

**OF FISHPOTS, BONNETS, AND WINE:
THE CULTURAL HISTORY OF THE BERMUDA PALMETTO**

by

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Abstract

This thesis represents the first academic study of Bermuda's historical ethnobotany. Settled by the English in the early 17th century, Bermuda soon gave rise to a set of interfused hybrid cultures formed by people from around the Atlantic Basin. While inhabitants were shunted into political categories according to social standing (slave, slave-owner, indentured servant, land-owner, etc.), in reality each group arrived with traditional ethnobotanical knowledge which they rapidly adapted to the new social, political, and ecological climate.

Until the 20th century, Bermudians were dependent on the island's two dominant, endemic forest species: *Sabal bermudana* L.H. Bailey (Bermuda palmetto) and *Juniperus bermudiana* L. (Bermuda cedar). While much is known and has been written about the cedar, this thesis focuses on the palmetto which played an equal, if not more fundamental, role in the island's economy and daily life. The palmetto was an invaluable source of food, wine, and household goods to 17th century settlers; its leaves were central to the 18th century plaiting and hat-making industry; and, now an endangered species, it is pivotal to today's conservation and ecological restoration efforts. By tracing the rise and fall of palmetto use in Bermuda, we gain a lens through which to consider Bermuda as a complex social-ecological system, one that, both socially and ecologically, has been in constant flux since its inception. Some of the driving forces explored in this thesis include the adaptation of knowledge from Bermuda's constituent cultures, the implementation of British colonial values and law, migration, slavery, scarcity of natural resources, starvation, the industrial revolution, and economic globalization.

While this multiplicity of factors has led to a sharp decline in plant knowledge in Bermuda in the last century, many Bermudians are keen to preserve their hard-won traditional knowledge, evidenced by the small but impassioned cultural-revitalization and conservation movements on the island. Appendix A, therefore, provides a catalogue of plants of historical and present-day value in Bermuda and serves as a record for present and future generations. This list is supported by herbarium specimens, housed at UBC, to ensure accurate identification.

Lay Summary

This thesis presents an historical ethnobotany of Bermuda in two parts. The first section traces the cultural history of Bermuda's endemic palmetto since the island's settlement in the early 17th century. This research aims to offer a fresh perspective of Bermuda's social, political, and ecological history, one that highlights the contribution and innovation of people from its many constituent cultures. The story of the palmetto sheds light on the many social and ecological forces that can affect a people's relationship to plants, thereby fundamentally changing their culture, such as migration, slavery, ecological change, global trade, and technological innovation. Appendix A contains a catalogue of plants of historical and present-day value in Bermuda. It aims to document and preserve 'hidden', lost, or vanishing knowledge through highlighting plant uses from historical sources and recording knowledge shared by living knowledge-holders.

Preface

This research was designed, carried out, and analyzed by the author alone with the approval of the UBC Behavioural Research Ethics Board under certificate number H16-01817.

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This research is dedicated to the palmetto tree: without you, we wouldn't be here.

Chapter 1: Introduction

[...] *Palmeta-trees,*
Whose uses are so many, not unfold
Them all can any man, from Winters cold
It keeps their Houses thatch'd with't, & its mats
For bedding madkes, with baskets, brooms, & hats
Nay more, it Cordage doth afford, in 'ts top
A Cabbage grows, for meat, and do but lop
Or bore a hold in't, you may plainly see
A pleasant Liquor flowing from the Tree;
Its fruit is luscious, whole stone's black and Jett
Will make neat Buttons, if with Silver set;
And its dry Leaves will serve in darksom night
In stead of Torches, Travellers to light.
Of all the Trees that is, or ever were,
None to the straight *Palmeta* may compare.

—John Hardy, 'Description of the Last Voyage to Bermudas in the ship *Marygold*, S.P. Commander, Nov. 12, 1670 - May 3, 1671' (Lefroy, 1871)

The social-ecological history of Bermuda presents an unusual window into the effects of Atlantic World colonialism on the plant use and knowledge of translocated, hybridized communities.

Bermuda's 400-year history, seen through an ethnobotanical lens, illustrates the effects that the terrestrial flora of a landscape can have on the adaptive developments of a culture, as well as the often-devastating effects of a rapidly adapting culture on the integrity of an ecosystem.

Two of Bermuda's endemic trees, the *Juniperus bermudiana* L. (herein called 'cedar') and the *Sabal bermudana* L.H. Bailey (herein called 'palmetto') proved invaluable to Bermudians for the majority of Bermuda's history. While much is known about the cedar, this thesis focuses on the palmetto which played an equal, if not more fundamental, role in the island's economy and daily life. By tracking the shifting practices and paradigms in how people related to the palmetto over five economic eras, we can gain greater insights into the cross-scale effects of internal and external influences, both social and ecological, on the overall direction and health of Bermuda's landscape and its people.

Situated 1070 km off the coast of North Carolina, isolated in the Atlantic Ocean, Bermuda is an archipelago of about 200 volcanic islands and islets, with a total landmass of just over 53 square km. There were no indigenous people on the island; and no people at all, as far as is known, until the early 1500s, and then only shipwrecked sailors and passersby. Settled by the

British colonists a century later, the island soon gave rise to a set of interfused hybrid cultures formed by people from around the Atlantic Basin (Craven, 1949). While inhabitants were categorized according to social standing (slave, slave-owner, indentured servant, land-owner, etc.), in reality each group arrived with traditional ethnobotanical knowledge which they rapidly adapted to the new social, political and ecological climate. It was this knowledge that helped the islanders to survive rapid changes in social and ecological dynamics, and that helped to form the foundation for the group of diverse and interrelated identities known today as ‘Bermudian’.

From the uninhabited island’s first recorded discovery in 1505 to the early 20th century, the palmetto (Figure 2) provided, variously, food (as a vegetable, fruit, and meal from the terminal bud, fruit, and ground seeds), drink (as a fresh juice or fermented wine from the sap), shelter (thatching and basic structures from the leaves), and other forms of material culture (baskets, fans, buttons, hats, mattresses, and other daily essentials, primarily from the leaves). By the late-1600s, plaited palmetto leaves were the source of a female-led export economy, keeping Bermuda in essential trade relationships with North America and Britain, and facilitating the migration of Bermudians and Bermudian knowledge to neighbouring British colonies.

Today, the palmetto is no longer needed to maintain Bermuda’s economy, and the household goods it once provided have long since been replaced by inexpensive imports. Ecologically, it is listed as an endangered species, threatened by habitat loss and crowded out by the introduced invasive *Livistona chinensis* (Jacq.) R.Br. *ex* Mart, commonly called ‘Chinese fan palm’. Bermuda’s traditional ethnobotanical knowledge is similarly endangered: a handful of people know how to weave the plait that was once the island’s greatest source of income; most people cannot differentiate the palmetto from the Chinese fan palm, and many encourage the fan palm in gardens, unaware of its invasive nature.

Yet all is not lost. To this day, the Bermudian culture continues to adapt to pressures both economic and ecological, most recently visible in governmental and non-profit conservation programs and the promising interest in cultural revitalization. The palmetto, on the brink of extinction and cultural erasure, is playing a key role in both these movements.

By tracing the adaptive changes in palmetto use in Bermuda over the last 400 years, we can start to see the ever-shifting, complex weave of Bermuda’s social-ecological system (Figure 1). In addition to physical dynamics of resource use, it allows us to consider the underlying perception and cultural value placed on plants and nature generally and how that perception has

changed over time. These shifts in use and perception could possibly be extrapolated to represent a similar historical arc experienced by other cultures and communities caught in the wave of European colonialism and globalized technological innovation that has swept much of the world. Some of the internal and external drivers of change explored include human migration, slavery, the sharing and adaptation of plant knowledge from many constituent cultures, the influence of the island's biota on culture and community, the influence of British colonial governance and religion on traditional knowledges, the overharvesting and subsequent scarcity of natural resources, agricultural failure, the technical-industrial revolution, the patenting of traditional knowledge, and cultural and economic globalization.

One of the goals of including historical, cultural and generally unacknowledged perceptions in such a narrative is to engage in a discussion on the reciprocal effects of social, economic, and ecological dynamics on a culture's 'relational values' with nature (Klain, Olmsted, Chan & Satterfield, 2017); that is, the ethical values such as reciprocity and kinship with which a cultural group may approach the natural world. The inclusion of diverse worldviews in historical accounts can facilitate the retelling of cultural narratives from non-dominant perspectives, and invite new, or draw attention to, underappreciated concepts, values, ethics, and norms. On a narrative level, for example, this thesis aims to highlight the intellectual contributions of the majority of Bermudians (such as women and enslaved people) whose vital contributions to Bermuda's development as a society are generally not acknowledged beyond their physical labour. Additionally, history told through an ethnobotanical lens can highlight 'nature's' role in sustaining human society, and the oft-unnoticed toll of human action on the greater non-human community. The hypothesis is that by retelling historical narratives one might invite communities to reflect upon present-day norms and worldviews that are generally taken for granted. Such reflection can invite the possibility of new ways of seeing, a 'leverage point' in resource management known as a 'paradigm shift' (Meadows, 2009). Paradigm shifts, if effective, can powerfully alter all levels of decisions going forward, from personal lifestyle choices to legislative and 'resource' management decisions.

Even though Bermuda's social-ecological system has changed dramatically over the last few hundred years, with both landscape and society altering, multiple times, almost beyond recognition, a strong argument can be made for having a wide-ranging and inclusive understanding of historical influences and dynamics before planning future ecological restoration

and cultural revitalization initiatives. The separation of the ecological from the cultural is a relatively recent, and largely artificial divide. By rejoining ecology with anthropology in assessing the current health of a system and in telling its history, each field can support and inform the other.

Chapters 2-6 outline the shifts in use and perception of the palmetto over the course of four major economic eras in Bermuda: 1503-1650: Early visitors, settlement, tobacco, and slavery; 1630-1680 Palmetto wine and torches: African traditions under colonial rule; 1680-1750: Maritime trade: Hats and plaiting; 1840-1930: Agriculture, tourism, and the rise of Western science; 1930-today: Tourism, tax haven, and time to revisit the past. I treat the economic era of 1750-1840, although featured in Figure 1 as an integral part of Bermuda's social-ecological history, as a brief intermission in the text. During that era, Bermuda sloops (made of Bermuda cedar), salt-raking in the Turks Islands, and privateering were the mainstay of Bermuda's economy, and the palmetto's economic and cultural value receded to the background. In Chapter 7, I offer some reflections on the underlying patterns in the system and a few ideas for helping to bring the palmetto back from the brink of extinction, through education, applied conservation methods, and cultural revitalization.

Figure 1 summarizes my thinking about Bermuda as a social-ecological system, in particular the key roles played by both the palmetto and the cedar. This figure serves as a map of the thesis and illustrates the relationship dynamics articulated in each section.

Figures 2-57 provide illustrations for the text, documenting historical and current images of the palmetto and related history. All of the author's photos were taken in 2017.

Appendix A offers a list of culturally valuable plants, both past and present, in Bermuda. This list contributes to the larger picture of translocated knowledge and the introduction of plants of economic and cultural value throughout Bermuda's history. By juxtaposing historical knowledge with information gathered from present-day (2017) interviews, I also hope to show how plant knowledge has both changed and persisted over the years.

1.1 Methodology

I began this project with a broad intention to research Bermuda's ethnobotany. Upon embarking on it, however, I was met with various challenges. The first challenge was very basic. No botanist has written a treatment of Bermuda's flora since Nathaniel Lord Britton's *Flora of Bermuda* almost

100 years ago (1918). As a result, the identifications of the island's flora, both native and introduced, are largely out-of-date, if not erroneous (and greater numbers of unidentified plants have arrived since that time). How, I wondered, can I write an 'ethnobotany' if the 'botany' is still outstanding? Much of Bermuda's flora is introduced, and an interesting approach to researching the ethnobotany would have been to ascertain from where the plants had come, who had brought them to Bermuda, how¹, and why. But without time to both accurately identify the plants and conduct the research into their history, that line of inquiry had to be set aside.

My next obstacle came in realizing that much of Bermuda's traditional ethnobotanical knowledge has been lost. Bermuda is largely developed, almost urbanized. The 2010 census reports a population of 65,059, equating to 12.3 persons per hectare. While some people still use plants for herbal medicine and grow their own food for traditional dishes, this is not the norm. If I focused my study only in the present, interviewed the few extant knowledge-holders in Bermuda, and collected herbarium specimens at the time of the interviews, I was concerned that the gleanings of the study would not merit a thesis.

That left history. I could extract mentions of plant use and knowledge from historical documents, but again I was left with the issue of identification. Without herbarium specimens accompanying those documents (and most of them have none), it would be impossible to know for certain which plants were being referenced.

My final challenge arose when I looked further into Bermuda's history and realized that Bermudian culture is, in fact, a complex set of interfused cultures whose histories and origins have gone largely undocumented, with archival documents written by British colonialists with narrow values and agenda. As a hub of maritime activity, Bermuda had people from many cultures coming and going for some 400 years: what would the ethnobotany of such a community look like? Furthermore, I soon realized that the flora of Bermuda had also changed over the years, both dramatically and often, clearly affecting the ethnobotanical knowledge of the people. My research subject was beginning to look like a giant jigsaw puzzle box filled with pieces from 100 different puzzles, with no picture on the front, and no way of knowing if or how the pieces would fit together.

¹ Carney (2011) relays a story from maroon communities in both Jamaica and Suriname about African women who, on their way to boarding slave ships, hid seeds of valuable plants in their hair. Stripped of their belongings, not knowing where they going, they anticipated needing food and medicine in the place they would arrive.

My solution was to write a thesis in two parts. I first created a list of plants of historical and present-day use in Bermuda, gleaned both from historical sources and interviews conducted in 2017 (Appendix A). To support this research, I collected herbarium specimens to provide hard data of the taxonomy of Bermuda's flora. Next, I launched an inquiry into the reason why so much plant knowledge had been lost in Bermuda. For this, I chose to focus my research on the historical ethnobotany of a single endemic plant: the Bermuda palmetto. This helped to simplify the problem of misidentification and soon became a fascinating lens through which I could understand Bermuda's social and ecological history. Through this research I learned that a whole history of a nation can be understood, in a sense, through its relationship with plants, and that the patterns discernible in the rise and fall of ethnobotanical knowledge in Bermuda could perhaps be extrapolated to help me understand the paucity of plant knowledge in most urban communities today. I soon realized that I could learn as much from the absence of knowledge as I could from knowledge itself.

