined. Plant use appeared to be strongly influenced by study site and then by ethnicity, but less by application. Due to isolation and adaptation processes, Maroon plant use kept evolving over time and space. Whether this will continue and how, depends on the level of contact and knowledge exchange between Maroon communities. Due to migration to the capital and higher accessibility of the interior, their social environment will likely continue to change in the future. Our research showed substantial differences in plant use among Maroons communities with regard to six herbal baths, but little is known on similarities in the many other herbal medicine practices among these groups. Our results further suggest that care should be taken in extrapolating plant use data collected in one location to an entire ethnic group. We hope that our study will contribute to the conservation of Maroon biocultural knowledge and will create awareness to the elaborate traditional medical practices of Surinamese Maroons.

Online supplementary files

Table A2 | Presence (1) and absence (0) matrix (DCA) with plant species used per herbal bath type per Maroon community as well as location. This supplementary file can be found in the online version at <https://doi.org/10.1186/s13002-018-0216-9>

Table A1 | Plant species used in herbal bathing in Suriname with scientific and vernacular names

Species with authorization	Collection number	Vernacular plant names with local languages (database)	References	Species in Au/Sa area (database)	Species in Au/Sa area (literature)	Vernacular plant names with local languages (literature)	Species not reported in Au/Sa area, reference to occurrence/ growthform [g]
<i>Abarema jupunba</i> (Willd.) Britton & Killip var. <i>trapezifolia</i> (Vahl) Barneby & J.W. Grimes	SRU1002	kabana (Sa)	[6]				
<i>Abuta grandifolia</i> (Mart.) Sandwith	KVP0089	- (Au), bundu (Sa)	[3], **	1			
<i>Aciotis purpurascens</i> (Aubl.) Triana	TKP0064	bemindyauii (Sa)	[2]			lebi swa uuii (Au)	
<i>Acmella uliginosa</i> (Sw.) Cass.	SRU1021	womi torobia (Sa)	[2]				[a]
<i>Adiantum fuliginosum</i> Fée	KVK0247	bibi uuii (Sa)	[2]				[g]
<i>Aframomum melegueta</i> K. Schum.	TVA5304	nenge konde pepe (Sa)	[1]	1		nengeekondepepe (Au)	
<i>Albizia pedicellaris</i> (Dc.) L. Rico	ARV0089	kabana (Sa)	[6]				[g]
<i>Allium sativum</i> L.	-	knoflook (Du) ¹	**				[c]
<i>Ananaribus blitum</i> L.	KVK0099	mboa (Sa)	[2]				[c]
<i>Ananaribus dubius</i> Mart. ex Thell.	KVK0097	mboa (Sa)	[1]				[c]
<i>Ananaribus</i> sp.	-	mboa (Sa)	*				[d]
<i>Anasonia campestris</i> (Aubl.) Moldenke	SRU0613	kimangoma (Sa)	**				[g]
<i>Amelania acida</i> Aubl.	SRU0449	mamba (Sa)	**				[g]
<i>Anacardium occidentale</i> L.	SRU1014	kasun (Au), kadyu (Sa)	[1], *	1			
<i>Anacagorea dolichocarpa</i> Sprague & Sandwith	SRU0932	pepekusatu (Sa)	**				[b]
<i>Andria</i> sp.	-	- (Au)	[3]				[d]
<i>Annona muricata</i> L.	TVA5133	atuku (Au)	[1]	1		alakutu (Sa)	
<i>Anchis hypogaea</i> L.	-	pinda (Au), baaka pinda (Sa)	[1]	1			
<i>Aristolochia</i> cf. <i>consimilis</i> Mast.	SRU0943	luangu terei (Sa)	[2]	1		loango terei (Au)	
<i>Aristolochia</i> cf. <i>stabelii</i> O.C. Schmidt	SRU0802	loango bita (Sa)	**				[d]
<i>Atrocarpus altilis</i> (Parkinson ex F.A. Zorn) Fosberg	TVA4757	belbo (Sa)	[1]	1		belibon (Au)	
<i>Atrocarpum sciophilum</i> (Miq.) Pulle	-	maka (Sa)	*	1		kiamaka (Au)	
<i>Asrocaryum vulgare</i> Mart.	-	tyotyoy (Sa)	**	1		awala (Au)	
<i>Attalea maripa</i> (Aubl.) Mart.	IVL0149	maipa (Sa)	[2]	1		atjabisi (Au)	
<i>Bagassa guianensis</i> Aubl.	SRU1027	wangi udu (Sa)	[6]				[g]
<i>Banara guianensis</i> Aubl.	CVK95	akubagoun (Sa)	*				[b]
<i>Bauhinia guianensis</i> Aubl.	KVK0135	logososikada (Sa)	[1]	1		weti kolada terei (Au)	
<i>Bauhinia</i> sp.	CVK84	okobuka (Sa)	*				[d]
<i>Bauhinia surinamensis</i> Amshoff	TVA5069	ko lada terei (Au)	***	1		logososikada (Sa)	
<i>Begonia glabra</i> Aubl.	SRU0780	koo-ati (Au), kotohati (Sa)	[1]	1			
<i>Bidens cynapiifolia</i> Kunth	KVP0081	piti uuii (Sa)	[1]	1		gingi (Au)	
<i>Bignonia nocturna</i> (Barb. Rodr.) L.G. Lohmann	CVK64	watuwanu (Sa)	[1]				[g]
<i>Boca prouaensis</i> Aubl.	GIBA0078	hogi pau (Sa)	[1]	1		ogii pau (Au)	
<i>Brosimum guianense</i> (Aubl.) Huber ex Ducke	GIBA0030	pau letu (Sa)	[6]				[g]

