Chapter 14
Ethnobotany of Brazil's African Diaspora: The Role of Floristic Homogenization

Robert Voeks

Abstract Nearly five million enslaved Africans were transported to the shores of Brazil over the course of the Atlantic slave trade. During the latter stages, from the 1780s to 1851, the majority hailed from the Bight of Benin, representing especially the Yoruba, Ewe, and Fon peoples. The belief systems introduced by these sub-Saharan peoples were reassembled in Brazil under the generic name of Candomblé. Among the noteworthy features of this religion is a profound spiritual association between a pantheon of deities (the orixás) and a host of edible and medicinal plant species. This chapter demonstrates that Brazil's African diaspora capitalized on a cornucopia of esculent and medicinal plants that had diffused back and forth across the Atlantic Ocean as part of the Columbian Exchange. Centuries before the kidnapping and transport of most African slaves, the anthropogenic habitats of South America and West Africa—the second-growth forests, swiddens, plantations, trails, and kitchen gardens—exhibited significant floristic similarity. This early transatlantic botanical homogenization greatly enhanced the ability of newly arrived Africans and their descendants to reassemble their ethnobotanical traditions in what was otherwise an alien floristic landscape.

Keywords Ethnobotany • Brazil • African diaspora • Slave trade • Candomblé • Spiritual • Traditional knowledge • Invasive species • Cultural diffusion

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Introduction

From 1519 until 1867, nearly 11 million forced African immigrants were transported to the New World. Brazil alone witnessed the arrival of nearly five million Africans, more than any other colony or country in the Americas (Eltis and Richardson 2008). Because of the tremendous volume of men and women arriving, Brazil's coastal frontier was dominated numerically throughout most of its history by people of African descent. But given the brutality of the Middle Passage and the horrific living conditions endured by enslaved Africans, there was surely no diaspora in Earth's history more constrained in their ability to introduce their culture and lifeways to their new lands. Nevertheless, in spite of these impediments, Africans contributed formidably to what would emerge over time as Brazil's unique cultural identity—from language to foodways, music to dance, and healing traditions to belief systems.

Ethnobotanists investigate the relationship between plants and people. The rich and nuanced botanical traditions and uses for which indigenous rural peoples are so well known are assumed to be the outcome of long-term occupation and gradual experimental familiarity with the floristic environment (Voeks 2011). Received wisdom often depicts indigenous people as environmentally conscious stewards of ancient biological wisdom, transmitted vertically as ossified oral text from generation to generation. In contrast, the plant knowledge and skills sustained by nonnative peoples, whose familiarity with their floristic landscape is brief by comparison, has until recently seldom been considered (but see Alexiades 2009; Pieroni and Vandebroek 2008). Whether stated explicitly or simply implied, the biocultural relations between diaspora communities and the flora of their immigrant landscapes have been perceived as unworthy of academic investigation.

This presumed ignorance of nature is particularly striking in regard to the descendants of enslaved Africans in the Americas. Confronted with the challenges of living and working as chattel, the African diaspora indeed seem poor candidates to have either introduced their original plant-based traditions or learned the indigenous names and useful properties of these alien forests and fields. The belief systems were different, the languages were different, the cropping systems were different, and, most importantly in this context, the native flora was different. Two thousand miles of ocean and a hundred million years of species diversification separated sub-Saharan Africans from their familiar cultural and biological landscape. And unlike European and later Asian immigrants, Africans were profoundly constrained in their ability to import useful plants from their homeland (but see Carney and Rosomoff 2009: 123–125). Given these monumental barriers to biocultural diffusion and assimilation, it is not surprising that ethnobiologists have largely ignored African diaspora communities in favor of indigenous groups.

This chapter explores the apparent anomaly of African diaspora ethnobotanical knowledge and skills in tropical America. By means of a long-term case study among the descendants of enslaved Africans in Northeast Brazil, I suggest that the anthropogenic landscapes of tropical America were floristically similar to their

sub-Saharan counterparts by the time the largest contingent of slaves were arriving. Several centuries of plant introductions, intentional and accidental, between tropical Africa and the Americas, created a common domesticated and disturbance flora in these distant regions. This process of botanical homogenization, termed the Columbian Exchange by environmental historian Alfred Crosby (1993), facilitated continuity and transculturation of African plant-based food and magico-medical traditions among their New World descendants and, in so doing, provided avenues of cultural resistance to Euro-American hegemony.

Study Area and Methods

Fieldwork has been carried out since 1990 in and around the cities of Salvador, Ilhéus, and Itabuna, Bahia (Fig. 14.1). Primary methods include open-ended interviews and participant observation, as well as field excursions with practitioners to spiritual gardens, disturbed habitats, and old-growth rainforest. I worked with priests and adherents representing the range of the Candomblé traditions—Ketu, Ijexá, Jeje