I began the research by exploring primary and secondary sources for any mention of the palmetto's ecology and ethnobotany. I then contextualized the research by reading more about Bermuda's history, again, both in primary archival sources, and historical and current secondary sources. I also read about the broader Atlantic World context in which the colonization of Bermuda is situated, striving to understand the physical, spiritual, and political climate which gave rise to the culture we know today.

In addition to reading, I conducted nearly a year's worth of fieldwork in Bermuda, both ecological and ethnographic (June-August, 2016; December 2016; February-September 2017). I spent as much time as I could in the remaining tracts of undeveloped land, collecting plants, studying their communities, and learning as much of the flora as I could. I did this both on my own and with local and visiting botanists, including one of my supervisors, Dr. Quentin Cronk. By comparing what I'd learned in the field with descriptions of plant communities from the past (Harshberger, 1905; Verrill, 1902), I began to understand the complex history of Bermuda's flora and wider ecological communities.

Specific to the palmetto, I gained hands-on experience harvesting and processing palmetto leaves for weaving (Figure 45). I offered several lectures on my research, generating a broader conversation on plant knowledge generally and the palmetto specifically. Through these lectures, I met many local Bermudians with a wide range of knowledge and interests relevant to

my field, including historians, ecologists, traditional craftspeople, medicine-makers, politicians, gardeners, farmers, and artists. I also shared my research insights in classrooms and workshops, at both the primary and college level, and helped to start a small palmetto weaving group, gaining firsthand experience of plaiting in a group setting, and providing instruction in the traditional craft².

In addition to research in Bermuda, I consulted with experts in related fields, including but not limited to palmetto cultivation and conservation, straw-hat plaiting in England, and palm-wine making around the world. I also analyzed ethnographies and histories from some of Bermuda's constituent cultures in an effort to trace the contributions made by each to the whole.

1.2 Literature review

There is no academic ethnobotanical literature that focuses on Bermuda specifically. There are, however, primary and secondary sources pertaining to the key aspects of this field. Ethnobotany is, by definition, interdisciplinary. Therefore, pertinent literature includes archival material: including laws, letters, and wills; firsthand historical traveller accounts; secondary sources in history, anthropology, and ethnography; as well as the natural histories, flora, conservation, and ecology of Bermuda and surrounding areas.

Because Bermuda is a composite culture, the above-listed types of literature pertaining to people and places that have contributed to Bermuda's cultural history are also relevant.

1.2.1 History

For historical information on palmetto and other plants, I combed through historical documents, both published and unpublished, looking for pertinent references. Ethnobotanical knowledge, being the stuff of everyday life, is generally not documented in recorded history, and then only by a few. To unearth it in archives and historical documents is to look for offhand mentions of plant use. A few books, many of them out of print, are the exception to this.

The earliest documents addressing the formation of Bermuda as a colony (Strachey and Jourdain (1610/1964), John Smith (1632), de Herrera y Tordesillas (1601), and Nathaniel Butler

² I learned to plait from Bermudian artist Ronnie Chameau, augmented by the very detailed instructions and myriad designs in Cooke and Sampley Cooke, V., & Sampley, J. (1947/2013). *Palmetto braiding and weaving: Using palm fronds to create baskets, bags, hats and more*. Brattleboro, VT: Echo Point Books and Media.

(1662)) are all useful as they articulate a first view of Bermuda's landscape and describe the earliest uses of Bermuda's plants by those ship-wrecked on or passing by Bermuda's shores. The identification of the plants may be difficult to ascertain because common names from those times, rather than Latin names, are used. The descriptions, however, are often accurate enough to allow one to make an educated guess as to their identity.

Bermuda's National Archives are a rich source of material, including legal documents, the letters of various governors, early editions of published manuscripts, newspapers, diaries, travellers, legal records pertaining to property and slavery, and fine art of both Bermuda's flora (incl. the botanical art of both Lady Lefroy and Lady Laffan), and plant uses. Governor John Henry Lefroy's *Memorials of the Discovery and Early Settlement of the Bermudas Or Somers Islands, 1515-1685* (1884; 1981) are an invaluable compendium of early resources, providing a range of archival material from letters to poetry. Documents from early colonial days reflect the social order and disorder. Legal proceedings, for example, provide a window into the creation of the slave society in Bermuda and how it was regulated. In addition to Lefroy, other authors have combed Bermuda's archives and sorted according to subject. Mercer (1982) compiled an excellent source of Bermuda settlers of the 17th century, listing wills and other legal documents organized by surname. While this is less useful for tracing family lines of people who were enslaved, it still give clues, if only tracked through first names, dates, and households. Hollis Hallett (2005) also has an excellent compilation of government records with an index for cross-referencing. The Bermuda Historical Quarterly, available in the National Archives, provides a similar service for historical documents, with an index searchable by subject, including several plant names directly (coffee, palmetto, etc.).

In such sources one can find other topics pertaining to ethnobotany, including early settlement needs and import products (generally advertised in newspapers), agriculture, private property and property rights, early conservation laws, exports, medicine, weather patterns, and so on. The Royal Gazette's online archive is extremely helpful in this area.

The other sources of occasional insight are travel guides written by visitors to Bermuda or by Bermudians wishing to guide travellers on their once popular island. Bermudian William Zuill wrote *Bermuda journey: A leisurely guidebook* (1946). Visitor Suzette Harriet Lloyd (1835) and others (i.e. Cotter, 1828) documented their visits to Bermuda in the late 19th century with serial

publications, letters home, and small collections of reflections, insights, and the occasional drawing.

Early historians of Bermuda's general history help to provide a basic framework for a chronology of events. They include Godet (1860), Craven (1949), and Wilkinson (1958). In recent years, there have been several very fine historians looking anew at Bermuda's history, including Dr. Clarence Maxwell (2000, 2017), himself a Bermudian based at Millersville, PA; and American Dr. Michael Jarvis (2010), based in Rochester, NY, who also conducts archaeological fieldwork on Smith's Island and other locales around Bermuda. Some historians have focused on a particular aspect of Bermuda's social history: Cyril Packwood (1975, 1980), who focuses on the history of African Bermudians; Elaine Crane (1990), on early female economy in Bermuda; Heather Kopelson (2014), on religion and slavery in Bermuda; and Virginia Bernhard (1999), on slaves and slaveholders. All of the above provide valuable alternative perspectives and points of view not offered in the heretofore dominant narratives. For a broader discussion on slavery in Africa and the Americas, Heywood and Thornton's *Central Africans, Atlantic Creoles, and the foundation of the Americas, 1585-1660* (2007) is indispensable; while Tinker's (2011) *The migration of peoples from the Caribbean to the Bahamas* lends key insights into the dynamic relationship between Bermuda and the Bahamas.

Additionally, there are several memoirs of traditional life in Bermuda that give details of plant use. These books are part memoir, part social history, written by people who realized that the Bermudian way of life was changing beyond recognition and sought to record traditions. Among the most informative are McCallan's *Life in Old St. David's* (1948) in which he names many plants and their uses, footnoted with their scientific name (notes and early drafts of this book are in the Bermuda National Archives, and provide additional insights); the letters and journals of Emily Pugh captured by her grandson Scott Ballard in *Bermuda, 1899: The Memoirs of Emily Pugh* (Stallard, 1899/1999); Helen Fessenden's *Childhood Memories of Bermuda in the '70s* (1948); and Nellie Musson's *Mind the Onion Seed* (1979), a tribute to the contributions of black women to Bermuda's culture and history.

Even outsiders recognized the need to record Bermuda's disappearing traditional knowledge. Winslow Bell, a visitor to Bermuda, wrote the unpublished *The forgotten art of plaiting* (1906), followed in the 1940s by Cooke and Sampley (1947/2013) with their extraordinary book on palmetto plaiting in the Carolinas, again because they saw the art was being lost. There was a

strong historical connection between palmetto plaiting techniques in the Carolinas and in Bermuda (which they mention briefly), and likely Cooke and Sampley were inadvertently recording that knowledge for descendants of Bermudians as well.

Myriad early travellers' accounts from Africa, the Caribbean, and the Americas provide insights into the use of plants in Bermuda's known constituent cultures as well as migration of plant knowledge with slavery. These include: Bosman (1705); de Herrera y Tordesillas (1601); de Rochefort, C. & John Davies (1666); Lawson (1709); Lopes, Moreau de Saint-Méry (1798/1958); Pigafetta (1591/1969); Pigafetta, Hartwell, & Rogers (1597); Purchas (1625); and Wafer (1699/2010). Their shortcoming, of course, is the bias and outsider position of the authors who cannot be relied upon to understand with any depth or sensitivity the cultural activities they were observing.

1.2.2 Ethnobotany

There are three out-of-print books dedicated to plants and traditional plant uses which I have drawn upon. These are: Louisa Hutchings Smith's *Bermuda's "Oldest Inhabitants": Tales of plant life* (1950); Jill Collett's *Bermuda: Her Plants and Gardens, 1609-1850* (1987), full of historical research including plant uses, their early mentions in the literature, and their possible dates of introduction; and Barbara Burland's *Medicinal Plants and Old Time Remedies of Bermuda* (1965), a tiny book that could fit in the palm of your hand, about 35 pages long, with common medicinal remedies as well as non-botanical tricks (like putting a cockroach on a string down one's throat for congestion).

In print and useful is The Bermuda Garden Club's *Bermuda: A Gardener's Guide* (2002), edited by G. Ogden, which devotes several pages to mainly herbal remedies, and Kuni Frith-Black's *Bermudian Folk Remedies* (2014). I used *Bermuda: A Gardener's Guide* as a reference, although I found that books in this category had generally consulted the same historical sources as I. *Bermudian Folk Remedies* helped me to make note of certain plants, but I did not use the author's usage notes in my table; much of Frith-Black's work is based on firsthand knowledge and direct research with Bermudian knowledge-holders in the community. I feel that her work, widely circulated and known, stands on its own, and so I opted to write something that I hoped would contribute to that same body of knowledge.

Only some of the aforementioned primary and secondary sources mention the plants by scientific name, and none – so far as I can find – include a collection of herbarium specimens. H.B. Small wrote *Botany of the Bermudas* in 1913. He lived in Bermuda for many years, and therefore documented local uses that previous natural historians and botanists neglected to mention or mentioned only briefly. His mentions, however, are also extremely brief. Unfortunately, I have not been able to locate his herbarium specimens to better match his descriptions to particular species, although the inclusion of the Latin name certainly helps.

For African plant knowledge that migrated to the Caribbean, Judith Carney's work (2011) is excellent, as is Tinde van Andel's (not cited). Pieroni and Vandebroek's *Traveling Cultures: The Ethnobiology and Ethnopharmacy of Human Migrations* (2007) is a collection of papers on the migration of plant knowledge that provides an overview of this phenomenon.

Useful ethnobotanics of Bermuda's constituent cultures include Austin's *Florida ethnobotany* (2004); Iwu's *Handbook of African medicinal plants* (1993), and papers on plant use in specific communities, such as Torres-Avilez et al's *Medicinal plant knowledge in the Caribbean Basin: A comparative study of Afrocaribbean, Amerindian and Mestizo communities* (2015).

For perspective on the relationship between botany and colonialism, see Schiebinger (2004 and 2017), as well as Stearns (1970) for an excellent treatment of science in the British colonies of the Americas generally.

Papers that focus on the cultural use of palms in Africa and the Americas include Smith (2004); Gruca, van Andel, & Balslev (2014); Francisco-Ortega & Zona (2013); and Dalibard (1999).

A recent video series put out by Bermuda's Department of Community and Cultural Affairs touches on many subjects of ethnobotanical importance, including videos featuring Ronnie Chameau's Banana Dolls, traditional medicine in Bermuda, traditional cedar craftsmanship, and traditional foodways. The Department has also published a series of popular books of ethnobotanical interest, including Frith-Black's *Bermudian Folk Remedies* (2014) and Pearman's *Hands on! The art of traditional crafts and play in Bermuda* (2016). The books and videos are all available through the department's website: www.communityandculture.bm.

1.2.3 Botany and conservation

Early botanists and natural historians Britton (1918), Harshberger (1905), Jones (1873, 1879), Lefroy (1884), Reade (1883), Hemsley (1883, 1885), and Rendle (1936) in Bermuda provide the first comprehensive plant lists and descriptions for the island. Their writing also illustrates the values and culture of western science as it has been applied to Bermuda. Some of the early flora and natural histories (Jones, 1873; Small, 1913; Britton, 1918) also occasionally include local Bermudian names for plants and brief notes on uses.

Verrill (1902) offers a sweeping history from a naturalist's perspective; this is the most integrated view of Bermuda as a social-ecological system because he considers crossover cause and effect between the cultural and the ecological.

One of the few field guides of Bermuda's flora currently in print is Christine Watlington's *Bermuda's Botanical Wonderland* (1996). The author provides illustrations and brief taxonomic notes on Bermuda's most common plants, both native and introduced. This work is likely based on historical documents (primarily Britton's 1918 flora), however, and is unsupported by herbarium collections. Therefore, the need to write an up-to-date flora of the island is still outstanding.

Much work has been done on Bermuda's threatened ecology, particularly by conservationist Dr. David Wingate (Pearlman and Wingate 1989) (Hayward 1981) and Kew's UK Overseas Territories initiative. These books rarely, however, focus on the cultural value systems and history behind the ecological devastation.

One result of the collaboration between Bermuda's Department of Environment and Natural Resources and Kew's UK Overseas Territories conservation science program is the creation of the *Bermuda plant finder: Indigenous and invasive plants* (Pettit et al, 2012), both a book and an online tool differentiating native from invasive species and encouraging Bermudians to plant native and endemic species in their gardens.

1.3 Theoretical context

This research is fundamentally ethnobotanical in nature – that is, its main objective is to highlight the relationship between the Bermudian people and the palmetto. While it is based in historical ethnobotany as a discipline, I have found it useful to draw upon studies in other fields to help build a picture of the significance and symbolism of this relationship. To that end, I have included references to the field of social-ecological systems research. This has allowed me to

really consider the cross-scale variables that have affected Bermudians' relationship with this tree, from insect introductions to hurricanes to slavery and global economics.

On an historical level, it has been useful for me to consider Hutton's model of political, social, and natural histories occurring on separate time-scales. Looking more closely at the study of social history, I have found it useful to consider the field of 'agnotology' – that is, the study of knowledge that is forgotten or left out of official records, as much plant knowledge surely is. This has allowed me to consider plant knowledge in a political context, and also a narrative one: reflecting on the power of stories, who gets to tell them, and what values they may or may not reflect.

Finally, because scientific research is an integral part of ethnobotany and conservation studies, I have also found it useful to reflect upon the anthropology of science, placing scientific knowledge on the same plane as other forms of knowledge, in its cultural and historical context. This has allowed me to consider each phase of the relationship with the palmetto as a shift in world view, opening up the discussion to future, integrated, and possibly novel paradigms.