Table A1 | Continued

Species with authorization		Collection number	Vernacular plant names with local languages (database)	References	Species in Au/Sa area (database)	Species in Au/Sa area (literature)	Vernacular plant names with local languages (literature)	Species not reported in Au/Sa area, reference to occurrence/ growthform
<i>Byrsotima crassifolia</i> (L.) Kunth		SRU1006	matu apa (Sa)	[2]				[b]
<i>Byrsotima spicata</i> (Cav.) Rich. ex Kunth		TVA5457	matu apa (Sa)	[1]				[b]
<i>Calea caloides</i> (DC.) H. Rob.		TVA4924	wolo ta piki a gajde basu (Sa)	[1]				[c]
<i>Campomanesia aromatica</i> (Aubl.) Griseb.		SRU0842	andoya (Au), adoya (Sa)	[1]	1			
<i>Campomanesia grandiflora</i> (Aubl.) Sagot		KVK0243	man pali udu (Au), adoya (Sa)	[5], [2]	1			
<i>Campyloneurum repens</i> (Aubl.) C. Presl		TVA5081	tabaka uwii (Au)	***				[g]
<i>Capirona decorticans</i> Spruce		-	Akantasi udu (Au)		1		mutene (Sa)	
<i>Capsicum annuum</i> L.		TVA5460	pepe (Sa)	[1]	1		pepe (Au)	
<i>Cardiophyllum surinamense</i> R.E. Fr.		GBA0041	mamba (Sa)	**				[g]
<i>Cecropia obtusa</i> Trécul		IVL0008	uma busi papaya (Au), muyeepanpantii (Sa)	[4], [2]	1			
<i>Cecropia pelata</i> L.		CVK90	busi papai (Au), womi muyeepanpantii (Sa)	*	1		uma busi papai (Au)	
<i>Cecropia sciadophylla</i> Mart.		IVL0074	busi papai (Au), womi panpantii (Sa)	[1], [2]	1			
<i>Chelonanthus datus</i> (Aubl.) Pullé		TKP0020	dagu yesi (Sa)	[1]			saka sii (Au)	
<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob.		SRU0714	- (Au), felu uwii (Sa)	[3], [2]	1			
<i>Chrysobalanus iaco</i> L.		TKP0089	kadyusii (Sa)	[7]				[c]
<i>Chrysophyllum cainito</i> L.		TVA5313	sterappel (Du) ¹	**				[c]
<i>Citrus aurantifolia</i> (Christm.) Swingle		TVA4773	lemiki (Au), lemiki (Sa)	[1]	1			
<i>Clibadium surinamense</i> L.		SRU0639	ndeku (Sa)	[2]	1		wel konami (Au)	
<i>Clibadium sylvestre</i> (Aubl.) Baill.		SRU0916	neku (Sa)	[2]	1		wey konami (Au)	
<i>Clidemia capitellata</i> (Bonpl.) D.Don		TVA4864	wasduku (Au)	[1]				[a]
<i>Clidemia hirta</i> (L.) D. Don		KVP0038	fukufuku uwii (Au), sopu uwii (Sa)	[1], [2]	1			
<i>Coccolobum guianense</i> (Aubl.) K. Schum.		TKP0077	womi zau zau patu (Sa)	[2]				[g]
<i>Coccoloba</i> sp. SRU0926		SRU0926	apuku tatai (Sa)	**				[d]
<i>Coccoloba</i> sp. SRU0987		SRU0987	waluru (Sa)	**				[d]
<i>Coras nucifera</i> L.		-	kokonoto (Sa)	[1]	1		kokoonto (Au)	
<i>Colocasia esculenta</i> (L.) Schott		TVA849	taya (Au)	[1]	1		taya (Sa)	
<i>Commelina diffusa</i> Burm.f.		TVA5051	weti/guun gado dede (Au)	[1]	1		weti gadu-dede-mi-dede (Sa)	
<i>Commelina erecta</i> L.		TKP0030	gadu-dede-mi-dede (Sa)	[2]	1		weti/grun gado dede (Au)	
<i>Copaifera guyanensis</i> Desf.		IVL0080	pansumuti (Au); kupawa (Sa)	***, [2]	1			
<i>Cordia sagottii</i> L.M. Johnst.		SRU0972	matu kikii (Sa)	**				[g]
<i>Cordia schomburgkii</i> A. DC.		TVA5421	koo uwii (Au), kasa uwii (Sa)	[1]	1			