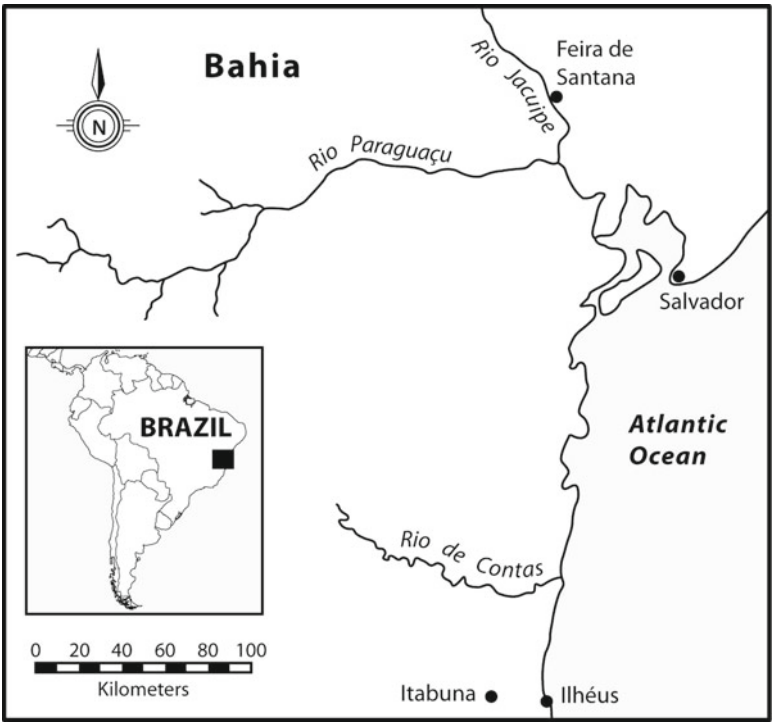

Fig. 14.1 Study areas in Salvador, Itabuna, and Ilhéus, Bahia

(Vodun), and Candomblé de Angola. Species were vouchered and stored at the Herbarium at the Centro de Pesquisas do Cacau, in Itabuna.

Extending from 12° to 18° south of the equator, the region's climate is classified as a Koppen Af, tropical rainforest type, with consistently warm temperatures and evenly distributed moisture. Mean annual rainfall ranges from 1,800 to 2,100 mm, and mean monthly temperatures vary from 21 to 27 °C (Silva 1984). Sandy-soiled beach communities inhabited by cosmopolitan herbaceous species and palms grade quickly into the tall, evergreen Atlantic Coastal rainforest. Dominated floristically by Myrtaceae and Fabaceae, these forests are highly endemic, extremely diverse, and critically threatened (Mori et al 1983; Ribeiro et al. 2009). They are, according to Myers et al. (2000), one of the hottest of the 25 global biodiversity hotspots.

Northeastern Brazil witnessed a series of economic cycles following the arrival of Portuguese merchants and settlers in the early sixteenth century. Extraction of the dye-wood pau brasil (*Caesalpinia echinata* Lam.) and piassava palm (*Attalea funifera* Mart.) was followed quickly by the exponential spread of sugarcane plantations and, later, gold-mining operations in the interior state of Minas Gerais (Voeks 1996). During the subsequent three centuries, over 10% of the total African slave population that would be unloaded in the Americas was transported to the captaincy and later state of Bahia, Brazil. Although these captive laborers arrived from various points in sub-Saharan Africa, the provenance of over 70% during the final decades of the Brazilian slave cycle was the Yoruba, Ewe, and Fon peoples of the Bight of Benin (Ribeiro 2008). Counted among these many thousands of late arrivals were captive priests and religious leaders, important potential sources of traditional West African medical and magical traditional knowledge, sold into servitude from their homelands during the Yoruba wars (Verger 1987: 10–11).

Candomblé Religion

The Candomblé religion constitutes a set of beliefs and practices introduced by Yoruba slaves and freedmen, negotiated and blended over time with Catholicism and with other West African-derived traditions. Engenho Velho, the first Candomblé terreiro (temple), was clearly present by 1830, and some accounts trace its existence to the mid-1700s. Candomblé is separated into several denominations, known as nacões (nations), including Candomblé de Ketu, Candomblé de Angola, Candomblé de Jeje, Candomblé de Congo, and others (Carneiro 1948). Each nation, to some degree, maintains its own unique lexicon, chants, ceremonies, deities, and offerings. Each also sustains, to a greater or lesser extent, its own medicinal, spiritual, and magical crops and wild plant species (Voeks 1997).

Candomblé represents an "exaltation turned toward life and its continuance" (Verger 1966: 35), as opposed to a religion of salvation directed toward the hereafter. Adherents recognize the existence of a supreme god, Olórun, the unknowable creator of all things, but he is perceived as distant and unapproachable by humans. It is the orixás of the Yoruba pantheon, serving as the earthly ambassadors of Olórun,

who are directly linked to the everyday world of mortals. There is considerable variation among houses of worship, but roughly a dozen of these Yoruba-inspired gods and goddesses are well developed and find devotees in nearly all Candomblé temples. These deities include Xangô, Ogun, Oxalá, Oxóssi, Omolu, Ossâim, Iroko, Yemanjá, Oxum, Iansã, Nanã, and Oxumarê. Much of Candomblé worship is dedicated to cultivating and sustaining spiritual equilibrium between adherents and their "owner" deities, with the objective of maximizing prosperity, good health, fertility (at least in years past), and general good luck.

Candomblé temples are directed by the mãe- or pai-de-santo (also known by their Yoruba labels babalorixá or ialorixá, hereafter referred to as the mãe-de-santo), which translates literally to mother- or father-of-saints. She (or less commonly he) represents the principal line of communication between the material world of mortals and the realm of the orixás and other spiritual entities. In addition to taking responsibility for temple functions, administrative and spiritual, the mãe-de-santo serves as community healer (curandeiro), divining the source of medical, magical, and spiritual problems and prescribing culturally acceptable remedies. These remedies are often complemented by an array of plant-based recipes, drawn from a pharmacopoeia of sacred foods and medicinal leaves (Voeks 1993).

The mãe-de-santo treats everyday illness episodes, such as infections and body aches, but more often addresses spiritual and magically derived health problems. Spiritual illness is believed to result from disequilibrium between the patient and one or more of the orixás and is treated (in part) with a combination of plant species dedicated to one or more of the deities. Trained in sorcery, the mãe-de-santo can also neutralize the effects of black magic and, if called upon, employ the occult arts for her own ends or for those of her clients (Brazeal 2007). These latter activities, which represent one of the reasons that African-derived religions specifically have yet to achieve the legitimacy of monotheistic religions, Catholicism and Evangelical Protestantism, are usually cloaked in secrecy.