The predominant fields that informed my research are outlined briefly below.

1.3.1 Situated knowledge

Science and Technology scholar Donna Haraway writes of the importance of 'situated knowledge'; that is, for the researcher to be transparent about her positionality in relation to the research at hand. None of us are without a past and none without a story. We are drawn to our studies for myriad reasons, all of which, one way or another, colour our hypotheses, our approaches, and perhaps even our results. There is no doubt that my interest in ethnobotany generally, and in Bermuda ethnobotany specifically, stems from my ancestral and cultural heritage, upbringing, personal and family values, education in natural history and world literature, experiences of traveling in many parts of the world, and my attempts to join society as it was presented to me – and all the ways in which I was disappointed. In this section, I will provide a brief history of the field of ethnobotany and situate myself in the field as I encounter it today.

The field of ethnobotany – the study of the relationship between plants and people – has its roots in European colonialism of the Americas. The earliest ethnobotanical studies were

catalogues, written by European visitors to the Americas, of plants that were used by indigenous peoples that could be of economic use to colonial powers (Anderson, 2014; Shiebinger, 2005).

Implicit in this type of ethnobotany was the impulse to ‘other’ the people being studied. The intention of the research was not to help or protect the subjects or their culture, but rather to extract their knowledge with the intent of exploiting it for financial or political gain. The people themselves were disposable. By the early 1900s, ethnobotany had become a branch of its parent discipline, anthropology; and as anthropology began to evolve out of its colonial roots, so too did ethnobotany. By the 1970s, ethnobotanists were asking questions about the role of plants in the fabric of a culture, including the role of ‘folk’ nomenclatures and taxonomies, how plant names related to the broader linguistics of a cultural group, and what could be learned from them.

In recent decades, the purpose of ethnobotany has shifted again: its express purpose to benefit the cultural groups that are being studied: the researcher acts as recorder, observer, and participant in cultural and social activities, making use of scientific methods and means of documenting knowledge that the cultural group may not have access to. Research that is culturally sensitive, such as information on medically or spiritually powerful plants, is not published, or published as databases accessible to only that cultural group.

The irony of the colonial urge to document knowledge is that the greater the colonial power, the more plant knowledge was lost, both by the indigenous people of the landscape invaded, and by the settlers from the European countries. Furthermore, the knowledge that was gathered by the colonial forebears did not necessarily trickle down to the settlers and immigrants either. In addition to acquiring indigenous knowledge of useful plants, the broader goal seemed to be to acquire both land and labour to cultivate those plants on a plantation-scale and fold them into a larger economic system. This created a social-economic structure that persists to this day.

Therefore, all inhabitants of the land, whether indigenous or transplanted, generally joined the larger economic systems based on global trade and wage labour that rendered their ethnobotanical knowledge obsolete. With the introduction of cheaply-made foreign products after the industrial revolution, as well as limited access to land, and limited time in which to practice skills, there was soon no need to know about the plants around you.

In today’s world, more and more people are displaced from their ancestral lands, and populations are increasingly urbanized. Ancestral land is often overseas, and many are

dependent on imported products to provide basic necessities. The knowledge of how to procure food, medicine, and shelter for ourselves from local plants is drastically diminished or non-existent.

Ethnobotanical research of certain areas, therefore, has become of interest not only to indigenous cultural groups of those areas, whose cultures (and, often, traditional lands) are under threat or undergoing radical and rapid change, but to those who, as the result of colonial practices, now find themselves several generations removed from the traditional lands of their ancestors, with little-to-no knowledge of the plants in their midst or how to relate to them, either physically and spiritually.

As a first generation Canadian, growing up in the city of Vancouver with a Dutch father and a Bermudian mother, I consider myself in this category. My interest in ethnobotany stems from what I believe is an innate desire to recognise, name, and engage with the non-human inhabitants of my surroundings, and to value and support this knowledge in my own and other communities.

As a child, I realised that knowing how to use wild plants not only conferred a degree of self-sufficiency, but enabled me to care for others in my community, whether through gathering and preparing food, making medicines from local plants in season, offering bouquets to the neighbours (in exchange for candy!), stuffing pillows with cattail fluff, building forts, divining the future in a daisy, decorating ourselves and each other, and generally engaging my mind and my curiosity on those otherwise long and uneventful walks to school. Knowing how to use plants enriched my relationship not only with my surroundings, but with other people; it allowed me to create a network that was natural, rooted in place, and free of charge.

All that is to say, it is one thing to study ‘the other’, to inquire about the cultural plant-human relationships of indigenous people, and it is another (for an urban-dwelling child of colonists) to study oneself. What could I learn from tracing the loss of cultural plant knowledge among my own people? What could I learn from inquiring into the causes of this void?

1.3.2 Historical ethnobotany

Ethnobotany, the study of the cultural relationship with plants, is typically divided into two subfields: *economic* botany, the study of the use of plants – and *cognitive* ethnobotany, the placement

of this use in a cultural context, including how plants are categorized and perceived (Martin, 1995).

The research for this paper began as a simple economic botany – a list of all the ways the palmetto has historically been used by Bermudians. However, it soon became apparent that much could be learned by placing this knowledge in a broader context.

Based on the work of Donna Harraway, Joseph Dumit created the concept of an ‘Implosion Project’. Such a project:

[...] attempts to teach and learn about the embeddedness of objects, facts, actions, and people in the world and the world in them. The emphasis is on details and nonobvious connections, as well as on the many dimensions with which we can analyze them: labor, professional, material, technological, political, economic, symbolic, textual, bodily, historical, educational. (2014, p. 350)

In some regards, my research into the palmetto became an implosion project.

A recent branch of ethnobotany is that of ‘historical ethnobotany’, a field that helps to “reconstruct cultural identities, from small human groups to large civilizations, through the retrospective review of different historical plant uses” (da Silva et al, 2014, p. 2). Studies in historical ethnobotany indicate that the factors contributing to the loss of plant knowledge are many and complex. No set of factors are applicable to all cultures or communities, but they may include migration, lack of access to traditional land, legal change of land use, population decrease and habitat loss for traditionally used species, the introduction of new species (both wild and cultivated), the subordination of indigenous groups by new cultures with different values and attitudes toward nature, the technical and industrial revolution; and economic globalization (Turner & Turner, 2008).

Loss of plant knowledge can be considered both a symptom and a cause of ecological degradation. Anthropologists and ecological historians alike posit that solutions to today’s environmental crises could be quickened by considering a broad range of skills, knowledge-types, and worldviews.³ Western science, the leading philosophy behind conservation efforts, tends to offer but one perspective. While scientific thinking is invaluable to solving some of the problems

³ “The great environmental crises of the twenty-first century will require diverse knowledge sets and the cross-pollination of multiple scientific disciplines to generate innovative solutions [...] Landscapes are constituted by individuals and their repetitive actions, where relations with other people and with nonhuman entities, including built landscapes, technology, plants, animals, and others, interact at varying spatial and temporal scales. In historical ecology, a relational landscape approach recognizes that humans live in animated and continually emergent landscapes, a recognition which opens the field for varying and inclusive perspectives” (Armstrong et al, 2017).

of today, there are many other frameworks that could be both equally valuable and complementary. Anthropological history, with a focus on traditional cultural practices and worldviews, can contribute insight and perspective into the roots of our present-day ecological crises, thereby informing our way forward.

The scientific botany of the Bermuda palmetto has been essential in defining its global range as limited to Bermuda (endemic), assessing its conservation status (endangered), and implementing conservation and restoration efforts. But the question of a broader cultural (emotional, spiritual, symbolic, material) relationship with the plant is also important to address, particularly if conservationists hope to engage the support and participation of the general public.⁴ Part of the purpose in tracing the cultural history of the palmetto is to explore the range of worldviews that may have preceded those of the present day. Awareness of historically diverse perspectives, particularly within a single social-ecological system, can encourage members of the public to reflect upon their present-day perspectives in an historical context. Such awareness can quicken adaptive innovation and paradigm shifts⁵ and help implement ecological management and educational programs that benefit people and plants alike.

1.3.3 Social-ecological systems and adaptation

Social-ecological systems studies allows one not only to consider the many stakeholders and drivers of a complex system, but the dynamics between them. One of the key dynamics informing this research, both ecologically and socially, is that of adaptation.

Plant knowledge is known to survive migration (Pieroni & Vandebroek, 2007). Even when access to land is generally denied and the ability to practice traditional culture largely curtailed, traditional knowledge survives, at least for one or two generations. This is evident in Bermuda's medicinal traditions, for example in the use of *Aloe vera*, and particularly in children's games, such as the use of a cane grass (*Panicum dichotomiflorum* Michx.) noose to try to catch a lizard, a past time nearly every Bermudian recognizes from their childhood.⁶

⁴ Global Plant Conservation guidelines emphasize the inclusion of local people and local knowledge in all conservation programs (Global Strategy for Plant Conservation, Targets. <https://www.cbd.int/gspc/targets.shtml>)

⁵ See Donella Meadows, *Leverage Points: Places to Intervene in a System* (1999) in which she describes how the most difficult but most powerful leverage point is "the mindset or paradigm out of which the system – its goals, power structure, rules, its culture – arises."

⁶ Using small grass or horsehair nooses to catch birds and other animals is common in many traditional societies. They were reportedly used in earnest by Nat Kiel, a well-known Bermudian man of apparently Native American

Another way plant knowledge is adapted in a hybridized society is in the exchange of knowledge between people from different root cultures. For example, among early Bermudians we see that people from tropical climates who perhaps had never used rosemary (*Rosmarinus officinalis* L.) before started to use it for weddings and funerals, as was popular among Europeans. Likewise, Europeans, who perhaps had never encountered cassava (*Manihot esculenta* Crantz) before, began to process it as the indigenous Carib and Arawak people once did, incorporating it into their yearly rituals, such as cassava pie at Christmas. Bermuda's ethnobotany holds examples of many types of plant knowledge: traditions maintained, traditions adapted to different plants or different cultural circumstances, traditions exchanged and also blended, depending on the economic or social need, as well as traditions lost (Appendix A).

The practices least likely to change were those that happened quietly at home. The use of the palmetto for household goods, such as brooms or fans, for example, is far less likely change overtime. In fact, these practices likely existed until the import of foreign-made goods in the 1930s (Figure 1). The tapping of palmettos for palm wine, however, especially by enslaved Africans, was a publically-visible practice that directly threatened the political regime: it went against Christian values of abstinence, enabled Africans to gather together and practice their traditional spirituality, potentially strengthened a community interested in rebellion, and made use of a natural resource that was needed for the country's economy. It was therefore legislated against and policed early on, and is all but forgotten today.

The continual use of plants, while a natural habit, can become an act of political resistance and cultural strength. Carney (2011) comments on what she calls 'memory dishes' – the common practice of migrant people to prepare the food they know from home. This practice is evident in Bermuda's ethnobotany today; from peas and rice (hoppin' john), a traditional West African dish, to afternoon tea, echoing the practices of colonial England.

Thus, the adaptation of plant knowledge in Bermuda moves at varying paces depending on availability of plants, social license to practice culture, time to engage in traditional practices, and access to imported goods that displace the need to make things oneself.

One observation about the role of adaptation in Bermuda's ethnobotany is that it has not stopped. The past adaptiveness, and therefore creativeness, of the community is remarkable, and invites a deeper conversation regarding direction of future practices.

descent. J.M. Jones describes how Kiel, in 1850, captured a Scarlet Tanager "in a trap of horse hair nooses set for cat-birds on the rim of a tub of water." (1859, p. 172)

1.3.4 Historical time-scales and social history

A framework in the field of history that supports both historical ethnobotany and social-ecological systems studies is that of historical time-scales. Historian Patrick H. Hutton (1981) notes that a traditional approach to history charts political events, as if key political events were the sole causes of change in social history. As an alternative perspective, he offers three time frames (or time-scales) by which human society could be tracked, including the political time frame, which is relatively quick, highly changeable, and generally charted by observable turning points.

The social time frame moves more slowly. Social history is comprised of people's daily lives and how they perceive them, a field Hutton describes as the 'history of mentalities'. Social mentalities might shift in relation to political history, but those shifts are generally superficial. Rather, creative insights and concurrent changes to social structures encourage people's physical and psychological habits to gradually shift – never quite leaving behind the foundational ideas upon which they rest.

Finally, Hutton writes, there is geographic or nature-based time-scale that determines the rate of natural history. This scale moves slower yet than social and political history – think of the movements of glaciers, mountains, rivers, the flux of species in an ecosystem – but still profoundly affects human culture.

While my focus is the social history relating to the palmetto, its story can and must be viewed through the lenses of all three time-scales, each one inextricable from the others. In Figure 1, I break these distinctions down further according to a framework created by the study of social-ecological-systems, that is: local biophysical drivers (geographic time-scale), household uses and users (social time-scale), and economy, governance, and international forces (political time-scale).

It can be argued that, relative to other parts of the world, all three time-scales in Bermuda have been greatly accelerated since humans arrived on the island. The palmetto-human relationship in Bermuda has therefore been particularly dynamic, influenced both by major turning points in the island's political history, as well as by radical (and not-so-gradual) changes in its ecological landscape.

The history of mentalities is akin to what in social-ecological systems might be called the study of 'relational values'. Studies in relational values attempt to articulate the ethical position a

culture takes in relation to other species, and how those species might be integral (not just on a practical, but on an emotional level) to a culture's rituals and identity. Conservation literature, such as scholars' content, usually refers to ecosystems either in terms of their *instrumental* or their *intrinsic* value. That is, nature should be protected either because it is 'useful' to humanity, or simply for its own sake (Klain, Olmsted, Chan & Satterfield, 2017). But between a utilitarian and a hands-off perspective there is a vast grey area of relationship dynamics. How do different cultures view plants and nature generally? How do they treat them? Are they kind, generous, with a sense of reciprocity and kinship? Are they cruel, ignorant, and have a sense of superiority? Our relationship with nature is not unlike any other relationship in our lives. We are completely intertwined and interdependent on these myriad forces and species: but how do we choose to relate with them?