Table A1 | Continued

Species with authorization	Collection number	Vernacular plant names with local languages (database)	References	Species in Au/Sa area (database)	Species in Au/Sa area (literature)	Vernacular plant names with local languages (literature)	Species not reported in Au/Sa area, reference to occurrence/ growthform
<i>Condia</i> sp.	KVK0089	leleri (Sa)	[2]				[d]
<i>Cordyline fruticosa</i> (L.) A.Chev.	TVA5056	man tasi uwii (Au)	[1]	1		be ingi tasi (Sa)	
<i>Corythophora labriculata</i> (Eyma) S.A. Mori & Prance	ARV0081	muyee baiklaki (Sa)	**				[g]
<i>Costus scaber</i> Ruiz & Pav.	TVA4809	lebi singavu (Au), (be) sangavu (Sa)	[1]	1			
<i>Costus spiralis</i> (Jacq.) Roscoe	TKP0086	sangavu (Sa)	[2]				[g]
<i>Coutoubea ramosa</i> Aubl.	KVK0108	lokoti bita (Sa)	[1]				[e]
<i>Crescentia cujete</i> L.	TVA4734	gaan kuya (Sa)	[2]	1		kaabasi (Au)	
<i>Crotalaria micans</i> Link	KVK0101	yoyo (Sa)	[1]	1		apuku baasi (Au)	
<i>Groton matourensis</i> Aubl.	SRU1008	matumbu udu (Sa)	[2]				[g]
<i>Groton trinitatis</i> Millsp.	KVK0086	pikingeleleri (Sa)	[2]				[a]
<i>Capania hirsuta</i> Radlk.	ARV0065	gawenti (Sa)	[2]				[g]
<i>Gyanthidium cinereum</i> (L.) H.Rob.	TVA5086	sabana uwii weti ede (Au)	[1]				[a]
<i>Gyathula prostrata</i> (L.) Blume	TVA5435	maputupu (Au), temeku (Sa)	[1], [2]	1			
<i>Gymbopogon citratus</i> (DC.) Stapf	TVA4839	situungaasi (Sa)	[1]	1		lun gasi (Au)	
<i>Gyperus odontatus</i> L.	GBA0084	ahun (Sa)	**				[e]
<i>Gyperus prolixus</i> Kunth	TVA5554	gaan anduu (Au)	[2]	1		masakusaku (Sa)	
<i>Davilla kunthii</i> A. St.-Hil.	KVK0079	diaretei (Au) faya tatau (Sa)	[1]	1			
<i>Davilla nitida</i> (Vahl) Kubitzki	TVA5234	diare (Au)	[1]			faya tatau (Sa)	
<i>Desmodium barbatum</i> (L.) Benth.	SRU0882	mapindapinda (Sa)	**	1		uma pinda pinda (Au)	
<i>Desmodium cf. incanum</i> DC.	CVK35	mapindapinda (Sa)	[1]				[a]
<i>Dicliptera</i> sp.	KVP0036	dagukakawii (Sa)	[7]				[d]
<i>Dicorynia guianensis</i> Amshoff	SRU0573	sindyapeetu (Sa)	[6]				[e]
<i>Dieffenbachia cf. seguine</i> (Jacq.) Schott	TKP0058	donke wiwiri (Sr) ¹	[2]	1		pikin donken (Au)	
<i>Diospyros cf. cavalcantrei</i> Sothers	GBA0064	baaka pau (Sa)	[2]				[g]
<i>Diospyros guianensis</i> (Aubl.) Gürke	SRU0083	baakapau (Sa)	[6]				[g]
<i>Dipteryx odorata</i> (Aubl.) Willd.	SRU0392	tonka (Sa)	[1]				[b]
<i>Dolichandra unguis-cati</i> (L.) L.G. Lohmann	SRU0948	awawe hansa (Sa)	[2]	1		kwaitaka nanga (Au)	
<i>Dolichocarpus brevipedicellatus</i> Garcke	SRU0808	fatatatai (Sa)	**				[g]
<i>Dolichocarpus parvianensis</i> Sleumer	SRU0822	fatatatai (Sa)	**				[g]
<i>Dolichocarpus</i> sp.	CVK85	fatatatai (Sa)	*				[d]
<i>Drypetes variabilis</i> Urtien	KVP0004	fungupau (Sa)	**	1		atila koko (Au)	
<i>Duroia aquatica</i> (Aubl.) Bremek.	CVK72	maamaadosu (Sa)	[2]	1		fankoba (Au)	
<i>Eclipta prostrata</i> (L.) L.	SRU0718	(uma) lu(i)sa (Au), totobia (Sa)	[1], [2]	1			
<i>Eleusine indica</i> (L.) Gaernh.	KVK0091	mangrasi (Au), masigasiga (Sa)	[1], [2]	1			
<i>Ephedranthus guianensis</i> R.F. Fr.	GBA0045	mamba (Sa)	[7]				[g]

Table A1 | Continued

Species with authorization	Collection number	Vernacular plant names with local languages (database)	References	Species in Au/Sa area (database)	Species in Au/Sa area (literature)	Vernacular plant names with local languages (literature)	Species not reported in Au/Sa area, reference to occurrence/ growthform
<i>Ereola trifolia</i> (L.) Kunze	KVK0161	was kondee uwii (Au), kofimeza (Sa)	[1], [2]	1			
<i>Eryngium foetidum</i> L.	KVK0085	muyee kwentu (Sa)	[2]	1		uma kwentu (Au)	
<i>Eschweilera collina</i> Eyma	GBA0034	man baiklaki (Sa)	**				[g]
<i>Eugenia</i> sp. ARV0030	ARV0030	gujaba-matu (Sa)	**				[d]
<i>Eugenia</i> sp. GBA0081	GBA0081	gujaba-matu (Sa)	**				[d]
<i>Eugenia</i> sp. SRU0856	SRU0856	logosofuta (Sa)	[2]				[d]
<i>Eugenia</i> sp. SRU1025	SRU1025	mutene (Sa)	**				[d]
<i>Euphorbia hirta</i> L.	SRU0715	adyasi (Au), bobi bobi (Sa)	[1]	1			
<i>Euphorbia thymifolia</i> L.	SRU0620	oligon (Au), tjembe uwii (Sa)	[1], [2]	1			
<i>Euterpe oleracea</i> Mart.	IVL0148	pina (Sa)	[1]			podosii (Au)	
<i>Ficus schumacheri</i> (Liebm.) Griseb.	SRU0949	finiuwikatu (Sa)	[1]	1		busunkin kartu (Au)	
<i>Griseospermum sericeum</i> Miers	SRU0788	bita (Sa)	[7]	1		abongabita (Au)	
<i>Gossypium barbadense</i> L.	CVK57	lebi kartu (Au), bemauiwii (Sa)	[1], [2]	1			
<i>Goupia glabra</i> Aubl.	IVL0037	kupi (Sa)	[6]				[g]
<i>Guarea gomma</i> Pulle	KVK0111	kodjo udu (Sa)	[2]	1		kodjo udu (Au)	
<i>Guatteria scandens</i> Ducke	TVA4984	kiintongo (Au)	[1]				[g]
<i>Guatteria schomburgkiana</i> Mart.	KVK0214	pepekusatu (Sa)	[1]				[b]
<i>Gustavia hexapetala</i> (Aubl.) Sm.	KVK0224	wata wanu (Sa)	**				[b]
<i>Handroanthus serratifolius</i> (Vahl) S.O. Grose	-	giin-ati (Au), giin-hati (Sa)	[1], [2]	1			
<i>Heisteria cauliflora</i> Sm.	GBA0002	bofonya (Sa)	**	1		bwabandé (Au)	
<i>Helianthus</i> sp.	-	zonnehloem (Du) ¹	[2]				[d]
<i>Heliconia psittacorum</i> L.f.	TVA5619	apunku palulu (Au)	[1]	1		akata palulu (Sa)	
<i>Heliotropium indicum</i> L.	KVK0211	komanti uwii (Au), kokooden (Sa)	[1], **	1			
<i>Hibiscus bifurcatus</i> Cav.	TVA5026	yookaokoo (Au)	[1]				[a]
<i>Hinca faginea</i> (Sw.) Nied.	CVK92	- (Au), alaturpau (Sa)	[3], [1]	1			
<i>Hirtella paniculata</i> Sw.	SRU0719	andi kem bai dai (Sa)	[1]	1		ayantesi (Au)	
<i>Hirtella</i> sp.	CVK112	basouuwii (Sa)	*				[d]
<i>Hymenaea courbaril</i> L.	SRU0706A	lokisi (Sa)	[1]	1		loka (Au)	
<i>Hymenocallis tubiflora</i> Salisb.	TVA5083	busi ayun uwii (Au)	[1]				[f]
<i>Hyptis lanceolata</i> Poit.	CVK33	dyanafaya (Sa)	[2]	1		kunopu uwii (Au)	
<i>Hyptis muabilis</i> (Rich.) Briq.	SRU1036	gadu paypina (Sa)	**	1		pikin nenge lansi (Au)	
<i>Hyptis recurvata</i> Poit.	SRU1032	tone uwii (Sa)	[2]				[a]
<i>Ichmanthus breviserolis</i> Döll	TVA5432	pen pen gaasi (Au)	[7]				[c]