Sacred Leaves

Ossâim is the guardian of the sacred leaves and medicine. He is the orixá most intimately associated with health and healing, and his domain ranges from the forests to the fields, wherever curative plants grow. Originally, the exclusive guardian of the Yoruba ethnoflora, Ossâim's medicinal knowledge, according to legend, was coveted by other deities who sought to share in his secrets. The following oral text, related by pai-de-santo Ruy do Carmo Póvoas in Bahia (Voeks 1997) and also recorded in West Africa by Pierre Verger and in Cuba by Lydia Cabrera (Cabrera 1971: 100; Verger 1981: 122–124), describes how the orixás came to possess individualized plant pharmacopoeias:

> There is a legend of rivalry between Ossâim, the orixá of medicine and leaves, and Iansã, the orixá of stars, winds, and storms. Everything began as a result of jealousy. Iansã went to visit Ossâim. Ossâim is very reserved, quiet, silent. Iansã wanted to know what he

> was doing. When Ossâim has the opportunity, he explains things. But Iansã is always rushed, she wants everything done immediately. She is always asking questions, and she needs to know everything that's going on. When Iansã arrived at the house of Ossâim, he was busy working with his leaves. It happens that there are certain types of work with leaves that you can't talk about, you need to remain silent. Iansã started asking, "What are you doing? Why are you doing this? Why are you doing that?" And Ossâim remained silent. "Alright, if you don't want to tell me what you're doing, then I'll make you talk." That's when Iansã began to shake her skirt and make the wind blow. The house of Ossâim is full of leaves, with all of their healing properties, and when the wind began to blow, it carried the leaves in every direction. Ossâim began to shout "Ewe O, Ewe O." [Yoruba--my leaves, my leaves]. Ossâim then asked the help of the orixás to collect the leaves, and the orixás went about gathering them. And it happens that every leaf that an orixá collected, every species, he or she became the owner of that leaf.

Scattered by the winds of Iansã, the sacred leaves drifted into the habitats of the other deities. Oxum, goddess of freshwater, collected leaves near her rivers; Yemanjá, deity of the oceans, collected her leaves near the shoreline. Oxalá gathered white leaves, while Exu incorporated those that burned and pierced the skin. In this way, Ossâim retained the mysterious power of the plant kingdom, but each divinity came to possess his or her own personal ethnoflora.

The resultant leaf-deity correspondence represents a fundamental element of Candomblé ceremony and ritual. Each plant species, at least in principle, is an element in the personal pharmacopoeia of each individual orixá (Voeks 2000). For human devotees who belong to one or another divinity, healing is mediated through recourse to the spiritual energy (axé) of his or her guardian's leaves. A leaf bath (abô) for one of Oxum's followers, for example, will usually include three or seven of Oxum's species. A leaf whipping (sacudimento) intended to clean the negative fluids from a son or daughter (filho- or filha-do-santo) of Ogun will include some of Ogun's leaves. If a client suffers from an ailment associated with another deity, such as Xangô's notorious anxiety or Oxum's obsession with material wealth, then the mãe-de-santo will incorporate leaves from the appropriate orixá. In this way, the sacred leaves represent a crucial link between the world of mortals (aiê) and the world of the deities (orun).

Sacred Foods

In addition to the pharmacopoeia of healing species associated with the Yoruba deities, each orixá is complemented by plant and animal food preferences and prohibitions suited to his or her archetype. Oxalá, for example, is the masculine god of creation, peace, and love. He is the supreme god of the pantheon, is clothed in white from head to foot, and he assiduously avoids wearing black clothing. Oxalá requires the sacrifice of chickens, doves, and female goats, and his primary food preference is white corn cooked without salt. Iansã, the hot-tempered female orixá associated with wind, storms, and lightning, is especially fond of acarajé, black-eyed pea dumplings fried in dendê (African palm oil) and filled with shrimp. Omolu,

Fig. 14.2 Baiana selling Candomblé foods on the street in Salvador (Photo by Robert Voeks)

divinity of disease and infectious illness, prefers popcorn; Ogun, god of the forge and war, prefers yams cooked in dendê. Consecrated animals serve as sacrificial offerings for the divinities, whereas foods are served at public gatherings, particularly those that are dedicated to one or another of the orixás. Ritual food offerings are also placed in the altars of each orixá, the peji, on the day of the week dedicated to each deity.

Candomblé's sacred cuisine is also sold as street food in Bahian cities and elsewhere. Filhas-do-santo tend to their small food stalls attired in the traditional clothing of the temple, voluminous skirts and petticoats, white turbans, and necklaces dedicated to the orixás (Fig. 14.2). The ubiquitous street-corner presence of Baianas, as they are popularly known, represents the strongest visual signal of the endurance of African-inspired foodways among the Brazilian population. Besides homemade confections and fried fish, Baianas dispense a host of West African-inspired cuisine, including acarajé, vatapá (manioc paste cooked with dendê, shrimp, and hot peppers), and abará (steamed black-eyed pea meal wrapped in banana leaves). Long an important source of income and independence for women of faith, street food serves as a form of ritual obligation to the black gods. In the process of purchasing these exotic delicacies, locals and tourists unwittingly make offerings to one or another of the African deities.

The Candomblé Flora

In the original plant collection, Candomblé mães-de-santo discussed the medicinal, spiritual, and magical properties of roughly 200 wild and cultivated species. I collected and vouchered 140 of these taxa (Voeks 1997). The species list reveals the Candomblé pharmacopoeia to be floristically rich, with 117 genera distributed in 54 families. Ninety-six of the genera, or over 80%, are represented by only a single species. Although it is tempting to view this taxonomic diversity as a reflection of the region's protean species richness, such a conclusion misses the mark entirely. Although the

Atlantic Coastal rainforests are dominated, floristically and physiognomically, by trees and treelets, arborescence does not at all characterize the Candomblé pharmacopoeia. Trees and treelets make up less than 14 and 11%, respectively, of the taxa. Many of these species, 41%, are exotic rather than native, and several of the native trees are domesticated or otherwise managed. Less than 10% of the Candomblé flora was collected in old-growth rainforest, and several of these, including pau pombo (*Tapirira guianensis* Aubl.), aroeira (*Schinus terebinthifolia* Raddi), and canela-de-velho (*Miconia* sp.), are more abundant in secondary than in old-growth forests.