1.3.5 Agnotology: Noticing the silences

Despite the palmetto's pivotal role in Bermuda culture, and the many creative ways that Bermudians found to utilize the plant, only a small portion of this knowledge has been documented. The study of information omitted from the published record, particularly when it has been omitted or suppressed for political purposes, is called 'Agnotology' (Shiebinger, 2004). Historical research must, to be effective at reconstructing truer narratives and facts, seek what is not easily found in official records. Most of Bermuda's social history is not on record. By the mid-18th century, people of non-European descent made up almost half the population, and two-thirds of all the people on Bermuda were women, and yet almost all of the published and archived records through the 19th century were written by, and generally about, wealthy Anglo-Bermudian men.⁷

While I was able to find many historical references to the palmetto, most of the early writing was in reference to the role the legal system played in regulating people's use of the tree, or the trade in products manufactured from its parts. Later references tended to be made by

⁷ I found the following handwritten note in a folder marked 'horticulture' in the Bermuda Government Archives. The author is not noted. It reads: "Very few records created by women. Through 19th century, almost all records about women that survive were created by men [...] Historians have studied them, and concluded that in the 18th century there were more women than men. More women owned land [in Bermuda] than in other North American colonies. Land law complicated, but women could own land of their own (1779 act). Earliest records in which we hear a woman expressing herself are wills."

visiting natural historians. Therefore, access to a thorough understanding of the historical uses and cultural perceptions of the plant is limited by who was documenting history and what they found worth noting. It can be presumed that a broad range of skills, knowledge, and perceptions held by the rest of the population have gone unnoted. It is impossible to fill those silences, but by acknowledging them, and attempting to gain insight into what they may contain, particularly through the exploration of known wider cultural contexts, this thesis hopes to contribute a fuller and more accurate picture of Bermuda's history.

Chapter 2: 1503-1684: Early Visitors, Settlement, Tobacco, and Slavery

Bermuda is one of the most far-flung inhabited archipelagos in the world. While generally referred to in the singular, it is actually a group of close to 200 islands and islets surrounded by coral reefs (Figure 3). Bermuda is situated in the Atlantic Ocean over 1000 km off the coast of North Carolina. A limestone-encrusted caldera at the top of a 100-million-year old extinct volcano, it rises just barely above sea level, reaching only 79 metres at its highest point. It is not visible on most maps. When sailing toward it you can smell the land long before it comes into sight; a sweet scent of flowers, trees, and earth.

A walk on one of the islands will show at least four types of ground underfoot: powder-soft, pink-toned sand; hard, spiky, dark-grey jagged rocks; a dark-brown sandy soil; and thick, rich, brick-red fossil earth, technically called *terra-rossa paleosol*, blown in from millennia of North African Saharan dust storms (Muhs et al, 2012).

The soft pink sands were formed from the breakdown of the exoskeletons of innumerable corals and other sea animals. The sharp limestone rocks that line the island's coasts and burst out occasionally from otherwise smooth and grassy ground are an aeolianite, the result of sand dunes moved inland by the wind and then hardened or lithified into stone (Figure 4).

Situated in the Gulf Stream, in the heart of the Sargasso Sea, Bermuda has an unusually warm climate for its latitude. Its place in the current means that it is also subject to a high degree of natural traffic, making it a common stopover for butterflies, bats, dragonflies, whales, and other seasonal travellers. Pelagic birds, such as the endemic nocturnal Bermuda petrel ('cahow') return to nest; migratory birds stop on their way from the Arctic to South America, and the wind and waves, particularly the hurricanes and tropical storms that arrive each year, have brought all manner of flotsam to the island's rocky shores over the course of millions of years.

Among these visitors have been seeds, carried on the currents of wind and sea, in the digestive tracts of birds and fish, or clinging to birds' feathers. A few of these seeds come ashore and fewer still take root. (Darwin Correspondence Project) ⁸

⁸ In a letter to Joseph Hooker in 1866 Charles Darwin mused on the origins of seed dispersion on remote islands, including Bermuda: "When you exorcise at Nottingham occasional means of transport, be honest, & admit how little is known on the subject. Remember how recently you & others thought that Salt-water would soon kill seeds. Reflect that there is not a coral-islet in the ocean which is not pretty well clothed with plants: & the fewness of the species can hardly with justice be attributed to the arrival of few seeds, for coral-Islets close to other land support

Bermuda is home to roughly 165 native terrestrial vascular plants, 15 of which are endemic. Thousands of years ago, when sea levels were much lower, Bermuda was more than 10 times larger in area than it is today. The forested islands were home to many species of resident birds, an endemic skink, and a land tortoise, now extinct. All life forms that survived on Bermuda adapted to the high humidity, limited access to fresh water⁹, salt spray, and hurricane-force winds.¹⁰

Among Bermuda's endemic plants is the Bermuda palmetto, one of a group of 16 species in the genus *Sabal*, with its closest relatives in the Caribbean, lining coasts as far south as Venezuela and as far north as North Carolina.¹¹ Palmetto seeds were likely carried to Bermuda by bird or possibly sea (Henderson, 1995). The hardy palmetto adapted to the island's unique conditions and, along with the endemic Bermuda cedar, was a dominant tree forming thick subtropical forests (Figure 3).

The palmetto grows equally well in fresh and brackish marshes, high ground and low, and can reach up to 98 feet in height. It is very slow growing. It takes about 15 years before it develops a stem and will reach between 9 and 18 feet tall after 50 years, depending on the conditions. After this age, its growth slows considerably, growing only 5 or 6 feet over the next half a century. The stem diameter and shape vary considerably: at times thick and straight, or sometimes curved, or with what been described as an 'hourglass' shaped stem (Figure 5). The

only the same limited vegetation. Remember that no one knew that seeds w^d remain for many hours in the *crops* of birds & retain their vitality; that fish eat seeds & that when the fish are devoured by birds the seeds can germinate &c &c—Remember that every year many birds are blown to Madeira & to the Bermudas. Remember that dust is blown 1000 miles over the Atlantic. Now bearing all this in mind, w^d it not be a prodigy if an *unstocked* Island did not in the course of ages receive colonists from coasts, whence the currents flow, trees are drifted, & birds are driven by gales. The objections to islands being thus stocked are, as far as I understand, that certain species & genera have been more freely introduced & others less freely than might have been expected. But then the sea kills some sorts of seeds, others are killed by the digestion of birds & some w^d be more liable than others to adhere to birds feet; but we know so very little on these points that it seems to me that we cannot at all tell what forms w^d probably be introduced & what w^d not. I do not for a moment pretend that these means of introduction can be proved to have acted; but they seem to me sufficient, with no valid or heavy objections, whilst there are, as it seems to me, the heaviest objections, on geological & on geographical-Distribution grounds, to Forbes' enormous continental extensions. But I fear that I shall & have bored you. Yours ever affect, C. Darwin." (Darwin Correspondence Project, "Letter no. 5174," accessed on 3 January 2018, <http://www.darwinproject.ac.uk/DCP-LETT-5174>)

⁹ There was a creek and a couple of springs reported when the first settlers arrived but those have since been filled in with garbage or paved over. Many people had wells as recently as the 1950s, but today people either collect rainwater on their roofs and funnel it into a private tank (as required by law) or can purchase poorer quality water from companies that own access to freshwater lenses.

¹⁰ Of the 1000 or so terrestrial plant species that have since been introduced by humans, many are not able to withstand such conditions, and the natives are still the hardiest, particularly in the almost yearly hurricane events.

¹¹ Although *Sabal* fruit have been found in the London clay deposits in Southern England, indicating the tree was there in the Eocene, some 32-50 million years ago (Henderson, 1995).

tree has a great regal tuft of 15-35 fan-shaped leaves on the top, known for their long smooth petioles, and particularly long ‘costas’, the part of the petiole that extends like a long V into the centre of the leaf (Figure 6). The leaf blades of the Bermuda palmetto can grow up to 8 feet long, often collapsing in on themselves, forming a distinctive arc. The small, white flowers hang in large, fragrant clusters (Figure 7), turning to green, and then black, roundish fruits with a hard, starchy nut inside (Figure 8; Figure 9).

As far as is known, Bermuda had no human inhabitants until European visitors starting arriving in the early 1500s. Each part of the palmetto, from the sap to the leaves and the fruit proved invaluable to the human inhabitants who were to become the island’s most dominant, and damaging, naturalized species.

2.1 Early visitors

We found it at first all ouergroene with weeds and plants of seyerall kinds, as many tall and goodly Cedars, infinite store of Palmetoes, numbers of mulberries, wild Olive trees store, with diuers others unknown both by name and nature. (Smith, 1632, p. 340)

The 1500s was a century of shipwrecks and survivors on Bermuda, all a product of the ever-increasing traffic between the Caribbean, the Americas, Europe, and Africa. Much of this traffic was the result of Europeans creating plantation economies based on culturally and chemically powerful plants (tobacco, sugar, coca) altering their value from a generally sacred one (in the indigenous culture that domesticated them), to one of base commodification and its dark companion, addiction (Verrill, 1901; Schiebinger, 2004). In the early writings, Bermuda was known as *Ya de Demonios*, the Isle of the Devils (Cabot, 1544). Its position in the Gulf Stream meant that ships were driven toward the island in frequently very stormy weather and, unable to navigate the vast wreath of reefs about the island, would run aground and founder, sinking to the sea. It was Bermuda upon which Shakespeare based *The Tempest*, writing of those infamous ‘still-vexed Bermoothes’. These were magical times. Europeans still had a strong animistic streak with a vibrant relationship with fairies (Stafford, 1848), Christianity and scientific reasoning hadn’t yet taken hold, and the calls of seabirds around Bermuda were seen as the shrieks of demons. Not all the ships wrecked, however. Some encountered Bermuda on a calm and placid day, stopping deliberately to rest and restock provisions on an island teeming with fish and docile pelagic birds. The cedar wood was perfect for ship-repair, the caulking made with turtle oil and

lime, and rope could be twisted with palmetto leaves – it was as if the island had designed itself for sailors, ready for a life at sea (Strachey 1610/1964).

While early sailors stopping over in Bermuda may not have recognized the palmetto as a unique species, they would certainly have recognized its potential utility. Palms are among the most useful plants to human beings. They have provided food, wine, shelter, rope, alcohol, fuel, clothing, and medicine to people throughout history, in much of the world. There is little doubt those first temporary visitors made use of the palmetto in much the way the future settlers would, to satisfy any number of daily needs. But in these first hundred years before settlement, the primary way the palmetto supported humanity was by feeding the feral pigs.

It is uncertain how pigs came to Bermuda, whether from a wreck or released deliberately for food, but their survival ensured a food source for stranded sailors.¹² Among other food sources, the pigs feasted on the starchy palmetto seeds. It is impossible to know to what degree the pigs altered the Bermuda landscape, which had not hitherto known resident mammals, but gauging by the damage they have wrought on other islands (such as Hawaii), we can imagine it was considerable.

2.1.1 1593: Henry May

It is unknown whether attempts at permanent settlement occurred in the 16th century. History notes that in 1527, the Emperor of Spain, Charles V, contracted Portuguese sailor Hernando Camelo to settle the islands, plant seeds and trees, and bring livestock and settlers, in exchange for tax breaks and other profits, but there is no clear evidence that this was attempted (de Herrera y Tordesillas, A., 1601). When the English arrived in 1609, they noted Spanish coins and crosses on trees, a patch of tobacco, and other plants that pointed to at least a long-term interest in stopping over, such as figs with ripe fruit, and olive trees (although some of the fruit and seeds could have come ashore with shipwrecks). These plants served the first few English in Bermuda, but none so well as the palmetto. In 1593, Englishman Henry May wrecked with a French ship on Bermuda. Only half the crew survived. He lived to write the tale and describe, firsthand, the great utility of the tree: “The tops of the Palmeta berries was our bread, and the

¹² Henry May, however, noted that the pigs were too lean to eat, and depended instead on palmetto tops, berries, etc.

iuyce we got out of the trees we cut downe our drink, and of the leaues, which are more than an Ell long, we couered our Cabens, and made our beds...”.

Henry May’s company was on the island for five months. They built a new ship from salvaged parts and tools, and then set sail for Cape Breton and on to Newfoundland (Smith, 1632, p. 119).

2.2 1609: The Sea Venture

For the islands of the Bermudas, as every man knoweth that hath heard or read of them, were never inhabited by any Christian or heathen people but ever esteemed and reputed a most prodigious and enchanted place, affording nothing but gusts, storms, and foul weather, which made every navigator and mariner to avoid them as Scylla and Charybdis, or as they would shun the Devil himself; and no man was ever head to make for the place but as, against their wills, they have by storms and dangerousness of the rocks, lying seven leagues unto the sea, suffered shipwreck. (Jourdain, 1610/1964, p. 108)

The Sea Venture was the first ship purpose-built for the settlement of the British colonies. It set out in 1609 with two other ships in tow, heading for the new settlement at Jamestown, Virginia. The ships were bringing much needed supplies and skilled labour to the starving colonists. The passengers were hand-picked to be able to pull their weight in the settlement, adept at carpentry, agriculture, medicine.¹³

The Sea Venture’s sister ships made it to Virginia, but the Sea Venture herself was caught in a three-day storm near Bermuda’s reefs. The new caulking could not withstand the pressure of the waves, the ship began to take on water, and the captain steered her onto the reefs, within swimming distance of Bermuda. Everyone survived.

Despite the rumours that these were the Devil’s Isles, the settlers found it surprisingly beautiful, rich, and calm – so much so, that many did not want to leave. There were even attempted mutinies on the island, with groups going off to other islets, declaring themselves free of the political structure of the ship, and of England, for how can there be politics in paradise? They soon learned that the rules, indeed, did apply, with one hanging and an attempted other, and endless other brutal deeds.

¹³ Including John Rolfe who was carrying the ‘sweet’ tobacco seeds that would eventually save the settlement in Virginia from economic collapse. He would go on to marry Pocahontas, but in Bermuda his then-wife Sarah Hacker gave birth to a daughter named Bermuda Rolfe. Neither mother nor baby survived and both were buried on the island (Lefroy, 1871).

The survivors stayed ten months in Bermuda. They built two new ships and stocked up on provisions from Bermuda's bounty to carry on to Jamestown. Early historian John Smith describes their leaving:

But having finished and rigged their two new Cedar ships with such provisions they saved from the Sea-adventurer they left amongst the Rocks, they called the one the Patience, the other the Deliverance; they used Lime and Oile, as [Henry] May did for Pitch and Tar. Sir George Summers had in his Barke no Iron at all but one bolt in her Keele; now having made their provisions of victuall and all things ready, they set saile the tenth of May 1610. (Smith, 1632)

The party left two men behind, Christopher Carter and Edward Waters. Some authors say that they were left there to claim the land for the British, but Smith reports that were fleeing persecution for crimes committed. One had shot a man, while the other, tied to a tree awaiting execution, used a hidden knife to cut his bonds. Both vanished into the forests, "and there rather desired to end their daies then stand to their trials and the event of Justice." (Smith, 1632)

Several first-hand accounts of their months in Bermuda survive today. Those of William Strachey and Sylvester Jourdain are the best known and most detailed. Each dedicate considerable time to the life-saving qualities of the palmetto.