Table A1 | Continued

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<i>Imperata brasiliensis</i> Trin.	TVA5291	rifi ede (Au)	[1]	1		monsonyo (Sa)	
<i>Imperata contracta</i> (Humb., Bonpl. & Kunth) Hitchc.	SRU0938	sé uwii (Sa)	[2]				[c]
<i>Indigofera suffruticosa</i> Mill.	KVK0237	inigo (Au), inigo (Sa)	[1], **	1			
<i>Inga alba</i> (Sw.) Willd.	GBA0093	abonkini (Sa)	[1]			lebi weko (Au)	
<i>Inga capitata</i> Desv.	KVK0046	waki (Sa)	**				[g]
<i>Inga edulis</i> Mart.	SRU0835	tetei weko (Au), tatai waki (Sa)	[1]	1			
<i>Inga lateriflora</i> Miq.	SRU0877	waki uwii (Sa)	[2]				[g]
<i>Inga</i> sp.	CVK38	waki (Sa)	[2]				[d]
<i>Inga stipularis</i> DC.	KVP0031	baaka weko (Au), dyebe (Sa)	***, **	1			
<i>Inga virgulata</i> Desv.	KVK0078	fini waki (Sa)	[5]				[g]
<i>Ipomoea batatas</i> L.	-	sutibatauwii (Sa)	[1]	1		patata tetei (Au)	
<i>Ipomoea</i> sp.	-	kusai barata tatai (Sa)	[2]				[d]
<i>Ipomoea tiliacea</i> (Willd.) Choisy	KVP0016	patat (Sr) ¹	**				[a]
<i>Ischnosiphon aruma</i> (Aubl.) Körn.	SRU0330	(gaan) babadua (Au, Sa)	[1]	1			
<i>Ischnosiphon gracilis</i> (Rudge) Körn.	CVK69	pikin babadua (Au, Sa)	[1]	1			
<i>Ischnosiphon petiolatus</i> (Rudge) L.Andersson	TVA5037	swampu pikin weiman (Au)	***				[g]
<i>Ischnosiphon puberulus</i> Loes.	GBA0059	babadua (Au); pikibabadua (Sa)	[4], [2]	1			
<i>Iseria parviflora</i> Vahl	KVK0092	detrol (Sr) ¹	[2]				[g]
<i>Ixora coccinea</i> L.	TVA2570	fayalobi (Sr) ¹	[2]				[c]
<i>Ixora</i> sp.	KVK0213	detrol (Sr) ¹	[2]				[d]
<i>Jatropha curcas</i> L.	KVK0240	pooka (Sa)	[2]		1	kakanoto (Au)	
<i>Jatropha gossypifolia</i> L.	SRU0915	pooka (Sa)	[2]		1	kakanoto (Au)	
<i>Justicia pectoralis</i> Jacq.	SRU0712	tone uwii (Au), papa uwii (Sa)	[1], [2]	1			
<i>Justicia secunda</i> Vahl	SRU0638	budu uwii (Sa)	[2]				[a]
<i>Lantana camara</i> L.	SRU0627	angomangamaka (Au), makamaka (Sa)	[1], [2]	1			
<i>Lepidagathis alopecuroides</i> (Vahl) R. Br. ex Griseb.	SRU0721	temeku (Sa)	[7]				[c]
<i>Licania leptostachya</i> Benth.	KVK0129	basoo (Sa)	**	1		baso (Au)	
<i>Licania octandra</i> (Hoffmanns., ex Schult.) Kuntze	ARV0002	adyadyina (Sa)	**				[g]
<i>Licania</i> sp.	SRU0859	tsyawaya (Sa)	**				[d]
<i>Licania guianensis</i> Aubl.	GBA0139	apisi (Sa)	[6]				[g]
<i>Lindsaea</i> sp.	KVK0105	biibii uwii (Sa)	[2]				[d]
<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P.Wilson	GBA0070	bobi froyfo (Au), piipipau (Sa)	[1], [2]	1			
<i>Lonchocarpus chrysophyllus</i> Kleinhoonte	SRU0860	ndeku (Sa)	[1]			neko (Au)	
<i>Loreya mespiloides</i> Miq.	SRU0826	atosikoyo (Sa)	**				[a]