Roughly 43% (60 species) of the plants identified by Candomblé mães-de-santo are cultivated or otherwise spared or encouraged. Many of these, such as urucum (*Bixa orellana* L.), jaca-de-pobre (soursop—*Annona muricata* L.), papaya (*Carica papaya* L.), and sabugueiro (*Sambucus australis* Cham. & Schltdl.), are domesticated species that depend entirely on humans for their existence. Others exist naturally outside of cultivation, usually in secondary habitats, such as mamona (castor bean—*Ricinus communis* L.), transagem (English plantain—*Plantago major* L.), corneta (*Datura metel* L.), and aroeira, but are often purposely planted in home gardens as ornamentals or for medicinal use. Still others occur spontaneously in gardens as weeds but are spared because of their perceived value, such as bom dia (vinca—*Catharanthus roseus* (L.) G. Don), and fedegoso (*Senna occidentalis* L. Link), quebra-pedra (*Phyllanthus amarus* Schumach. & Thonn.).

Many of these plants are not native to Brazil. Of the 122 taxa for which origins are known or suspected, 25% are of Old World origin. Two of these that are widely known and used in West Africa arrived serendipitously via waif dispersal well after the continents of Africa and South America separated. Both the bottle gourd (*Lagenaria siceraria* (Molina) Standl.) and beach morning glory (*Ipomoea pes-caprae* Roth) have notoriously effective flotation devices that facilitated their transatlantic colonization. The bottle gourd, a symbolic representation of the parallel Yoruba worlds of the material and the spiritual, may well have suggested to immigrant Africans the presence of their deities in the New World. Beach morning glory, known in some Candomblé terreiros by the Yoruba term aboro aibá, is likely the first recognizable species that enslaved Africans would have recognized as they made landfall in Brazil (Fig. 14.3). Dedicated to Nana, the elderly female divinity of rain, soil, and mud, beach morning glory is employed in West Africa and in Bahia in spiritual baths (Verger 1995; Voeks 1997).

A few species, including obí (kola—*Cola acuminata* (P. Beauv.) Farw.) and akokô (*Newbouldia laevis (*P. Beauv.) Seem.), were purposely introduced from sub-Saharan Africa specifically for use in Candomblé worship. Others, such as orobô (*Garcinia kola* Heckel) and atarê (malagueta—*Aframomum melegueta* K. Schum.) failed to bear fruit in Brazil and continued, until quite recently, to be imported from Nigeria (Voeks 1993). Still others, such as the African oil palm (*Elaeis guineensis* Jacq.) and jambo branco (*Syzygium jambos* (L.) Alston), a fruit tree introduced from Asia, were brought for commercial purposes by the Portuguese colonists and incorporated by Afro-Brazilian healers. A host of Iberian medicinal species also found their way into the Afro-Brazilian pharmacopoeia, including erva doce

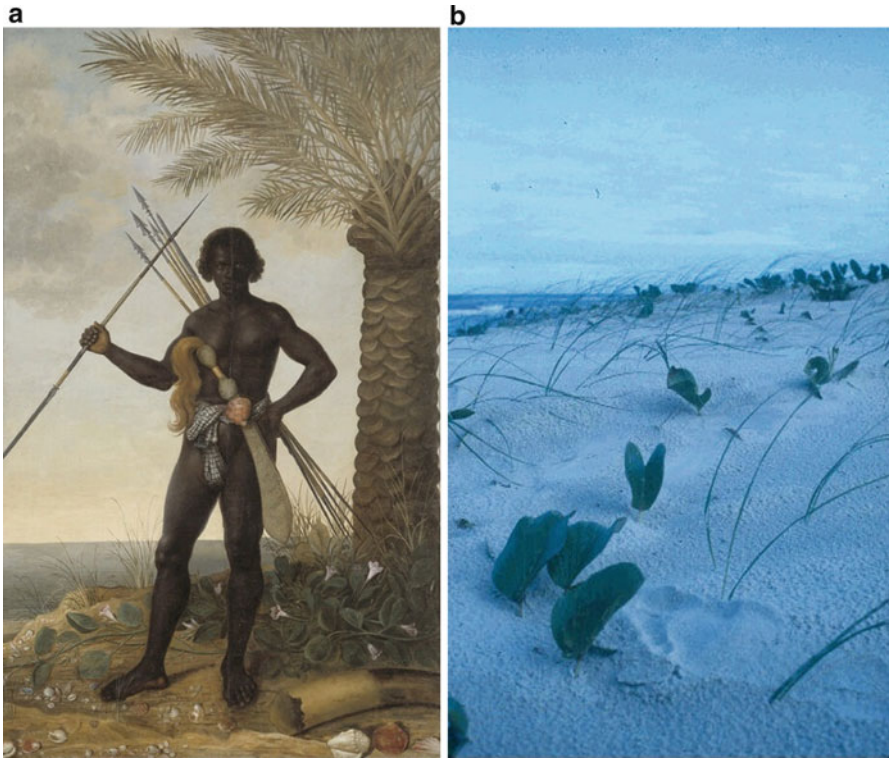

Fig. 14.3 Beach morning glory (*Ipomoea pes-caprae*). Name in West Africa and in some Brazilian Candomblé houses—aboro aibá. (**a**) Painting in Pernambuco, Brazil, late 1600s, by Dutch artist Albert Eckhout (Note morning glory growing behind the figure). (**b**) Photo of beach morning glory near Salvador, Bahia, by Robert Voeks

(anise—*Pimpinella anisum* L.), losna (wormwood—*Artemisia cf. absinthium* L.), and several mints, such as manjericão (*Ocimum americanum* L.), and poejo (penny-royal—*Mentha pulegium* L.).