Strachey compares the tree to other species of palm he has seen or heard about. His thinking demonstrates the kind of informed and adaptive reasoning people instinctively practice when it comes to ethnobotanical knowledge. Observers of patterns, people can often naturally ascertain if an unfamiliar plant is related to plants they know or have heard of; and what, therefore, its uses may be. While this particular species of palm was likely unknown to the people on the Sea Venture, they nonetheless deduced very quickly how to use it. Strachey writes:¹⁴

The Tree is high, and straight, sappy and spongiuous, unfirm for any use, no branches but in the uppermost part thereof, and in the top grow leaves about the head of it (the most in most part where of they call Palmeto, and it is the heart and pith of the same trunk, so white and thin, as it will peel off into pleats as smooth and delicate as white Satin into twenty folds in which a man may write as in paper) where they spread and fall downward about the Tree like an over-blown Rose, or Saffron flower not early gathered; so broad are the leaves, as an Italian Umbrella, a man may well defend his whole body under one of them, from the greatest storm rain that falls. For they being stiff and smooth, as if so many flags¹⁵ were knit together, the rain easily slideth off. [...] With these leaves we

¹⁴ Note too that Strachey refers to the tree as a 'Palmeto', from the Spanish palmito, what they called the white heart of the palms that were felled and eaten in the Caribbean. While not an English practice, they had no doubt heard already about this food.

¹⁵ Possibly a comparison to *Acorus* or *Iris pseudacorus*.

thatched our Cabins, and roasting the Palmito or soft top thereof, they had a taste like fried Melons, and being sod they eat like Cabbages, but not so offensively thankful to the stomach. (1610/1964, p. 76)

Strachey goes on to describe the ‘thousands’ of trees felled by the company in ten short months. Note how he refers to them as ‘ancient Burgers’, naturally personifying them and describing their death as ‘murder’:

Many an ancient Burger was therefore heaved at, and fell not for his place, but for his head: for our common people, whose bellies never had eares, made it no breach of Charitie in their hot blouds and tall stomachs to murder thousands of them. They beare a kind of Berry, blacke and round, as bigge as a Damson, which about December were ripe and luscious: being scalded (whilst they are greene) they eat like Bullases. These Trees shed their leaves in the Winter moneths, as withered or burnt with the cold blasts of the North winde, especially those that grow to the Seaward, and in March, there Burgen new in their roome fresh and tender.¹⁶ (1610/1964, p. 77)

It is unlikely that travellers today, unless they were naturalists, go into such detail over a species tree encountered in a foreign land, nor the many ways to use it; but it is worth remembering that in Strachey’s time the adventurers were utterly dependent upon their immediate environment for food and drink, and their knowledge of such was as crucial as it is today to travel with cash or a credit card. Plants plus knowledge was the currency that led to food, shelter, fuel, tools, and other essentials.

Sylvester Jourdain, also on the Sea Venture, echoes Strachey’s tale, emphasizing the extreme utility of the tree:

And there is a tree called Palmetto tree, which hath a very sweet berry, upon which the hogs doe most feed; but our men finding the sweetness of them, did willingly share with the hogs for them, they being very pleasant and wholesome, which made them careless almost of any bread with their meat; which of occasioned us to carry in a manner all that store of flour and meal we did or could save for Virginia. The head of the Palmito tree is very good meat, either raw or sodden, it yieldeth a head which wieldeth about twenty pound, and is far better meat, than any cabbage. (1610/1964, p. 112)

Only conjecture may explain the English travellers’ use of palmetto upon arrival. They may have been informed beforehand by stories of palms and their uses, for elsewhere Strachey compares the palmetto to the date palms he had heard of from Egypt, and to coconut palms from the Caribbean. We know that there were at least two Native American travellers onboard the ship, returning from a tour of Europe: Powhatan men, named Namuntack and Matchumps,

¹⁶ Strachey also describes using the palmetto for bedding – sleeping under a leaf or two, and on top of one as well.

are listed as Sea Venture passengers in John Smith's *Generall Historie*.¹⁷ But while *Sabal palmetto* leaves in Florida were traded as far north as New England (Austin, 2004), it is unlikely that these voyagers from the northeast coast would have been familiar with eating the hearts of palm or tapping trees.

It is more likely that some of the English sailors, including Somers, Yeardley, and Smith, having spent considerable time in the Caribbean and other tropical zones, had observed the many uses of palms. From about North Carolina southward, indigenous people had been using a similar species of *Sabal* for generations. All houses along that coast and on the Caribbean islands (and further south in Mexico, Meso-, and South America) were thatched with the leaves of various species of palm, while many communities also used the leaves for weaving, and ate the 'cabbage' in the same way described by Strachey and Jourdain.

However the English discovered the palmetto's utility, such adaptation was typical of the rapid lateral spread of plant knowledge. Upon arrival in Bermuda, there was an opportunity for those without specific knowledge of palms, but with the knowledge of, for example, knowing how to thatch (which was also the typical roof in England in that day, albeit with grasses and rushes) to adapt to a new plant resource, applying new material to an old, familiar skill).

The Sea Venture party were not the only stranded group rescued by the palmetto; so too were the English in Jamestown. Jourdain notes that the abundance of food from the palmetto in Bermuda enabled the castaways to save the provisions that had been destined for Jamestown. To this they added salted fish, cured pork, and a store of living turtles. When they finally arrived in Virginia they were able to feed the ailing settlers, many of whom were ill with malnutrition, even

¹⁷ According to historian Hobson Woodward (as referenced by Kopelson), the men were returning to Virginia after living abroad in London for several years. Kopelson discusses these two passengers in the following statement. "When the Sea Venture wrecked upon Bermuda, however, they were likely the individuals that named the parts of the palmetto for the English (Strachey's oblique statement that "they" called the palmetto pith "the palmetto" seems to allude to such third party information) and instructed them on its uses, like using its inner leaves for "paper." Similarly, it is unlikely that the Sea Venture survivors would have experimented with eating and stewing palmetto hearts without some assurances of their safety, nor would they have known to "seethe, strain, and let stand" cedar berries in order to make "a pleasant kind of drink" without expert instruction." I would like to posit an alternative explanation. The word 'palmetto' is from Spanish 'palmito', denoting the heart of palm. The Hispanic inhabitants of the Caribbean and Latin America is likely the 'they' to whom Strachey was referring. The Powhatan men likely would not have known Spanish, plus palmettos are not native to Virginia, from whence they came. As stated earlier, several of the sailors onboard had spent years in the Caribbean, Venezuela, etc., and that experience was likely the source of this knowledge. As for the cedarberry 'beer', making simple fermentations from fruit, including juniper berries mashed in water, was common practice in Europe generally and England specifically. The cedar would have closely resembled junipers from home and the castaways would likely not have hesitated to make a drink already familiar to them. They would also, no doubt, have been familiar with its medicinal qualities. It is therefore unlikely that the two Powhatan men would have been the source of such instruction.

resorting to cannibalism. If it weren't for the Sea Venture party arriving when they did, with their surplus of provisions, it is possible the Virginia settlement would have failed altogether (Verrill, 1902).

2.3 First settlers in a place so wondrous strange

Here also a tree called ye Palmeto which in age farr exceeds the three hundred years liv'd oake the first growth & age of this Surpassing all men's memory or Discovery nor is their hight less Strange for though Sixty yeares growth Produceth not above six foot yet have they been knowne to grow Eighty or Ninety but in these latter ages not above thirty or fourty and are of so great and Extraordinary use and Service to ye People yet without them it is Generally opinioned they Could not have Subsisted ye leafe being ye only thatch for their houses with which they alsoe Make Cables rops matts &C. & with ye tops hats bongraces baskets bromes sives Chaires with such like necessarys & out of ye body of Same three may be Extracted an Excellent portable Drink called Bibbie. (Robinson, 1687)

People were brought to Bermuda from all walks of life, from all kinds of landscapes, and with varying levels of 'indigeneity' in their homelands. All were uprooted from landscape, some from culture, families, and language, and all repurposed for the profit of the powers that be: first the Virginia Company (1609-1614), then the Somers Island Company (1618-1684), and after that, the British Crown (Bermuda is still a UK Overseas Territory today).

Ethnobotanical knowledge was crucial to life in pre-industrialized Bermuda. While many goods were imported into Bermuda in the early years, it was essential for early settlers, particularly those without wealth, to take full advantage of whatever resources they had around them. Furthermore, while servants and enslaved people could not own property, they still did much of the housework, cooking, childcare, farm and garden work, fishing, sailing, boat-building, and so on – all of which would have required an encyclopaedia of plant knowledge (Packwood, 1975). Their traditional and adapted knowledge would therefore have been instrumental in establishing a larger cultural and economic system.

But, as we'll see, plant knowledge (and the use of plants) was closely regulated, channeled into the newly structured system and away from the self-sufficiency and social bonding for which it might have originally evolved. It's not that the knowledge didn't still serve this purpose – it did. It can't help but strengthen social bonds to make a medicine for a child, or sit together with your family on a winter night peeling arrowroot, but the ultimate political goal was different – all energy and fruits of labour moved upward to benefit those in charge: the landowners, the lawmakers, and, soon, the slave-owners. The ongoing shifts in the social-economic purposes of

plant knowledge, and the way that people creatively adapted to, but also resisted them and maintained independence, is a theme I wish to highlight.

In 1612, the Virginia Company sent the first 150 settlers from England to colonize Bermuda. While there was some hope for pearls and whales, the land was the primary investment, profiting relatively few investors overseas. Their goal was to take advantage of the fertile soil and whatever profitable crops they were able to grow, beginning with tobacco. Without an indigenous population and with a relatively mild climate, Bermuda was deemed an ideal opportunity to both grow crops and strengthen the presence of Christianity in the New World. It was also a strategic location for maritime dominance and trade, at the crossroads of Europe, the Caribbean, New England, and the fertile fishing grounds of Newfoundland.

Early Bermudian cultural origins, as far as is presently known, can be traced back to Ireland, Scotland, England, North America (Acadian, indigenous, Metis), Latin America, Afro-Caribbean, indigenous Caribbean, West Central and Southeastern Africa, Portugal, Spain, Holland, and France. John Camden Hotten (1874) titles his list of English settlers in the American plantations from 1600-1700 as: “Persons of quality; emigrants; religious exiles; political rebels; serving men sold for a term of years; apprentices; children stolen; maidens pressed [...]”. We can only assume that such a colourful variety, and more, was likewise present in all the cultural groups who arrived.

People came to Bermuda for a wide range of reasons, whether by intention or by force.

Those of African and Afro-Caribbean descent were often captives, prisoners of a slave trade that had developed in recent centuries between Europe and parts of Africa. In the 17th century African-Bermudians came via the Caribbean and on hijacked slave ships from Madagascar and the Southeastern Africa; while the 18th century, the majority were taken from West Central Africa, predominantly Angola. Many came from small villages rather than larger, stratified urban centres, their identity rooted in local landscapes (Heywood and Thornton, 2007; Maxwell 2017; Bernhard, 1999; Hall, 2005).

Arrivals from Great Britain and Ireland came from all walks of life: they might have been expelled convicts, or orphans bound for indentured servitude working off a debt they hadn’t yet incurred. Others were brought because they were young and female: wives for the island’s single men, sold for 100 pounds of tobacco apiece (Lefroy, 1879).

A high number of settlers were captives from numerous wars. Pequot and Algonquin Bermudians arrived as slaves from the Pequot War (1634-1648) and King Philip's War (1675-1678); Acadian and Metis Bermudians from the French and Indian War (1754-1763); and Irish and Scottish Bermudians as prisoners from the English Civil War (1642-1651). Between 1652 and 1659, for example, 50,000 Irish people were sent to Bermuda, the West Indies, and Virginia. In Bermuda, they were forced into indentured servitude, generally sentenced to work seven years to pay their journey (Bernhard, 1999).

Settlers who came voluntarily may have been government officials, or adventurers who viewed the settlement as an investment opportunity.

It is certain that most people who arrived in Bermuda were multicultural to some degree. Whether as enslaved or enslavers, servants or sailors, many early Bermudians were well-travelled, spoke multiple languages, and were already adept at cultural and ecological adaptation. Most people from the Afro-Hispanic Caribbean would have spoken at least three languages. Berlin writes that Africans in the Atlantic world were, "familiar with the commerce of the Atlantic, fluent in its new languages, and intimate with its trade and culture." (Berlin 1998, p. 17)

The fluidity of their knowledge would have extended to the landscape. All early settlers in Bermuda would have recognized some aspect of the island's flora, and many who came brought seeds and seedlings with them. In the late 18th century, Moreau de Saint-Méry (writing from the Caribbean) wrote: "When the slaves come off the ship they are not greatly surprised at the various natural products of the island. These are all too similar to what they knew in Africa." (1797-1798, p. 58) For those arriving in Bermuda, the presence of palmetto trees would have seemed like encountering old friends.

Enslaved Africans in the Caribbean, having lived side by side with indigenous islanders, were known to have adapted their traditional tropics-based knowledge to the new terrain and were generally far more knowledgeable than their socially-isolated, Northerner enslavers. The latter frequently depended upon the former for food production, and more critically, for medicine (Sobel, 1987).

At the same time, some of the British mariners who arrived in Bermuda had spent years in India, Africa, South America, and/or the Caribbean, absorbing information on local use of economically important plants that became part of a broader colonial culture.

Yet despite their multiculturalism, many who came to Bermuda came directly from a land to which they had an indigenous relationship, their culture and identity rooted in place. The situation they found themselves in was the opposite of indigeneity. All had to rapidly adapt their cultural relationships to landscape and plants to a largely unfamiliar and highly constricted political system.

From the start, settlers were viewed according to their utility, allotted to a place in the company they were to fulfill. In 1620, for example, Nathaniel Butler writes that the colonists being sent from England were “aged, diseased, and impotent persons” (Smith, 1632, p. 194) and that they should be sent back.

By the mid-1600s, with the establishment of a slave society this culturally diverse group of people were divided into simplified (and superimposed) groups called ‘black’, ‘white’, ‘mulatto’, and ‘Indian’; and into ‘slaves’, ‘servants’, ‘tenants’, and ‘landowners’. Not all groups were beholden to the same laws, and when they were, the law would specify types of punishment depending on the social standing: the wealthy were generally fined, while those who owned only their own skin were publically whipped or mutilated (Hollis Hallett, 2005).