Table A1 | Continued

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<i>Ludwigia erecta</i> (L.) H. Hara	SRU0901	kontaka futu (Sa)	[2]				[c]
<i>Ludwigia lysiphiolia</i> (G. Don) Exell	CVK105	kontaka futu (Sa)	*				[c]
<i>Ludwigia nervosa</i> (Poir.) H. Hara	KVK0084	kontaka futu (Sa)	[2]		1	paramanklem (Au)	
<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven	KVP0018	kontaka futu (Sa)	[2]				[c]
<i>Luehopsis rosea</i> (Ducke) Burret	TVA5109	lebi baka (Au), maau (Sa)	[1]	1			
<i>Lycopodiella cernua</i> (L.) Pic. Serm.	TKP0039	amooma (Sa)	[6]			amoman (Au)	
<i>Lygodium volubile</i> Sw.	-	- (Au)	[3]				[a]
<i>Mabea piriri</i> Aubl.	SRU0946	gaan leleti uwii (Sa)	**				[g]
<i>Macarolobium</i> sp.	CVK39	lokoti (bita) (Sa)	*				[d]
<i>Mangifera indica</i> L.	TVA5128	manya (Au, Sa)	[1]	1			
<i>Mansoa alliacea</i> (Lam.) A.H. Gentry	IVL0030	agbonengetatai (Sa)	[1]			ayun terei (Au)	
<i>Maprounea guianensis</i> Aubl.	KVK0080	kisungula (Sa)	[2]		1	bisangola (Au)	
<i>Martiera montana</i> (Aubl.) Amsh.	SRU1033	bakabesi (Au), stroom (Du) ¹	***, **	1			
<i>Matayba</i> cf. <i>arborescens</i> (Aubl.) Radlk.	CVK74	gawenti (Sa)	*			basa komanti udu (Au)	
<i>Mauritia flexuosa</i> L.f.	-	muusi (Sa)	[2]		1	moisibon (Au)	
<i>Mayaca</i> sp.	TVA5444	wata amooma (Au)	***				[d]
<i>Melaleuca cajuputi</i> Powell	TVA5474	albina uma (Au), alabina uma (Sa)	***, **	1			
<i>Miconia ciliata</i> (Rich.) DC.	SRU1009	kodyitanda (Sa)	**				[g]
<i>Miconia gratissima</i> Benth. ex Triana	SRU0876	kodyitanda (Sa)	**				[g]
<i>Miconia latifolia</i> (D. Don) Naudin	SRU0935	matu bonu uwii (Sa)	[6]				[g]
<i>Miconia lepidota</i> Schrank & Mart. ex DC.	TVA4889	musupu (Au), mama lena (Sa)	**	1			
<i>Miconia prasina</i> (Sw.) DC.	SRU0869	matapi	[2]		1	suku roobi (Au)	
<i>Miconia racemosa</i> (Aubl.) DC.	TVA5482	yaakopi (Sa)	[1]		1	obia uwii (Au)	
<i>Miconia</i> sp.	-	kodyitanda (Sa)	*				[d]
<i>Miconia tomentosa</i> (Rich.) D. Don ex DC.	TVA5461	musude baasa (Au)	[1]		1	pipa pau (Sa)	
<i>Micropholis guyanensis</i> (A. DC.) Pierre	SRU0787	ahwa pau (Sa)	**				[g]
<i>Microtea debilis</i> Sw.	KVK0102	eiwiti wiri (Sr) ¹	[2]				[a]
<i>Mikania cordifolia</i> (L.f.) Willd.	SRU0944	aki ndeku (Sa)	[2]				[a]
<i>Mimosa myriadenia</i> (Benth.) Benth. var. <i>myriadenia</i>	KVP0080	akaamaka (Sa)	[2]				[g]
<i>Mimosa pudica</i> L.	KG0022	seemai (Sa)	[2]		1	seemai (Au)	
<i>Monordia charantia</i> L.	CVK52	bakulu sopolopo (Sa)	*				[a]
<i>Montrichardia arborescens</i> (L.) Schott	TVA5148	moko moko (Sa)	[1]		1	mokomoko (Au)	
<i>Mouriri crassifolia</i> Sagot	ARV0054	topi (Sa)	**				[g]
<i>Musa</i> sp.	TVA5122	bakuba (Sa)	[1]			baana (Au)	
<i>Musa x paradisiaca</i> L.	TVA6208	bakuba (Sa)	[1]		1	baana (Au)	

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<i>Myrciaria floribunda</i> (H. West ex Willd.) O. Berg		KVP0083	busi nguyaba (Au), logosofuuta (Sa)	[1], [2]	1			
<i>Neea ovalifolia</i> Spruce ex J.A. Schmidt		GBA0097	tarai bijapau (Sa)	**				[g]
<i>Neperia aquatica</i> (Aubl.) Naudin		SRU0868	sabanauwii (Au), atabuli (Sa)	[1], [2]	1			
<i>Nicotiana cf. tabacum</i> L.		KVK0244	tabaku (Sa)	[1]		1	tabaka uwii (Au)	
<i>Nymphaea rudgeana</i> G. Mey		TKP0062	hangukuyee (Sa)	**				[d]
<i>Ocimum campechianum</i> Mill.		CVK41	sumeeuwii (Au), bonu-uwii (Sa)	[1], [2]	1			
<i>Ocimum gratissimum</i> L.		TVA5060	man sume uwii (Au)	[1]				[f]
<i>Oldenlandia corymbosa</i> L.		KVK0104	lokoti bita (Sa)	**				[a]
<i>Olyra latifolia</i> L.		CVK101	dagu-alisi (Sa)	*				[e]
<i>Ormosia couinboi</i> Ducke		TVA5289	agi (Au)	***				[g]
<i>Oryctanthus alveolatus</i> (Kunth) Kuijt		TKP0085	pikifoulaka (Sa)	**				[g]
<i>Oryctanthus florulentus</i> (Rich.) Tiegh.		TKP0054	pikin foolaka (Au), piki fou kaka (Sa)	***, [3], **	1			
<i>Oryza sativa</i> L.		TVA5583	kuli alisi (Sa)	[1]	1		alisi (Au)	
<i>Pachira nervosa</i> (Uittien) Fern.Alonso		GBA0067	yongoo (Sa)	**				[g]
<i>Parinari campestris</i> Aubl.		SRU1004	fungu pau (Sa)	[2]	1		fungu (Au)	
<i>Parkia nitida</i> Miq.		SRU0547	gaan pau (Sa)	**	1		dodomisinga (Au)	
<i>Parkia pendula</i> (Willd.) Walp.		SRU0965	ahwa (Sa)	[1]	1		kwatakama (Au)	
<i>Parkia ulei</i> (Harms) Kuhlth.		SRU0792	awha (Sa)	[6]	1		kwatakama uwii (Au)	
<i>Paspalum conjugatum</i> P.J. Bergius		KVP0017	long gaasi (Au), pipapau ahun (Sa)	[1], [2]	1			
<i>Paspiflora foetida</i> L.		KG-P0016	sindekimakudya (Sa)	**				[a]
<i>Paspiflora</i> sp.		-	piki makudya (Sa)	*				[d]
<i>Paulinia pinnata</i> L.		TVA4907	feifi finga (Au), feifi finga uwii (Sa)	[1], [2]	1			
<i>Paulinia</i> sp.		TVA5014	feifi finga (Au)	***				[d]
<i>Peperomia pellucida</i> (L.) Kunth		SRU0626	konsaka uwii (Au, Sa)	[1]	1			
<i>Peperomia quadrangularis</i> (J.V.Thomps.) A.Dietr.		TVA5118	gaan ribi (Au)	[7]	1		konsaka uwii (Sa)	
<i>Peperomia rotundifolia</i> (L.) Kunth		SRU0917	tisivi (Sa)	[1]	1		pikin kuku (Au)	
<i>Platfia glomerata</i> (Spreng.) Pedersen		SRU0713	kondolinga (Sa)	[2]	1		kinikini (Au)	
<i>Pterakospermum guyanense</i> (A.Rich.) Endl. ex Miq.		SRU0475	palulu (Sa)	**				[g]
<i>Philodendron deflexum</i> Poepp. ex Schott		TVA5100	ayran terei (Au)	[1]				[g]
<i>Philodendron biederacum</i> (Jacq.) Schott		KG-P0004	ayee uwii (Au), abaasa (Sa)	[1]	1			
<i>Philodendron insigne</i> Schott		SRU0692	boontapu (Sa)	**				[g]