Plant life form is the other common feature of the Candomblé pharmacopoeia. The herbaceous habit predominates, with 55% of species, followed by shrubs with 15%. Few if any of these inhabit old-growth Atlantic Coastal rainforest. Rather, most are characterized by weedy life histories—they are small, they reproduce rapidly, and they are poor competitors. These plants owe their abundance and diversity to removal of the native forest rather than to its preservation. They occur most often in secondary forests, cattle pastures and plantations, along roadsides, and in kitchen gardens. And many are noxious weeds of pantropical distribution, including quitoco (*Pluchea sagittalis* (Lam.) Cabrera), malissa (*Mimosa pudica* L.), and guiné (*Petiveria alliacea* L.).

The primary forests of the Atlantic Coastal zone are dominated floristically by native trees, treelets, palms, lianas, and epiphytes, yet these habitats and life

forms clearly fail to draw the medicinal and magical plant foraging attention of mães-de-santo. Rather than a natural outgrowth of the region's elevated tropical biodiversity, the Candomblé ethnoflora is highly representative of the profound human landscape modification this region has witnessed during the previous five centuries—it is cultivated, it is disturbed, it is exotic, and it is successional. These species exist within one of the most floristically diverse forests to date identified on Earth, but they are not of it.

These botanical features represent something of a puzzle. On the one hand, the primacy of disturbed habitats as the preferred collection sites for healers has been established in recent years by quantitative studies of the differing ethnobotanical value of old-growth and second-growth tropical forests (cf. Chazdon and Coe 1999; Gavin 2009; Voeks 2004). Familiar, accessible, and often rich in secondary compounds, herbs, cultivars, and nonnative species represent ideal candidates for plant pharmacopoeias (Stepp and Moerman 2001). In this regard, the plants employed in Candomblé magical and medical ceremonies are consistent with other similar ethnofloras. Nevertheless, the near total absence of native, old-growth trees stands in contrast to most indigenous forest pharmacopoeias. Native communities living in the lowland tropics not only possess biologically diverse medicinal and magical pharmacopoeias, but they also employ the full range of life forms, nearly always including the bark, roots, flowers, and fruit of native trees (cf. Bennett et al. 2002). Why is the Candomblé ethnoflora so different?

Black Atlantic Floristic Homogenization

By most standard measures of botanical similarity, Africa and South America have little in common. So taxonomically different are the two floras that Paul Richards termed Africa the botanical "odd man out" (Richards 1973: 21–26). The combined effects of continental drift, 100 million years of geographical isolation, pronounced climatic oscillations, and taxonomic divergence add up to a relatively minor shared floristic ancestry between these distant biomes. Indeed, according to this "nature minus people" view of Brazil's biogeographical legacy, newly arrived African bondsmen would have encountered few opportunities to reconstitute their plant-based food and healing traditions in the New World.

But this myopic view of plant geography disregards the profound botanical enrichment that occurred over the five centuries of the Columbian Exchange. Determined to recreate elements of their lost floral landscape, European traders, colonists, and missionaries went to considerable lengths to acclimate their useful Old World plant species and to introduce recently discovered foods and medicines and spices from Africa and Asia. The scope of this biotic homogenizing project was astonishingly rapid and global, linking the distant and barely known colonized shorelines of Southeast Asia, India, sub-Saharan Africa, the Mediterranean, and tropical America. In the New World, the arrival of European, African, and Asian cultivars doubled or even tripled the number of indigenous cultivated food crops

(Crosby 1993). So effective were these introduction and acclimation efforts that by the end of the sixteenth century, the abundance of introduced plants and animals of European origin in Bahia moved Padre Fernão Cardim to state that "This Brazil is already another Portugal" (Cardim 1939 [1584]).

The quest to learn about new and useful species, and the motivation to effect their near-global dispersion, was, according to Cañizares-Esguerra (2006), a product of scientific curiosity, patriotism, individual enterprise, and nationalistic campaigns. Missionaries were especially effective botanical vectors, their efforts to disseminate recently identified edible and medicinal species matched only by their proselytizing zeal. The Jesuits in particular, for whom studying and exploring nature was "one way of worshipping God," were committed to learning and spreading the world's *materia medicas* (Anagnostou 2007: 294). Stationed in missions throughout the world and in long-term intimate contact with indigenous people, the clergy was probably better placed to apprehend and distribute the world's useful species than any group on Earth (Harris 2005). At the same time, as infectious diseases navigated distant points of the tropical compass, European settlers—especially the Portuguese, French, Spanish, English, and Dutch—went to considerable lengths to globalize newly encountered indigenous pharmacopoeias for humanitarian relief and for profit (Rutten 2000). Concerted efforts to acclimate foods and medicines were initiated early by European medical schools and physic gardens. Beginning in the mid-sixteenth century, seeds and seedlings were dispatched to European centers and to distant tropical colonies, for example, the Cape of Good Hope (1652), Calcutta (1787), Ceylon (1821), Java (1811), and the Jardin Botanico in Rio de Janeiro (1808), guaranteeing that farmers and merchants had access to a cornucopia of novel agronomic opportunities (Gunn 2003). The great European botanical gardens, including Kew in London and the Jardin du Roi in Paris, were pivotal in this botanical homogenization endeavor, particularly when the intent was to breach lucrative botanical monopolies. Employing various means, from patronage to outright theft (Gramiccia 1988; Spary 2000), agents of the garden circuits orchestrated the transfer of clove, cinnamon, vanilla, cinchona, rubber, ginger, and many others. For British botanist Sir Joseph Banks, in a 1787 letter to Sir George Yonge (Chambers 2000: 90), these transfers of botanical resources were not so much "Filching from another country its commercial advantages" but rather fulfilled the lofty goal of "the production of nature usefull for the support of mankind that are present confined to one or the other of them."