As the economic structure was put into place, so too as was the religious one. The latter helped to keep people in order, with the threat that they would be spiritually and physically punished by God for any transgressions. Cause and effect was such that hurricanes and early rat infestations were declared to be punishment for idleness and excessive drinking (Lefroy, 1871).

Perhaps one of the fundamental ways indigenous plant knowledge has been challenged under colonial rule is through private property and zoning systems affecting both access to land and what one is allowed to do on that land.

Between 1613 and 1615, Bermuda’s scant bit of real estate was surveyed and divided, the property owned by offshore English investors (Figure 12). There was very little space left for ecological or social commons or as a genetic repository of native species. Private property ownership limited public access to all wealth that the land provided, from tobacco (Bermuda’s first currency) to food crops, and building materials such as cedar and palmetto. Most early settlers, free and enslaved, did not own property and were therefore relegated to labour positions, occupying one or another position in a sharply stratified society. Property owners were intent on controlling access to their land/investment and the plants/wealth it contained. Continuing the practice of traditional ethnobotanical knowledge in such a context was essential for all settlers,

but challenging. Practices that supported and were of use to the dominant culture (such as thatching and agricultural knowledge) were, at least initially, accepted and encouraged, while those that facilitated social bonding and physical or spiritual independence from the colonial system were soon outlawed. With the additional pressure of limited resources and the need for islanders to conserve, the free practice of ethnobotanical knowledge was very much curtailed. Early laws regarding the use of palmetto, particularly for making palm wine and torches exemplify these restrictions.

2.3.1 Household uses: Material culture, food and medicine

There are no firsthand accounts of daily life in Bermuda from this time, particularly none relating to work handled by women and enslaved people and what plants they may have used to fulfill their needs. There are also no firsthand accounts from the people of Native American, African, and Irish descent who arrived in the first decades of settlement. Bermuda's history, as stated earlier, has generally been charted as a series of political 'turning points' circling around economic, legislative, and administrative change. The majority of daily life went unrecorded. But while many details of plant use are left out of early records, almost every early written report from the island mentions the incomparable utility of the palmetto. In 1687, Governor Robinson wrote that the palmettos were of "soe greate & Extraordinary use & Service to the people that without them it is Generally opinioned they Could not have Subsisted" (Verrill, 1902). The following year, colonist Richard Stafford expressed a similar sentiment in a letter to the Royal Society: "And 'tis the Palmetto without which Tree we could not live comfortably in this place [...] I know no Tree in the World that can equal it in the number of commodities that it affords." (Lefroy, 1879, p. 266). Some of the more common uses of palmetto appear in Bermuda's early laws. The government regulated, or attempted to regulate, palmetto roof thatching, bibby (palm wine), torches, and leaves used for the export of plait. In addition to these, the palmetto fulfilled many household needs (Figure 15). Some details are certain, as a few of these uses lasted into the 20th century, while other can be inferred from social histories and ethnographies of Bermuda's constituent cultures.

Early colonists used both palmettos and cedars as property markers when they were first dividing the land into ‘tribes’.¹⁸ Holes were drilled into boundary trees, some of which were still visible as of the early 1900s (McCallan, 1948).

Most early settlers in Bermuda would have been accomplished basket-makers, rope-makers, and weavers, although not all would have been familiar with palm fibres. The early British settlers were adept at weaving with ‘straw’, a generic term for grasses and reeds that soon extended to include palmetto, but they would have quickly adapted their techniques to the new material.¹⁹ The Africans who arrived in Bermuda would have immediately recognised the palmetto as a very important plant. The sheer technical skills of the women in particular, knowing how to work with palms, are thought to have allowed them to survive slavery, boosting their utilitarian value as slaves and providing crucial contributions to the survival of the larger communities they joined: “Such industriousness became useful to them on slave-owning properties as they acclimated quickly to making something out of nothing, using the throwaways and elements around them to survive [...]” (Harrison, 2009, p. 43-44).

Palmetto leaves were the island’s best source of fibre and were used for most aspects of material culture, including: buildings (particularly thatching for roofs), brooms, sieves, baskets, fly-switches, fish-pots, lightweight string and rope for watercraft (Figure 16; Figure 17), woven chair-seats, sleeping mats, bed ‘springs’ (rope trussed between four-poster beds on which mattresses were laid), and as mattress themselves stuffed with the beaten fibres of the petioles. (Figure 14).²⁰ The hard seeds were used as buttons (Figure 9), likely sewn on with the long, thin thread that emerges naturally from between the leaf segments (Figure 16). This thread was also used for stringing fish, an important part of the great fish markets still prevalent in Bermuda in the late 1800s (palmetto bags were also woven in which to transport the fish). And we can imagine that the need for fans – particularly for those who spent long Sundays in a sweltering church, as most Bermudians famously did, chewing fennel seeds (*Foeniculum vulgare*) to stave away the hunger pangs – was immediate and acute. Palmetto fans are still used in some churches

¹⁸ If no palmetto or cedar were available, settlers were expected to plant fig and pomegranate trees in their stead. One still sees palmettos, fig, and pomegranate trees on the peripheries of the oldest Bermuda properties.

¹⁹ There were also *Typha*, *Schoenoplectus*, and certain grasses that would have lent themselves to weaving, but they were not nearly as bountiful as the palmetto.

²⁰ Beds were also stuffed with feathers, wool, bed-grass (*Eustachys petraea* (Sw.) Desv.), crab-grass (*Stenotaphrum secunda*), corn husk and corn silk (*Zea mays* ssp. *mays*), etc. See Appendix A for a list of plants and their uses.

today, although I could not locate anyone who actively makes them today, and only one woman who knows how.

And the leaves didn't always need processing to be useful. The largest of them, as today, were also handy for emergency umbrellas or a simple shelter in Bermuda's often unexpected and torrential rain. Richard Norwood (1590?-1675), surveyor of the island from 1613-1615, is even reported to have used one for an emergency sail. The story is recounted by E.A. McCallan in *Life in Old St. David's* (1948):

[Richard Norwood, on Long Bird Island] cut down a tree and made of it a dugout with outriggers to port and starboard, and in it went by night to Somerset. There he loaded the little boat – in his opinion 'scarce worthy to adventure a dog in' – with palmetto berries, and set out for St. George's. Spanish Point was reached at sundown, and there Norwood spent the night under an overhanging rock. Next morning a strong wind was blowing, and continued for five days. At last becoming impatient at the long delay he resumed the journey, with a palmetto leaf for a sail. One of the outrigger floats was washed way, and the other 'hanged only by a small twisted string'. The wind had abated by the time Burnt Point (now Ferry Point) was reached. From there he paddled down the Reach to Mullet Bay in the darkness, and hid the boat. This is one of the most remarkable boat adventures that Bermuda has witnessed. (p. 102)

In addition to the sail, note that Norwood loaded his boat with palmetto berries. One wonders what their ultimate purpose was – to eat raw, to extract dried seeds and grind into flour, to use as fodder for livestock, to ferment into wine, or to turn into buttons. Was he delivering them to the meal-restricted gluttons? Or were they to plant out for future palmettos? From an ecological perspective, it is also worth considering what might have compelled him to leave Long Bird Island (now a part of the airport), and travel about 31 km west to Somerset to gather palmetto berries, only bring them back, overshooting Long Bird Island to reach St. George's, an additional kilometre away? Is it possible that Strachey was right in saying that early visitors had felled so many thousands of palmettos in the St. George's area that it was now essentially deforested, forcing the settlers further and further west to get trees?

In addition to provisioning almost all aspects of Bermuda's early material culture, the palmetto also provided food to early settlers, both as a vegetable and a starchy meal for bread. The settlers, as the early visitors had done, ate the 'heart' or 'cabbage' of the palmetto. This practice of cutting off the crown of leaves to reveal the layers of tender white heart naturally killed the tree. The 'cabbage' (the terminal bud) was baked, boiled, or roasted and consumed immediately. Hearts of palm were also eaten in the Caribbean (particularly that of the closely

related *Sabal palmetto*, or ‘cabbage’ palmetto), as well as in many areas of West Central Africa. The ripe fruit was considered a sweet snack, while the starchy seed inside was ground into meal for bread (Figure 9).²¹

Thus, the palmetto provided much-needed nutrition on an island which otherwise offered far from a balanced diet. Governor John Henry Lefroy (1817-1890, governor of Bermuda from 1871-1877), describes early settlers gorging on oily seabirds, leading to poor health – or so feared Bermuda’s first Governor Richard Moore (governor of Bermuda from 1612-1616). Butler’s comments upon the famine add a further perspective:

The overcleareing of St. George's Hand, which was the place of their residence, by cuttinge downe the palmitoe trees, to have their heades for foode, a cheife releife of the people at that time, but such a disableinge of the place for tobacco (which is as yet the staple commoditie), as that not only to this day but for many yeares to come it must needes to feele the weight of that stroke ; neither was it possible for the governour to cure or prevent this ill, by any prohibition, because the belly hath noe eares. (Verrill, 1902, p. 598)

The implication is that so many palmettos were felled for their heads (for cabbage) that the tobacco plantations suffered from lack of windbreak, while the settlers were left with only seabirds for food. Moore moved the gluttonous settlers to a different part of the island, where seabirds and their eggs were out of range, and put them on a diet. A few birds and some fish were brought to them each week, a boatload at a time, and, “Palmetoe Berries, which you know are so wholesome and nourishing, as a man may well live on them, and be in heart and strength, though he haue nothing else [...]”. (quoted in Lefroy, 1877, p. 582)

There are no records of the Bermuda palmetto being used medicinally, but it is likely that some people used it this way; similar species have been used medicinally in the Caribbean, North America and Africa, and doubtless at least some inhabitants would have had that traditional knowledge or would have acquired it in their travels. In the Bahamas, for example, people use the closely related *Sabal palmetto* as a cure for “fish poisoning”, eating the heart of palm or steeping it in gin as a medicinal drink (Austin, 2004). Given the centuries of migration from Bermuda to the Bahamas, it is very likely that Bermudians used the palmetto in this same way. Likewise, palm wine – which I will discuss shortly – is not only itself a traditional medicine, but is used in Angola and other West Central African traditions to extract medicinal components from

²¹ The Seminoles likewise ground *Sabal palmetto* seeds into a meal for bread (Austin, 2004).

the leaves, bark, roots, and other parts of a wide range of medicinal plants (Iwu, 1993). There is no doubt that many early Bermudians would also have used it as such.

However, it is worth considering the impact of the shift in *purpose* of ethnobotanical skills in a slave society. For those who were enslaved, their work, rather than being for their own family or community, was channeled out to benefit enslavers. It was even common in Bermuda for enslavers to hire out their captives and collect the wages earned for their labour (Maxwell, 2000). Just as UNESCO draws a distinction between intangible cultural heritage practiced for one's own community and that done for commercial purposes (UNESCO, n.d.), so too should a distinction be drawn between cultural heritage practiced for one's own community versus that exploited for the profit of others. Would such a shift in purpose affect the level of excellence, creativity, care taken with materials, the relationship with the finished product and/or with the plant itself? We have no way of knowing, and I don't want to infer that it would automatically weaken or reduce these qualities (for many traditions remained strong in Bermuda and were practiced privately in homes until recent years) but I believe these are questions worth reflecting upon.

2.3.2 Thatching

The only building in Bermuda today that is thatched with palmetto is a small wattle-and-daub replica house on the property of Carter House, one of the oldest buildings in Bermuda, now a museum. The replica was built in 2014 by local Bermudians guided by two professional thatchers from the United States who have familiarized themselves with thatching methods and materials from Africa, Europe, and the Caribbean (generalized). It is known that British settlements in North America (including in Jamestown, Virginia) were historically thatched in the style of the indigenous people of each region. In the Caribbean, indigenous people and settlers alike used palms and palmettos for thatching, while palms and grasses were used in much of West Africa. While the professional thatchers attempted to replicate the style of thatching from Jamestown, Virginia, with the assumption it would have been the same in Bermuda, the thatching technique, or perhaps set of techniques practiced in Bermuda (given the rich demographic mix of the island) is largely unknown.

It is known that most roofs in Bermuda were thatched with palmetto leaves until the early 1700s (Verrill, 1902). As stated earlier, the British back home had been thatching roofs primarily

with grasses, sedges, and rushes, and they would have adapted these skills to the materials at hand. In 1688, Governor Robinson reported that 84% of thatching used palmetto leaves (Figure 19). It is likely the remaining 16% was made with the sedges and possibly grasses closely related to those more familiar to the English inhabitants. Thatching community roofs was the responsibility of all landowners with palmetto on their property. In 1677, all members of the community were required by law to each bring 8 dozen good palmetto leaves and labour to thatch St. John's Church in Pembroke.

Furthermore, Verrill (1902) writes that in the early years the houses were built entirely of palmetto – the walls thatched as well.

When a plague and other illnesses hit England and Virginia in the early 1620s, people were sent to Bermuda to recover. Verrill attributes their relative immunity to these diseases, and the visitors' recovery, to the palmetto houses: "The fact that the houses in Bermuda were, at that time, all made of palmetto leaves, and that the people lived largely in the open air, and very plainly, will account for the speedy arrest of the disease." (1901, p. 33)

While thatching roofs with palmetto was the natural choice for the early settlers, the thatch was soon replaced by Bermuda stone. This was due to a number of factors. There was a great need to conserve palmetto leaves for weaving hats and for household goods generally, and the deforestation that had already taken place had had a marked effect on the settlers: clearing forest for tobacco planting, as mentioned earlier, had removed Bermuda's natural windbreaks, leaving the cedar-palmetto houses vulnerable to weather and rot. Bermuda is also subject to frequent tropical storms and hurricanes. In 1712 and 1716, the island suffered from two major hurricanes that "blew many houses to the ground." When people rebuilt, stone became the material of choice, replacing cedar walls and palmetto thatch in kind (Verrill, 1902). Stone work tools and labour allowed Bermuda to quarry its soft and very useful limestone, additionally making stone slates more economical than thatching.

Stone roofs had the further benefit of enabling Bermudians to catch rainwater and funnel it into water tanks. Fresh water is uncommon in Bermuda, and until that time people had been dependent on brackish ponds and wells. Stone was also cooler than thatching, helping to turn houses into havens on hot summer days; it also greatly reduced or eliminated the risk of house fires, a common peril at the time, largely due to thatching. By 1720, almost all Bermudians were living in stone houses, as they continue to till this day; some, from the early 1700s are still

standing (Figure 54; Figure 55). Roofs are still generally made of thin overlapping tiles of Bermuda limestone, painted white with a lime wash, and serve as water catchments for each household ...

... And between the declining palmetto population and flourishing of human innovation, the art of palmetto thatching was soon forgotten.