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<i>Philodendron linnaei</i> Kunth	IVL0136	boontapu (Sa)	**				[g]
<i>Phoradendron perrottetii</i> Nutt.	TVA5485	kanyankama (Au), piki fo kaka (Sa)	[1]: *	1			
<i>Phthirusa pyrifolia</i> (Kunth) Eichler	SRU0811	pikifoulaka (Sa)	**				[g]
<i>Phthirusa stelis</i> (L.) Kuijt	TKP0043	pikin foo kaka (Au), pikifoulaka (Sa)	[1], **	1			
<i>Phyllanthus amarus</i> Schumach. & Thonn.	TVA4870	aheni (Sa)	[1]	1	finibita (Au)		
<i>Phyllanthus urinaria</i> L.	SRU0865	finibita (Sr) ¹	[2]				[a]
<i>Physalis angulata</i> L.	SRU0912	avatore (Sa)	**	1	afatere (Au)		
<i>Pisonia coriacea</i> Mart. & Zucc.	SRU0833	fatatai (Sa)	**				[g]
<i>Piper aduncum</i> L.	TVA4932	gaanna udu anu (Au)	[1]	1	tisiyi (Sa)		
<i>Piper anonifolium</i> (Kunth) Steud.	TVA5018	ampuku uwii (Au)	[1]	1	kabana udu (Sa) (Au), gabana udu (Sa)		
<i>Piper arboreum</i> Aubl.	SRU0985	pikin kamikindi (Au), malembetoko (Sa)	[1]	1			
<i>Piper hartlingianum</i> (Miq.) C. DC.	GBA0003	blaka kulakatenga (Au); kulakatenge (Sa)	[4], **	1			
<i>Piper cf. avellanum</i> (Miq.) C. DC.	SRU0986	kulakatenga (Sa)	**				[g]
<i>Piper hispidum</i> Sw.	SRU0923	malembetoko (Sa)	**				[g]
<i>Piper marginatum</i> Jacq.	TKP0009	malenbelembé (Au, Sa)	[1], [2]	1			
<i>Piper pellatum</i> L.	KVK0238	gaan malembelembé (Sa)	[2]				[a]
<i>Piper</i> sp.	TVA5107	booko kindi (Au)	[5]				[d]
<i>Ptyrogramma calomelanos</i> (L.) Link	KVK0093	weti baka (Sa)	[2]				[a]
<i>Portulaca oleracea</i> L.	KVK0098	posen (Au), bembé (Sa)	[1], [2]	1			
<i>Pouteria cf. cuspidata</i> (A. DC.) Baehni	KVK0204	akara (Sa)	[7]				[g]
<i>Pouteria engleri</i> Eyma	ARV0022	awa pau (Sa)	[6]				[g]
<i>Pradosia surinamensis</i> (Eyma) T.D.Penn.	TVA4977	kimboro (Au)	***				[g]
<i>Protium heptaphyllum</i> (Aubl.) Marchand	TVA4816	tingi moni (Au)	[1]	1	busi kadea (Sa)		
<i>Pseudopiptadenia suaveolens</i> (Miq.) J.W. Grimes	ARV0042	pikimii siki (Sa)	[2]	1	pikimisiiki (Au)		
<i>Psidium acutangulum</i> Mart. ex DC.	SRU0919	alasa (Sa)	[6]				[g]
<i>Psidium guajana</i> L.	TVA5129	ngobaya (Au), guyaba uwii (Sa)	[1], [2]	1			
<i>Psidium guineense</i> Sw.	TVA5439	liba ngobaya (Au)	[5]				[g]
<i>Psychotria apoda</i> Steyerl.	SRU0341	aka(ntasi?) (Sa)	[6]	1	manayentintin (Au)		
<i>Psychotria capitata</i> Ruiz & Pav.	SRU0933	daandan uwii (Sa)	[2]				[a]
<i>Psychotria officinalis</i> (Aubl.) Raesch. ex Sandwith	SRU0924	womi bobi fiofo (Sa)	**				[g]