Importantly, many of the most common exotic esculents from Asia, Africa, and tropical America had made their way around the globe well before these nationalistic efforts took place (Figs. 14.4 and 14.5). For example, according to Ho (1998), China witnessed the arrival of the American peanut (groundnut) by 1540 and the sweet potato by 1563. New World maize was being cultivated in the Chinese interior in 1555, suggesting its arrival several decades earlier. American guava was growing in India by 1673 and in Kampuchea by 1676. New World pineapple was cultivated in India by 1564, as was avocado by 1750 (Achaya 1998). French botanist Michel Adanson (1759: 165), working in present-day Senegal, noted in 1750 that on dry ground you can see "guavas, acajous [cashew], two sorts of paw paws [papaya],

Fig. 14.4 Early colonial diffusion of African crop plants to Latin America and the Caribbean (Sources: Acosta 1970 [1604]; Cardim 1939 [1584]; Carney and Rosomoff 2009; Crosby 1993; Edwards 1798; Labat 1724; Monardes 1580; Nóbrega 1886 [1554]; Piso 1948 [1648]; Rochefort 1681; Sloane 1707; Sousa 1971 [1587]; Stedman 1988 [1790]; Trapham 1694; Rolander 2008 [1754–1756]. Map drawn by Kelly Donovan)

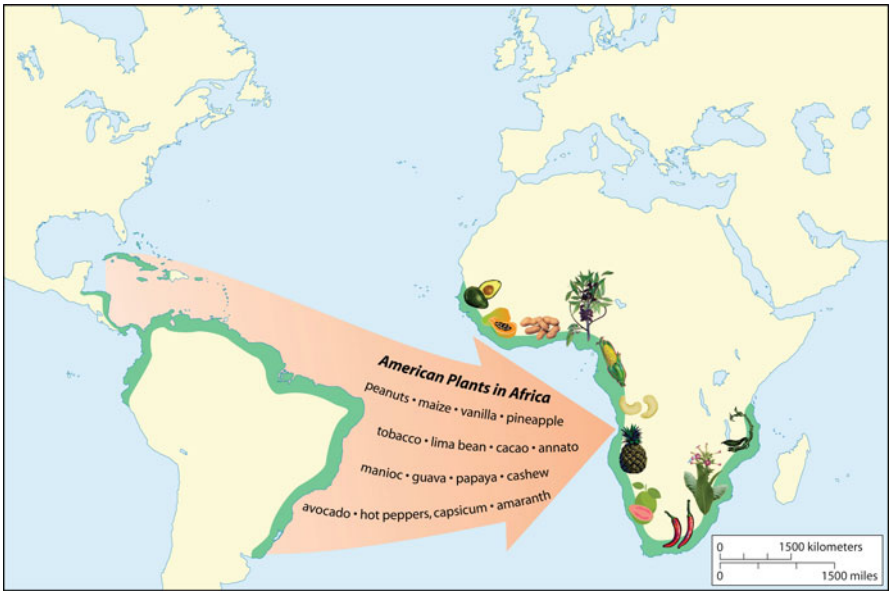

Fig. 14.5 Early diffusion of crop plants to sub-Saharan Africa (Sources: Achaya 1998; Adanson 1759; Alpern 2008; Atkins 1737; Bosman 1721; Dampier 2007 [1697]; Orta 1913 [1563]; Hair et al. 1992; Poivre 1770; Purseglove 1974; Santos 1609; Wadstrom 1795. Map drawn by Kelly Donovan)

with orange and citron trees of exquisite beauty … [and] the roots of manioc [cassava]," all of which are East Asian or American domesticates. In the early seventeenth century, Dominican missionary João dos Santos (1609: 9) observed from present-day Mozambique that "There are lots of pineapples, excellent as the ones in Brazil." Alpern (2008) reports that American prickly pear, papaya, guava, soursop, and cashew were all present in West Africa prior to 1650. Manioc from South America was cultivated in the Congo Basin by 1558, and maize was recorded as early as 1540 growing on the Cape Verde Islands (Camargo 2005; McCann 2005). In the Caribbean, fruits of Asian origin were so thoroughly acclimated by the late sixteenth century that Jesuit missionary José de Acosta (1970: 265) could report "whole woods and forests of orange trees." Likewise, Asian banana and plantain were reported in eighteenth-century Suriname, so common that Dutch officer John Stedman (1988: 296–297) described them as "the Bread of this Country." From present-day São Paulo, Brazil, Jesuit Padre Joseph de Anchieta noted in a 1585 letter that "from Africa there are lots of melons and beans that are better than those from Portugal" (Cartas Jesuíticas 1933). Clearly, by the end of the seventeenth century, wherever one traveled in the equatorial latitudes, he or she was likely encounter a wealth of familiar food plants.

Accompanying these intentional introductions were multiple, but largely unreported, accidental transfers of weedy herbs and shrubs. Arriving as stowaways on the thousands of ships plying the tropical sea lanes, opportunistic species, many invasive, silently colonized the increasingly disturbed floristic landscapes of Asia, America, and Africa. Although explorers and settlers failed to notice weedy taxa, many clearly arrived early in the colonial period, were tested by local communities, and were ultimately incorporated into local foodways and pharmacopoeias (Pfeiffer and Voeks 2008). Among the few species that observers noticed was the castor bean (*R. communis*), known to Europeans as Palma Christi, or the hand of Christ (Fig. 14.6). A readily identifiable shrub both cultivated and spontaneous, this plant has been known and used medicinally since ancient times. It was discovered in Pharaonic pots dating to 2,000 BCE and is recorded in the Bible (Scarpa and Guerci 1982). Although likely native to Egypt, castor bean had arrived and was being employed medicinally in India by at least the early sixteenth century (Pires 1967: 69) and was reported growing in West Africa by 1697 (Petiver 1697) as well as the Antilles and Brazil by 1681 and 1648, respectively (Rochefort 1681; Piso 1948: 384–385). Today, this globally invasive species is counted among the personal pharmacopoeia of orixá Omolu and is known throughout Brazil by its Bantu lexeme, mamona.