2.3.3 Rope

When sailors arrived in Bermuda it was likely with great relief that they found that the two dominant forest species, cedar and palmetto, were almost all a knowledgeable person needed for making or mending a boat. Bermuda cedar has all the properties suitable for boat building. It is light, strong, and resilient in water. It can also be used ‘green’ (uncured), a great benefit to stranded sailors. It is difficult, however, to keep a boat without at least a painter for tying it to shore, and palmetto leaves provided strong and easily accessible fibres for rope. Unlike some plant fibres, such as cotton, that are so short they require spinning, palmetto leaves are upwards of 8 feet long. And unlike hemp, flax, and coir that need to be retted or otherwise processed in order to access their fibres, palmetto leaves need only be cut and left to dry for a day or two before they are supple enough to twist without breaking (Figure 16; Figure 18).

Rope and string were essential to the early colony not only for boating, but for myriad other uses too: tying up animals; making fishing lines, nets, and fishpots; weaving baskets and the handles and tumplines to carry them; weaving hats and bonnets and their straps; sewing clothing; dipping water from a well; lashing down belongings in a hurricane; felling trees; hanging laundry ... just to name a few.

Rope was so a precious a commodity in early Bermuda that many Bermudians today still adhere to the wisdom that one should only ever cut a piece of string if absolutely necessary. In the late 1660s, such an insight was made official in a company court order. The order requested that no rope meant to be used for whale-fishing be cut off or misused, such as for towing. Rather, it says that “directions be given that Palmetto leaves be used for the making of blubber and towing ropes for that same hath been found serviceable in the like cases.” (Company Court Order, February 1667/68). This likely means that the strongest fibres such as salvaged or imported hemp and flax be kept intact and used for the strenuous task of whaling, while the relatively more fragile, but still ‘perfectly good’ palmetto be used for tasks such as towing the

whale ashore.

Palmetto rope was still in use in 1722 when then Governor John Hope wrote, “The only thing these Islands subsist by are the cedar and palmetto trees. Of the cedar they build their sloops and fishing-boats; and of the palmetto leaves they make a sort of ware called platt; as likewise cables for their sloops, and ropes for other uses” (Headlam, 1934, xii).

Not only was palmetto rope used for the famous Bermuda sloops that became the mainstay of the island’s economy in the mid-1700s, it was also handy for the lighter boats that served as people’s daily transport around the archipelago. Use as rigging suited palmetto fibre as it is best kept wet, growing brittle and cracking when dry (Austin, 2004).²²

Accustomed to a life of extreme scarcity and thrift, Bermudians have always specialized in salvaging and repurposing imported goods and in making use of plants for everything imaginable. People born in the 1940s and earlier have childhood memories of nails bent back into shape, every scrap of fabric saved, kerosene cans repurposed into any number of things, flour sacks bleached and sewn into clothes, mattresses stuffed with crab grass, and corn cobs used as fuel (see Appendix A). Rope was no exception. Not only was rope only cut if absolutely necessary, useable fragments were generally saved and spliced together, or unraveled and re-laid anew. Much rope was imported, but it was still commonly made on-island.

Palmetto wasn’t the only homegrown fibre. Records indicate at least a modest attempt to grow flax (*Linum usitatissimum*) and hemp (*Cannabis sativa*), the latter still found openly in gardens at least until the early 20th century (McCallan, 1948). *Agave*, *Yucca*, and *Furcraea* species were frequently grown, and are feral still, and *Sansevieria* was known as an ‘African’ hemp and encouraged by Lefroy as he thought it could be useful to future generations (Appendix A). (Unfortunately, much of Lefroy’s keen dissemination of foreign species was also short-sighted; *Sansevieria*, as are many of his propagation projects, is now invasive.)

There are the remains of several ropewalks in Bermuda, notably at Dockyard and on Hinson’s Island, as well as stories of others long since overgrown or lost to development. Rope (of uncertain material) was still made in St. David’s until at least the 1960s, and many have fond memories of the late St. David’s Islander Gary Pitcher, famous for making his own boats and his own rope too. But of all the plants retted and spun, the endemic palmetto is the only homegrown fibre still used for string, albeit very rarely.

²² The closely related *Sabal palmetto* was traditionally used for rigging small craft throughout the West Indies (Austin, 2004).

Spinning threads and making twine had spiritual significance for people in many parts of Europe, Africa, and indigenous North America at the time of settlement. European traditions of rope and cord making are tied to fertility and magic. While the story of the three Fates spinning, measuring, and cutting the cord of one's life is of Greek origin, its echoes were present in 17th century Britain. (Note: Bermuda's own motto, based on the wreck of the Sea Venture, reads *Quo Fata Ferunt*, "whither the Fates may carry us".) Pre-Christian practices of ceremony and magic often involved the use of strings and knots to create or control connections between entities visible and invisible.

The same can be said of early Bermudians who came from Caribbean, native North American, and African cultures. While many had adopted Catholic and Protestant faiths, they likely brought with them, particularly in the early days, cultural practices from their homelands. Interwoven with their practical functions, fishing, spinning, and net-making had spiritual significance in most traditional cultures. Kopelson (2014) notes that many of Bermuda's early cultures would have perceived the connection between the living and the dead in terms of 'cords,' and would have engaged in rituals to bind and sever these connections accordingly. For most early Bermudians, the ritual use of string could have been a way to connect with ancestors; particularly poignant to consider as all who arrived in Bermuda were far from home.

There is no way to know what was being practiced in the privacy of people's homes, behind closed doors, or on ships at sea, but it is possible that in early Bermuda, palmetto string was used for such purposes.

2.4 Early European perceptions of palmetto

It is interesting to consider how the first European settlers might have perceived the palmetto in those early days. We can find our first clues in the fact that Bermuda was once known among Spanish and English people as 'The Devil's Isle'. Long before the Sea Venture wrecked there, the island had a reputation among mariners for being haunted by shrieking demons who would drag one's boat into the depths (Figure 11).²³ This was the late 16th and early 17th centuries, and while Christianity had a strong foothold in English culture, there is no doubt that the general populace (moving at the rate of *social*, rather than *political* history) still had a deep connection to fairies,

²³ The lines and battles between magic and reason, the perceived division between so-called 'superstition' and 'rationality', was encapsulated in Shakespeare's *The Tempest*, thought to be based on the Strachey's 1610 account of the Sea Venture wreck.

imps, goblins, and other beings who lived just out of sight and were often found in wild places. With the introduction of Christianity, a type of syncretism emerged, blending the pre-Christian worldview with the newly imposed one.

In the mid-17th century, Bermuda experienced witch hunts like those taking place in England and the United States. Though several people were killed based on their purported ability to make others fall ill, or marks found on their bodies, pre-Christian household practices continued covertly to survive to more modern times. Intriguingly, E. A. McCallan in *Life in Old St. David's* (1948) describes daily housekeeping rituals:

...[the ultimate] in brick kitchen floor and dooryard tidiness was to sweep with palmetto broom or sage-bush²⁴ twigs, and sprinkle with sand; the latter a practice brought from the Old Country. In the generations before mine the sand was put on after more or less fixed patterns of great antiquity and pagan origin, being the magic use of rune-staves or runes to ward off disasters. My mother remembered when Christian cross and pagan rune were combined for good luck.

It is unclear which 'Old Country' he is referring to, and more research could be done to ascertain how common this 'runic' practice was, what the symbols were, and their significance, but it points to the fact that many practices later considered 'witchcraft' were still being practiced in Bermuda in the 19th century or beyond.

How did 'pagan' Europeans in early Bermuda perceive the natural world? One Irish story from the times relates how people conflated between fairies and demons. To paraphrase briefly: As Lucifer was cast out of heaven, a legion of innocent or ignorant followers (demons) trailed behind him; and to the degree that they were guilty of sinful thought, they fell into the burning lake of hell. The most innocent fell lightly, and were caught among the clouds and winds of the sky, others fell a little lower, landing among the trees and flowers; then others into the ocean; and then the guiltiest down, down into the pits of hell (Wilde, 1888).

This story illustrates the crossover between indigenous beliefs and the newly introduced Christian doctrines which sought to convert the populace. The fairies that once dwelt in the natural elements were still present, but were lesser than God. One observer in the 1840s, after travelling to all corners of Great Britain and Ireland, remarked that he was afraid that within 100 years the belief in fairies might be totally eradicated from the countryside (Stafford, 1848). While in the mainstream sense he might be right, these deeply held beliefs are slow to wane, and there

²⁴ *Lantana involucrata* and *L. camara*

are still lingering tales in the far corners of Great Britain and Ireland today. But in the early 17th century, the perception of little people, spirits, and possibly devils would have been common. It is likely that many of those who emigrated to Bermuda from parts of Great Britain and Ireland, while from a wide range of cultures, lived in a thusly animated world.

It is also worth noting that some 17th century Christians could have perceived the ocean as akin to Christ's desert (Figure 12). Monks frequently set up monasteries on remote islands, viewing the raw power of the ocean and its vast impenetrable simplicity as an echo of the power of God.

Whether through pre-Christian or Christian eyes, until relatively recently people related to an animistic world. Wonder was more prevalent than reason and informed perception and experience. There was a greater sense of being connected with other species, whether as fellow 'people', denizens of earth, or as fellow creations of God, and the species that were known often held social and cultural value not as readily spoken of today. Such values can often be spied in metaphors.

Psalms 92:12 of the King James Bible reads: "The righteous shall flourish like the palm tree: he shall grow like a cedar in Lebanon". The metaphor of the palm as a symbol of righteousness is found in the legal system of the day as well. 17th century commentary in the records of the Central Criminal Court of England and Wales on the last words of criminals about to be executed reads, "The Truly Penitent, as the Palm-tree, spring up higher in the Exercise of their Graces, and abound more in the Fruits of Righteousness, by how much their Trials are multiplied and prolonged." (Old Bailey, 1692)

Thus, as the more or less radically converted Christians approached the low-lying speck of land they may have known as 'Bermuda', or perhaps as the 'Summer Isles', what did they perceive? Did they hear the screech of the seabirds as embodiments of Lucifer's legions? Were they filled with wonder, with dread? Were they humbled by the beauty and magic of the thick cedar forests, the towsy-headed robust and towering palmettos, whipping in the wind but appearing unscathed? Did they worry for their lives, for their children, the homes they were leaving, and that they were hurtling towards? Did they pray?

Chapter 3: 1630-1680: Palmetto Wine and Rorches: African Traditions Under Colonial Rule

*The sweet Palmettos a new Bacchus yield,
With leaves as ample as the broadest shield;
Under the shadows of whose friendly boughs
They sit carousing, where their liquor grows.*

- Edmund Waller, from *The Battell of the Summer Islands*, 1645 (Lefroy, 1879)

Early Bermudians from almost all constituent cultures had at least one thing in common: a robust appreciation for alcohol. As today, there were many reasons for using alcohol, including for refreshment, escape, habit, conviviality, celebration, forbearance, and ceremonial libation.²⁵ It is not always possible to know Bermudians' many reasons for drinking some 400 years ago, but we can gain insights from anecdotes, habits, and traditions.²⁶

As described in early reports, it would seem that many Bermudians, without ceremonial auspices, simply drank. (Keep in mind that as these reports were written by Christians with strong judgements against drinking, if something of spiritual importance were happening, it is unlikely it would have been recognized or respected as such.) Lewis Hughes, a pastor of dubious renown, writes from Bermuda in 1620:

My heart giveth me, that among other sins, the abominable sins of Drunkenness, that aboundeth among you, every shipping time, did much further the bringing of that judgement upon her, to admonish some to bee no longer Bawds to Drunkenness, by sending over so much Aqua-vitae, and also to admonish you to suppress Drunkenness and all other sins, as much as you can, which doe abound too much among you, to the great dishonour of Almighty God, and daily provoking of him to wrath. Forget not the judgement that God hath showed on Drunkards among you. (Verrill, 1902, p. 551)

²⁵ In 1666, de Rochefort lists some of the reasons for drinking palm wine among the Indigenous people in the Caribbean (he does not specify which culture on which islands). It is unclear whether they used palm wine at the time, or if that was only after contact with people of African descent, for while he mentions indigenous Caribbean people using cassava, corn, bananas, and other plants for making alcohol, he specifies that it only the 'Negroes' who made palm wine. Certainly palm wine is made today on Hispaniola from species *Pseudophoenix* spp. Occasions included: "Their drunkenness and their debauches are frequent, as hapning upon these several occasions: 1. When there is any Councel held concerning their Wars. 2. When they return from their Expeditions, whether they have prov'd successful or not. 3. Upon the birth of their first Male Children. 4. When they cut their Children's hair. 5. When they are at age to go to the Wars. 6. When they cut down trees, in order to the making of a Garden and building of a House. 7. When they launch a new Vessel, and lastly when they are recovered of some disease. They call these assemblies Ouicou, and since they have conversed with the French, Vin, that is Wine." (Book II, p. 308)

²⁶ Drinking was a highly politicized act in 17th century England, a cultural tension that may have spread to Bermuda, particularly among the ruling classes and made its way into legislation. While there was certainly a good deal of legislation surrounding drinking in Bermuda, it is outside the scope of this paper to examine the cultural context and nuances of these laws and this dynamic generally. For more on drinking in the 17th century, see Smyth, 2004.

There were many other stories from those early years of people drinking themselves to death, falling drunk into the ocean, or simply getting drunk and riding a cannon; again, according to Hughes (in Verrill, 1902) one man was reportedly “shot off full charged, which did shake him terribly.” During that same era (1619-1620), Governor Butler remarked:

Will it ever be believed [...] that twelve hundred persons (whereof the one half almost are women and children, and so no drinker in this nature) should in three months space only consume and empty two thousand gallons of this hartburneing gear, by powering it down into their vast maws? (in Verrill, 1901, p. 551)

Most of these references allude to the consumption of imported alcohol, namely rum. In 1698, Bermudians imported more rum than the entire English nation. But the first and most commonly made alcohol in early Bermuda came from the palmetto tree.²⁷ The drink was commonly called ‘bibby’.²⁸ Bibby was so ubiquitous in early Bermuda that palmettos earned the nickname ‘the bibby tree’ (not thatching palm, not cabbage palm, but bibby!).

Tapping palms for their sweet sap is an ancient custom throughout Asia, Africa, and the Americas. There are five products for which the sap has been processed traditionally: a fresh or lightly fermented drink, wine, distilled spirits, vinegar, and ‘sugar’/molasses (Francisco-Ortega & Zona, 2013). In early Bermuda, the first three beverages were commonly made.