Table A1 | Continued

Species with authorization	Collection number	Vernacular plant names with local languages (database)	References	Species in Au/Sa area (database)	Species in Au/Sa area (literature)	Vernacular plant names with local languages (literature)	Species not reported in Au/Sa area, reference to occurrence/ growthform
<i>Psychotria</i> sp.	KVK0103	asanti (Sa)	[2]				[d]
<i>Psychotria ulbiformis</i> Steyer.	SRU0911	azaunsapatu (Sa)	[1]	1		dubinsapatu (Au)	
<i>Quassia amara</i> L.	TVA4784	kwasibita (Sa)	[1]	1		kwasibita (Au)	
<i>Renalmia alpinia</i> (Rottb.) Maas	TVA4747	gaan masusa (Au)	[1]	1		gaan masisa (Sa)	
<i>Renalmia floribunda</i> K.Schum.	TVA5446	baaka masusa (Au)	[1]	1		pikin masisa (Sa)	
<i>Renalmia guianensis</i> Maas	SRU0900	pikin masusa (Sa)	[2]				[g]
<i>Renalmia</i> sp.	KVK0245	gaan masusa (Sa)	[2]				[d]
<i>Rhizophora racemosa</i> G.Mey.	TVA5134	mangu (Au)	***				[f]
<i>Rhynchanthera grandiflora</i> (Aubl.) DC.	SRU0907	duku (Sa)	[2]				[c]
<i>Ricinus communis</i> L.	KVK0242	kaapata (Sa)	[1]	1		kaapata (Au)	
<i>Rinorea flavescens</i> (Aubl.) Kuntze	SRU0843	gaan kikise (Sa)	**				[g]
<i>Rolandra fruticosa</i> (L.) Kuntze	CVK31	dyadya uwi (Au), bookopangi (Sa)	[1]: *	1			
<i>Saccharum officinale</i> L.	TVA1878	tyeni (Sa)	[1]	1		tjen (Au)	
<i>Sacoglottis guianensis</i> Benth.	GIBA0160	gammasagon (Sa)	[6]				[g]
<i>Schefflera</i> sp.	-	atapele (Sa)	**				[d]
<i>Scleria secans</i> (L.) Urb.	SRU0699	kengesi (Sa)	[2]				[a]
<i>Scoparia dulcis</i> L.	SRU0612	was konde uwii (Au), lembe konde (Sa)	[1], [2]	1			
<i>Sclaginella novae-hollandiae</i> (Sw.) Spring	CVK66	okoowa (Sa)	*				[g]
<i>Sclaginella parkeri</i> (Hook. & Grev.) Spring	SRU0982	mansakamang (Au), okokowa (Sa)	[6], **	1			
<i>Senna latifolia</i> (G.Mey.) H.S. Irwin & Barneby	SRU0857	amooatawe (Sa)	**				[a]
<i>Senna occidentalis</i> (L.) Link	TKP0071	komatisangu (Sa)	[2]	1		misi konde uwii (Au)	
<i>Senna quinqueangulata</i> (Rich.) H. S. Irwin & Barneby	KVK0109	mamatawe (Au), amooatawe (Sa)	[1], [2]	1			
<i>Senna reticulata</i> (Willd.) H.S. Irwin & Barneby	TKP0011	yonvoutu (Au) ¹	[2]	1		nyufodu (Au)	
<i>Senna</i> sp.	-	okobuka (Sa)	**				[d]
<i>Simaba orinensis</i> Kunth	TVA5403	tu ede (Au)	**				[g]
<i>Simarouba amara</i> Aubl.	SRU0112	adonisido (Sa)	[6]				[g]
<i>Siparuna guianensis</i> Aubl.	SRU0618	feba uwii (Au), febe pau (Sa)	[1], [2]	1			
<i>Smilax schomburgkiana</i> Kunth	-	agbagomaka (Sa)	[1]			agwago maka (Au)	
<i>Solanum americanum</i> Mill.	SRU0707A	goma uwii (Sa)	[2]	1		goma uwii (Au)	
<i>Solanum leucocarpum</i> Dunal	SRU0619	agbo pau (Sa)	[2]	1		mananga (Au)	
<i>Solanum</i> sp.	-	woniagbopau (Sa)	*				[d]
<i>Solanum stramonifolium</i> Jacq.	TPK0048	matunga maka (Sa)	[2]	1		bigi maka (Au)	
<i>Solanum subinerme</i> Jacq.	KCP0012	malta (Sa)	[2]				[a]

Table A1 | Continued

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<i>Spermatocoe alata</i> Aubl.	SRU0910	jonku gbagbe (Sa)	**				[a]
<i>Sphagneticola trilobata</i> (L.) Pruski	CVK45	azokopampa (Sa)	*				[a]
<i>Spigelia anthelmia</i> L.	SRU0710	(a) dongooma (Sa)	[2]	1		foto duunguma (Au)	
<i>Spondias mombin</i> L.	SRU0883	mombe (Sa)	[1]	1		mope (Au)	
<i>Stachytarpheta cayennensis</i> (Rich.) Vahl	SRU1013	alatulabu (Au, Sa)	[1], [2]	1			
<i>Stachytarpheta jamaicensis</i> (L.) Vahl	SRU0622	alatulabu (Sa)	[2]				[a]
<i>Stagnaphyllon sinuatum</i> (DC.) A. Juss.	SRU0908	dyanga(futu)tatai (Sa)	[2]				[a]
<i>Struthium sparganophorum</i> (L.) Kuntze	KVK0110	seigoto (Sa)	[2]	1		bobi fyu fyu (Au) bobi fyu fyu (Au), baaki muyee (Sa) piki fowu dori (Sa)	
<i>Struthanthus syringifolius</i> (Mart.) Mart.	-	- (Au)	[3]	1			
<i>Suarzia</i> cf. <i>schomburgkii</i> Benth.	CVK65	bugubugu (Sa)	*				[g]
<i>Suarzia</i> sp.	CVK58	hogipau (Sa)	*	1		aya udu (Au)	
<i>Symplocos guianensis</i> (Aubl.) Gürke	KVP0015	ba-apa (Sa)	[2]				[g]
<i>Synedrella nodiflora</i> (L.) Gaertn.	KVP0035	wolo ta piki a gajde dendu (Sa)	**				[a]
<i>Syzygium cumini</i> (L.) Skeels	TVA5152	dyamu (Au, Sa)	***, **	1			
<i>Syzygium malaccense</i> (L.) Merr. & L.M. Perry	TVA1149	pomerak (Sr) ¹	[2]				[c]
<i>Tabernaemontana heterophylla</i> Vahl	SRU0928	bobi bobi (Sa)	**				[g]
<i>Tabernaemontana siphilitica</i> (L. f.) Leeuwenb.	SRU0918	kapiwa-uwii (Sa)	[1]				[g]
<i>Tabernaemontana undulata</i> Vahl	KVK0022	ketenge posu (Sa)	[1]				[b]
<i>Talisia microphylla</i> Uttien	ARV0057	spadungu (Sa)	**				[g]
<i>Tamarindus indica</i> L.	-	tamarinde (NI door Sa informant)	[1], [2]	1		tamalen (Au)	
<i>Tapiira guianensis</i> Aubl.	TVA5311	daanliba (Au)	[1]	1		danliba (Sa)	
<i>Tectaria</i> sp.	KVP0092	makoko tabaku (Sa)	**				[d]
<i>Terminalia amazonia</i> (J.F.Gmel.) Exell	CVK104	anagosuti (Sa)	[7]	1		anagosuti (Sa)	
<i>Terminalia catappa</i> L.	TVA1853	amanda pau (Sa)	[1]				[c]
<i>Ternstroemia asperula</i> Miq.	TKP0042	dëgi bombon (Sa)	**				[g]
<i>Ternstroemia alisima</i> (Aubl.) Swart	GIBA0080	sali (Sa)	**	1		tingi moni (Au)	
<i>Tetrapteris styloptera</i> A. Juss.	SRU1005	- (Sa)	**				[g]
<i>Thelypteris leptorei</i> (Hook.) R.M. Tryon	SRU0927	alalalabu (Sa)	**				[g]
<i>Theobroma cacao</i> L.	TVA1195	sukuati (Sa)	[1]				[c]
<i>Tibouchina aspera</i> Aubl.	KG00014	bombokasa (Sa)	[2]				[c]
<i>Tibouchina grandifolia</i> Cogn.	SRU0716	wasduku (Sa)	[2]				[c]
<i>Tilia bacata</i> (L.) Pruski	TKP0007	agbo neku (Sa)	[1]	1		pikin nenge santu (Au)	