The effect of these intentional and accidental botanical transfers was a wholesale reorganization and dramatic enrichment of the humanized landscapes of the tropical latitudes. Primary habitats that were distant from centers of human activities, then as now, sustained high numbers of endemic trees, lianas, epiphytes, and shrubs known in most cases only by local indigenous peoples. But those vegetation associations occupied and created by people—swiddens, plantations, fallows, trails, and dooryard gardens—were occupied by many of the same crop plants and medicinal species, regardless of the continent in which they were domesticated. This increasing

Fig. 14.6 Historical reference to castor Bean (*Ricinus communis*). Known in Brazil as mamona, a Bantu term, this species is associated with the Candomblé god of smallpox and infectious disease—Omulu—perhaps due to the plant's explosive capsules and to the deity's renowned explosive temper (Map drawn by Kelly Donovan)

floristic similarity of the tropical latitudes was noted or at least suspected by colonial physicians and naturalists. From Goa, India, the Portuguese doctor Garcia da Orta concluded that "The medicines were never better known than at present, especially by the Portuguese … as a result of having transplanted them from one land to another" (Orta 1913 [1563]: 121). Sir Hans Sloan, who was both well traveled and possessed botanical collections from all over the world, also supported this view, reporting in 1707 that "I find a great many plants common to Spain, Portugal and Jamaica and the East Indies and most of all Jamaica and Guinea [West Africa]." (cited in Stearn 1988). Likewise, Carl Linnaeus, whose formidable familiarity with the world's tropical floras came from his apostles rather than personal experience, "tended to regard the tropical flora of the world," according to Stearn (1988), "as rather uniform" (Stearn 1988: 781).

Candomblé Spiritual Flora: Continuity and Change

The ebb and flow of crop plants, medicinal plants, and useful weeds, as well as the knowledge of their uses and cultural meanings, between Asia, Africa, the Mediterranean, and the Americas, facilitated cultural continuity and transculturation of foodways and religious ceremonies among Brazil's black diaspora. Some were direct transfers, such as the African oil palm (*E. guineensis*), first introduced by the Portuguese to Brazil for commercial purposes. The oil of this palm (dendê)

plays a pivotal role in animal sacrifices and offerings (ebó) to orixá Exú and is used as cooking oil for many foods that are dedicated to one or another of the black deities. Other introduced African cultivars served as provisions on the slave ships and were transplanted, either by Africans or Europeans, for cultivation in slave or freedmen kitchen gardens (Carney and Rosomoff 2009). These included okra (*Abelmoschus esculentus* (L). Moench), an iconic staple of many African-American cuisines. In eighteenth-century Guyana, according to Bancroft (1769: 73), okra continued its dual West African role as food and abortifacient among enslaved Africans. Known in Brazil as quiabo, a Bantu term, okra is a sacred food for orixás Xangô, Iansa, and Ibeji. It is served freely to the public on December 5 as a stew (caruru) containing okra, dendê, and shrimp (Lordelo and Marques 2010). Caruru is also associated with the celebration of Ibeji, the mythical Yoruba twins, and in many cities is served freely as a religious obligation. But while the ingredients of caruru are mostly African in origin, and its preparation is associated with African-derived ceremonies, caruru was in fact originally an indigenous South American stew made with cultivated amaranth (*Amaranthus* sp.), a New World grain. Several of these edible amaranths, as well as the tradition of preparing them as caruru, were introduced to Africa early in the slave trade by the Portuguese. Over time, the amaranth component of this introduced South American cuisine was replaced by okra. Finally, having been adopted into West African culture, this Africanized caruru was reintroduced to Brazil by slaves and their descendants, who continue to prepare what has become a sacred food (Camargo 2005; Voeks 1997).

As in the case of okra, many of the plants and their uses that today represent spiritually relevant species to the Candomblé community arrived by circuitous means, and many were temporally contingent. Thus, whereas the majority of the species employed in Candomblé ceremonies are in fact American in origin, several are considered part of an African botanical legacy, and several maintain West African names in Brazil. This circumstance resulted from the asynchronous transatlantic movement of plants and people. As noted above, Europeans transferred many American species to Africa and Asia within a few short years of colonization, and most of these crops and (speculatively) weeds arrived during the first two centuries of exploration and colonization, that is, the sixteenth and seventeenth centuries. However, the bulk of slave traffic occurred later. Of the total of 4.8 million Africans brought to Brazil between 1550 and 1851, 80% (roughly four million) arrived after 1700 (Eltis and Richardson 2008: 49–50). Consequently, during the many decades after these exotic crops diffused to sub-Saharan Africa, local people must have come to perceive many as natives, which from a local perspective they were, and went on to incorporate them into cultivation regimes and ethnomedical practices. All of this would have occurred well before the peak of slave traffic in the eighteenth century. When Africans were enslaved and transported across the Atlantic generations after American species had been incorporated into their regional ethnofloras, they would have encountered food and medicinal species they considered to be their own. One elderly pai-de-santo (Vicente de Ogun) was clear on this point, noting that one or another spiritual species "é nossa," (is ours), meaning from Africa. Consequently, although many of the species used in Candomblé worship are New World in origin,

Fig. 14.7 Author holding folha-da-fortuna growing along a path in Bahia

it is quite likely that they had been assimilated into their ethnofloras centuries earlier in Africa. New World maize, for example, was assimilated into Yoruba recipes in present-day Nigeria for good luck, wealth, and healthy births (Verger 1995: 41–46). Today, it is the sacred food of several of the black divinities. And pantropical weeds of American origin, such as malissa (*M. pudica*), guiné (*P. alliacea*), and alfavaquinha-de-cobra (*Peperomia pellucida* (L.) Kunth), are now employed for similar medicinal and magical ends in West Africa, Brazil, and Cuba (Barros 1983; Voeks 1997).