Table A1 | Continued

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<i>Tournefortia cf. lauracea</i> Standl.	TVA4926	aluwau (Sa)	[1]	1		bigi musatika (Au)	
<i>Trema micrantha</i> (L.) Blume	CVK83	tonontika (Au), piikutupau (Sa)	[1]	1			
<i>Tripgandra serrulata</i> (Vahl) Handlos	TKP0032	lebi gadodede (Au), be gadu-dede-mi-dede (Sa)	[1], [2]	1			
<i>Uncaria guianensis</i> (Aubl.) J.F. Gmel.	SRU0107	popokainanga (Au), papakalhunya (Sa)	[1], [2]	1			
<i>Unonopsis rufescens</i> (Baill.) R.E. Fr.	SRU0803	mamba (Sa)	**	1		buisunsaka (Au)	
<i>Unxia camphorata</i> L. f.	SRU0617	kanfu (bita) (Sa)	** *	1		fuku fuku bita (Au)	
<i>Virola surinamensis</i> (Rol. ex Rorth.) Warb.	IVL0078	sipadu (Sa)	[1]	1		mutomba (Au)	
<i>Vismia ceylonensis</i> (Jacq.) Pers.	SRU0871	weti baka pinya pau (Au, Sa)	[1], [2]	1			
<i>Vismia guianensis</i> (Aubl.) Pers.	TVA4770	lebi baka pinya (Au), be baka pinya pau (Sa)	[1], [2]	1			
<i>Vismia macrophylla</i> Kunth	TVA5402	- (Au), gaan be baka pinya pau (Sa)	[3], [2]	1			
<i>Youacaponia americana</i> Aubl.	SRU0791	boanti (Sa)	**				[g]
<i>Youarana guianensis</i> Aubl.	TVA4939	bigi tingimoni (Au), singabaasi (Sa)	[1], [2]	1			
<i>Waltheria indica</i> L.	SRU0629	dusuma (Sa)	[2]				[a]
<i>Xylopia discreta</i> (L.f.) Sprague & Hutch.	TVA4736	pedreku (Sr) ²	***	1		kunye (Sa)	
<i>Xylopia frutescens</i> Aubl.	SRU0720	kundyece (Sa)	[2]				[d]
<i>Zingiber officinale</i> Roscoe	-	adjindja (Sa)	[1]	1		djindja (Au)	
<i>Zingiber</i> sp.	KVP0093	dagu adyindya (Sa)	**				[d]
<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	TVA5084	djindja masusa (Au)	[1]	1		awoonenge sangaavu (Sa)	
<i>Zygia catanactae</i> (Kunth) L. Rico	-	dyabec (Sa)	*				[g]
<i>Zygia inaequalis</i> (Willd.) Pittier	TVA5007	koia weko (Au)	[1]				[g]
<i>Zygia latifolia</i> (L.) Fawc. & Rendle	TVA5004	buasiman weko (Au)	[1]				[g]

Local languages abbreviated: (Au) = Aucan, (Du) = Dutch, (Sa) = Saramaccan, (Sr) = Sranan Tongo, and information shared by: 1= Saramaccan informant, 2= Aucan informant (if necessary)

Collectors: ARV = A. Vermeulen, CVK = C. van 't Klooster, GBA = G. Bavy, IVL = I. van der Linden, KGP = K. Gajapersad, KVK = K. van Kerkhove, KVP = K. van de Putte, SRU = S. Ruysschaert, TKP = T. Koppert, TVA = T. van Andel, - = not collected.

References: [1] Van Andel and Ruysschaert (2011), [2] Ruysschaert et al. (2009), [3] Vossen et al. (2014), [4] Groenendijk (2006), [5] Van Andel et al. (2008), [6] Van 't Klooster et al. (2003), [7] Van Andel et al. (2014), * = Van 't Klooster, unpublished fieldwork data, ** = Ruysschaert, unpublished fieldwork data, *** = Van Andel, unpublished fieldwork data

Occurrence/growth form: [a] common weed/sec forest species, [b] common forest species, [c] widely cultivated, [d] uncertain identification, [e] savanna (only Saramaccan), [f] coastal area (only Aucan), [g] rainforest.