The integration of the American peanut (*Arachis hypogaea* L.) into African diaspora ethnobotanical usage is instructive. Native to southern South America, peanuts were transplanted and naturalized by the Portuguese in West Africa by 1660 and possibly earlier (Alpern 2008). They spread rapidly from farmer to farmer, perhaps because of their similarity to the native Bambara nut (*Vigna subterranean* (L.) Verdc), a domesticated but less productive African tuber (Smith 2002: 9–13). The frequency of their appearance in contemporary African pharmacopoeias suggests that peanuts became both a food crop and a significant ethnomedical component (cf. Dalziel 1948; Verger 1995). Later, as a common provision on slave ships, peanuts were transferred over time to African-American gardens along the Atlantic coast. The Virginia variety, which had earlier journeyed to West Africa via Mexico and the Antilles, was thus (re)introduced in the seventeenth century to the West Indies and North America. Thus, following a journey to and from West Africa, peanuts over time came to be identified as a cultural marker and magical species for Africans and their American descendants (Voeks 2009).

The importance of weedy plant transfers is suggested by the presence and use of folha-da-fortuna (*Kalanchoe pinnata* (Lam.) Pers.), also known in some terreiros by its Yoruba lexeme, oju orô (Fig. 14.7). Although most of the species in the genus

Kalanchoe appear to be of African origin, their widespread dispersion during colonial times complicates pinpointing their original distribution. What is apparent is that newly arriving Africans in Brazil recognized this and other exotic Kalanchoes, applied its West African name, and continued traditional (or perhaps developed novel) meanings and uses. This weed and ornamental is today an element in orixá Oxum's pharmacopoeia. This deity's passion for wealth accounts for her association with this "leaf of fortune," which has the habit of sprouting roots and seedlings at its leaf margins (vivipary). This plant's perceived ability to create something from nothing (it is sometimes hung on the door to "attract money") underpins its connection with Oxum (Voeks 1997).

Conclusions

Brazil's African diaspora maintain a biologically diverse spiritual ethnoflora. Some species and uses represent a direct transfer of sub-Saharan traditions to the Americas, others suggest fusion and negotiation with Amerindian and European traditions, and still others likely constitute completely novel uses and meanings of native and exotic plants. Africans arriving as chattel slaves in Brazil encountered primary forests that were strange and mostly unknown to them, but the settled landscape into which they were forced to reside and toil was by the time of their arrival brimming with familiar esculents and medicinal plants. The grand transatlantic biotic exchange initiated in the sixteenth century created coastal poles of useful plant similarity facilitating a relatively seamless ethnobotanical transition for forced African immigrants. Many of these species were incorporated into ceremonies associated with the development of Candomblé, itself a reformulation of various Yoruba-Dahomey traditions and practices. Some species were perceived as especially reflective and symbolic of distant Africa and became over time iconic and even "sacred" in the sense that they retained their West African lexeme, became associated with one or another of the pantheon of black divinities, and were incorporated into ceremonies believed to be practiced by their ancestors (see Rashford 2012, this volume).

The notion that the plant knowledge sustained by African diaspora communities is lacking or somehow inferior is not supported by this project or others. The descendants of enslaved peoples throughout tropical America employ plants for food, construction, craft, medicine, magic, and the other use categories, just as do indigenous groups. But whether or not qualitative or quantitative differences exist between native and immigrant groups remains to be seen. The inchoate nature of immigrant ethnobotanical traditions, at least in the case of African descendants, is suggested by the numerical dominance of successional, domesticated, exotic, and herbaceous species. For example, in and around Recife, Brazil, Albuquerque (2001) reported that most of the 60 species used by Afro-Brazilian religious groups are either New World or European in origin, and nearly all are herbaceous. In the Afro-Brazilian community of Sao Benedito, Schardong and Cervi (2000) found 182 ethnospecies (122 identified to species rank) employed for medicinal or cosmetic purposes, and an additional 17 species used in spiritual healing ceremonies. Again,

nearly all were herbs, the majority cultivated in kitchen gardens or maintained in otherwise weedy habitats. In another study carried out in Candomblé temples, the three most speciose families were Asteraceae, Lamiaceae, and Fabaceae, all herbaceous (Pires et al. 2009), and in a study of Afro-Cuban medicinal species, the majority were determined to be herbaceous, exotic, and weedy (Moret E, 2008, personal communication).

Does the dominance of herbaceous, cultivated, and weedy species in immigrant ethnofloras suggest a stage in the ethnobotanical acquisition and/or retention process? Recent research with Maroon communities in Suriname appears to support this view. Van Andel et al. (2012, in this volume) discovered among Afro-Surinamese practitioners of Wintu religion a high proportion of trees and primary forest species (40%) in their magical flora, a dramatic departure from previous findings. What is different about this group is their extreme isolation in the interior old-growth forests, their remoteness from coastal anthropogenic habitats, and their lengthy residence in the region, upward of three centuries. As van Andel et al. point out, "The assumption that the paucity of trees in black diaspora healing floras is a product of lack of time and experience in the South American forest (Voeks 2009) may hold for the Afro-Brazilian population, but certainly not for the Suriname Maroons." Further light on this question is shed by Hoffman (2012, this volume) who carried out the first cross-cultural comparison of ethnobotanical knowledge among indigenous (Trio Amerindians) and African diaspora (Saramaccan Maroons) groups. Although he reports that after 350 years the Saramacca have developed a "robust hybrid ethnobotany," Hoffman also discerned significant differences in plant knowledge between the groups. The indigenous Trio "know more" species overall, but the Saramacca have a particularly elevated knowledge of secondary as opposed to primary forest. If ethnobotanical traditions are indeed space and time contingent (Alexiades and Peluso 2009), the results of this and other work among America's African diaspora may provide a guidepost as to how the process progresses—from ubiquitous crops and weeds, to disturbed forests and fields, and ultimately to old-growth habitats. In order to understand the processes of continuity and change that shape foodways and pharmacopoeias, ethnobotanists are encouraged to pay greater attention to human diasporas.

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