Knowledge of how to procure the palm wine could have come to Bermuda through various channels. Henry May (1593) reports making a drink from the tree, knowledge his European crew, en route from Tobago to Newfoundland, most likely attained in the Caribbean, although they could have learned it in many other parts of tropics they had travelled to. It is also possible that such knowledge would have been common among mariners in colonial times. Charles de Rochefort, writing from the Caribbean in 1666, references early knowledge from India: “The most ancient Authors assure us, that among the East-Indians, the Wine of Palms was very much in use, as indeed it is at this day: It is also used in some parts of Africk, as at Monomatapa.” This type of ethnobotanical knowledge, while perhaps more accessible to the

²⁷ ‘Cedar berry’ (*Juniperus bermudiana*) beer and wine was made by the Sea Venture castaways, and the practice continued on Bermuda until recently. Inhabitants also made fermented fig (*Ficus carica*) and prickly pear (*Opuntia* spp.) beverages (Strachey, 1610/1964; Lefroy 1871).

²⁸ It is unclear where the word ‘bibby’ comes from and seems to be unique to Bermuda. Bibby in the Bahamas references ‘mucus’ from the nose, possible connection here being the sap that flows from a bored hole in the tree. Alternatively, bibby was a verb ‘bibble’ from the late 1500s meaning to drink and keep drinking (OED). Thus, Bibby was also sometimes called ‘bibbly’.

literate and educated, still seems to have travelled, like a rumour, across continents.²⁹ Certainly, anyone who came to Bermuda from the Caribbean and Africa would have been intimately familiar with various processes of tapping palms and fermenting the sap. For them, the practice was a spiritual one, intimately linked with traditional ceremonies, and a part of daily life. Their varied skills would have contributed the most to Bermuda's pool of common knowledge, possibly altering the way palmetto wine processing changed over time.

At first the practice of tapping palmetto was shared and enjoyed by all early Bermudians for a wide range of purposes, but by the 1630s, as the slave society tightened its grips on the freedom of many, so did such traditional practices become 'necessary' to control. Drinking was seen, by the staunchly Christian government, as a grave and unholy sin and, despite all Bermudians' general interest in the pastime, laws were drawn to limit and even forbid it. These laws were particularly applied to people of African descent, likely as a way to control their movements, how they socialized with each other, their access to resources on private property, and their ability to pursue their own cultural practices and spiritual lives.

While the traditional plant knowledge of the voluntary settlers in Bermuda was drastically altered by the novel landscape and lifestyle demands of living in Bermuda, the cultural knowledge and practices of those who arrived on the island as slaves would likely have been even more dramatically changed. A means of independence, self-care, and social bonding, the plant knowledge of subjugated people can be perceived as directly threatening to those in charge. As stated earlier, the knowledge that would have benefited the colony directly would surely have been kept, while that which challenged the political structure of slavery would have been penalized, and therefore either altered, lost, or driven underground.

To follow the history of palm wine in Bermuda is to follow the eventual loss of a great tradition.

3.1.1 Boring and grubbing up

There are multiple ways to tap palms, both sustainable and destructive. The various processes used in Bermuda are traceable to different cultures, although we can't know for sure who

²⁹ "Evidence of the use of *Borassus flabellifer* sugar in India has been reported by the Greek historian Megasthenes, ambassador to the court of Chandragupta, in the 4th century BC. Hindus knew how to extract it about 4,000 years ago (Ferguson 1888, cited by Fox 1977). In Africa, the main traditional use of palm sap is for wine production. It has been reported in Egypt (date palm) long before the birth of Christ (Barreveld 1993) and on the Guinea coast by early navigators in the 15th century (Sodah et al, 1971); (Dalibard, 1999).

brought them to the island.³⁰ Regardless, it is worth noting that in Bermuda several methods were used.

In July 1612, a companion of then Governor Moore wrote an addition sent home by the last ships from ‘Our Colonie in the Barmudas’: “I must needs mention that Palme tree once again, I have found it so good, take a hatchet and cut him, or an augur and bore him, and it yields a very pleasant liquor, much like unto your sweet wine [...]” (Verrill, 1902).

Boring palms for wine was practiced in parts of the Americas and West Africa alike. The *Drake Manuscript*, formally known as the *Histoire Naturelle des Indes* (1683/1996) depicts culturally important plants and animals in 17th century Caribbean. An image of a palm tree is accompanied by text describing how palm wine is made, showing a hole bored in the base of the tree with a small pipe (perhaps a rolled leaf or a piece of hollow grass) inserted, out of which the sap drips into a bowl (perhaps a calabash or coconut) (Figure 24). This image, however, is deemed fanciful by palm expert Dr. Scott Zona from the Fairchild Botanical Garden. Rather, Zona suggests that when a tree is bored for wine it is always in the terminal bud (near the leaves), where it would be juicier and less fibrous (S. Zona, personal communication, August 1, 2017). Regardless of where the trunk is bored, boring is one of the most sustainable ways to collect palm sap for wine.

A similar type of harvest is or was practiced by the Kuna people of present-day Panama. Lionel Wafer (1640-1705) stayed with the Kuna on the Isthmus of Darien in the late 17th century. He wrote:

Upon the Main also grows the Bibby Tree, so called from a Liquor which distills from it, and which our English call Bibby. The Tree hath a straight slender Body no thicker than one’s Thigh, but grows to a great Height, 60 or 70 Foot. The Body is naked of Leaves or Branches, but prickly. [...] When the Tree is young they tap it, and put a Leaf into the Bore; from whence the Bibby trickles down in great Quantity. It is whitish Liquor of a pleasant tart Taste; and they drink it after it had been kept a Day or two. (Wafer, 1699, p. 98)

The practice of making palm wine is widespread in West African cultures and West Africans brought this tradition with them across the ocean. The palms in the Caribbean and the palmettos in Bermuda were, of course, different species from their West African cousins, but closely enough related that the people instantly recognized them and knew how to access the drink within.

³⁰ For a thorough explanation of methods used globally, see Francisco-Ortega & Zona, 2013, and Dalibard, 1999.

In *The History of the Caribby-Islands* (1666), Frenchman Charles de Rochefort (1605-1683) makes several mentions of palm wine, likely made from *Acrocomia aculeata* (S. Zona, personal communication, June 18, 2017), the same species of palm tapped by the Kuna of Panama.³¹ It is particularly interesting that he specifies its use by ‘Negroes’, people who had come from Africa:

The Negroes before they come neer it make a fire about a foot of the Tree to burn up the prickles, which are as so much armour to it [...] Of this kind of Palms (Prickly-Palm) some Negroes get a sort of Wine by making incision in the branches. [...] And The Negroes, who are slaves in these Islands, make incision in the prickly Palms, out of which there destils a certain liquor like White-wine, which they gather in several little Gourds, fasten’d to the overtures of those trees, whereof each will yield two pints every day, and sometimes more. (p. 35)

There is no doubt that the culture was similarly practiced in Bermuda among the early arrivals directly or indirectly from West Central Africa, even as it was also likely practiced by the European sailors who had learned in their travels from observing palm wine being made in the tropics. (It is worth noting, however, that extraction of palm wine is said to be an art, and any European practicing the skill would likely have had a firsthand education in it overseas.)

The methods at first practiced in Bermuda, of nondestructively tapping or slicing the stem just below the terminal bud, most closely resembles the tapping method for *Borassus akeassii* of West Central Africa. The range for *B. akeassii* is from Senegal to the Democratic Republic of the Congo and it is used for wine throughout this area. *B. akeassii*, like the Bermuda palmetto, is a fan palm, and the scars on their trunks from tapping closely resemble the scars seen on some Bermuda’s older palmettos. (It has not been proven that the palmetto scars are, indeed from tapping, but this correlation supports the hypothesis.)

Palm sap can be attained even more sustainably by cutting the tree’s inflorescence and gathering the sugars that would otherwise go into making the fruits (palm wine paper). It is unclear whether this method was also practiced in Bermuda. Given the wide range of cultural backgrounds of the island’s inhabitants throughout the centuries, it is possible that several techniques were tried.

Bermudians didn’t always tap nondestructively. By 1627, they were practicing other methods, also akin to those known in Western Africa as well as in parts of the Americas. Now instead of just slicing or boring, whole trees were being felled, a well cut into the trunk and the seeping sap scooped out over a period of months. This change in practice could indicate the

³¹ Interestingly, there are no records of *Sabal palmetto* used for wine, despite its close relationship with *Sabal bermudana*.

arrival of different cultural groups from West Africa. For example, in traveller Thomas Winterbottoms's account of Africans from Sierra Leone (1805), he describes two methods from two different areas.

In a small bag hung around his neck or arm he carries an auger to bore the tree, and a gourd or calabash a gourd or calabash to receive the wine. A hole is bored, about half an inch deep, below the crown of the tree, and into this is inserted a leaf rolled up like a funnel, the other end of it being put into the mouth of a calabash capable of containing several quarts, which is filled in the course of a single night. The liquor is discharged more abundantly during the cooling of the night and morning than the heat of the day. About a quart of wine may thus be procured twice a day, over the space of a month, from each tree, without any injury to it, as it will yield the same quantity for many succeeding years. If, however, wine be taken from it for a longer time than about a month, the tree either dies, or requires a much longer respite to recover. When The palm wine has been drawn off, the hole is carefully filled up with mud, to prevent insects from depositing their eggs in it, the larvae of which would destroy the tree. Upon the Kroo coast it is the custom to cut the tree down, and to burn or scorch the outside before they tap it, probably to excite a degree of fermentation. Palm wine, when fresh drawn, is sweet, remarkably cool and pleasant, and very much resembles whey in appearance, and somewhat in taste. In this state it is not in the least degree intoxicating; but after standing twenty-four hours it enters into the vinous fermentation, and becomes very inebriating, and on that account is preferred by the natives. (p. 61)

Verrill confirms this development, writing, "A little later, the people were not content with tapping the trees for the sap, but cut down the largest ones to extract the entire pulp and juice from the interior to make this drink, which was at first used only as a fermented beverage. It was, however, decidedly intoxicating and led to much drunkenness and disorder". (1902, p. 3) His words "at first" allude to the fact that soon Bermudians were going beyond fermenting to distilling the sap into spirits.

3.1.2 Cultural significance of palm wine

While I am reluctant to make generalizations about West African cultures, of which there are many language groups, Hall writes that "leading experts in history, anthropology, and linguistics assure us that West Central Africans shared very closely related languages and cultures" (2005, p. 158). This seems particularly true when applied to spiritual practices involving palm wine, which appear to be shared among all those who live where the palm trees grow.

Palms are one of the most widely used plants in the tropics – indeed, one of the most useful plant families in the world. As stated earlier, the knowledge of how to use palms for a wide

range of daily needs was to serve the captives greatly, as they used their skills to help both themselves and the colonizers survive. But in the case of palm wine, traditional knowledge served enslaved people not only on the level of physical survival, but on the spiritual level as well.

When a plant is extremely useful to a people, it is generally assumed to have ritual or spiritual significance; it is more likely to feature in origin tales, stories, and lore. Gruca et al write, “Since palms are part of the everyday life of nearly all rural people in Africa, it may be expected that they are also important in the spiritual framework of rural life in Africa.” (2014, p. 10)

For early West Central African and Afro-Caribbean settlers in Bermuda, making palmetto wine would have allowed them to maintain their spiritual connections and a semblance of ‘normalcy’, that is, cultural continuity in a foreign and nightmarish context in a foreign and faraway land. While cut off from ancestors and ancestral lands, they could still connect to a world beyond this one through familiar practices.³²

By looking to present day ethnographies of African cultures from these regions, we can perhaps gain a window of insight, however obscure, into the inner lives of these early Bermudians when they were tapping palmettos for wine.

Palm wine, which goes by myriad local names, has been used in various African cultures in the following ways: as a vehicle for black magic and physical poison; an offering or sacrifice to spirits for protection, this accompanied by prayer; a gift on ancestors’ graves; and as a source of protection enclosed in amulets (Gruca et al, 2014).³³ In 1602, Pieter de Marees described Akan people pouring the first drops of wine on the ground as a libation for ancestors.³⁴ If they were wearing special ties around their wrists or ankles, they would spit the first drops of palm wine upon them, ensuring a peaceful occasion (Smith, 2004). Missionary Karl Laman (late 18th century) wrote, “Here and there one still finds special houses for the safe keeping of the nkisi, idols and ancestral images. One also comes across small well-built ancestral houses in which there is only one mug, into which one pours palm-wine that is sacrificed to the ancestors.” (1953, p. 56)

³² For an excellent discussion on African culture in Caribbean slave societies, and the complex socio-political role that alcohol played, see *Spirits and Spirituality: Alcohol in Caribbean Slave Societies*, F. H. Smith, 2004.

³³ For detailed accounts of how palm wine and different species of palm are used in specific African cultures, see Gruca et al, 2014.

³⁴ Alcohol is commonly used in many religions for libations. Libations are prayers accompanied or punctuated by the pouring of alcohol, usually onto the ground. I met a Bermudian man (of African descent) in 2017 who reported a similar practice, saying, ‘This is for my homies!’, as he pours a bit of his beer onto the ground. He reflected that he had never really questioned why he did this or where the practice came from. In the United States hip-hop culture, the tradition is called ‘pouring one out’, or ‘tipping’ to [one’s] homies’, the practice of which is featured in popular music. Likewise, a widespread practice in present-day Cuba involves pouring a few drops of rum into the ground ‘para los Santos’, for the saints.

When children were born into Igbo communities, the reincarnated spirit was given a gift of palm wine, and all attending consumed large amounts in celebration. Bosman (1705) wrote that in the city of Benin “publick mourning commonly lasts fourteen days ... during which they drink very plentifully.” (p. 448) Other funerals are described as having much shouting and dancing with copious amounts of drink (clearly an outsider’s perspective).

In some cultures, the sense of power and meaning extended beyond the sap to the tree itself. The Wanaka of East Africa, for example, see a maternal spirit in the palm tree; nourishing people as a mother would her children. Wanton destruction of a palm tree is thus akin to matricide.

Among the Ba-Ila of Zambia, a person could engage in a ritual to hide their life in a palm tree for protection. The person would only die if the palm fell, and as that was unlikely, they were destined to live a long life. Interestingly, this is not unlike some of the covert forms of sympathetic magic practiced by Bermudians today with cedar trees. Cedars are planted to commemorate marriages or the birth of a child, and while it is not stated overtly, it is understood that as the tree grows strong and healthy, so will that marriage or that child. I have heard Bermudians express dismay at certain people’s cedars suffering damage or listing – as if it were reflective of the wellbeing of those people.

These are just a small sampling of traditions, indicating the importance of palm wine in some traditional African cultures. Of course, under the duress of slavery, separation from family and often from language, and at times already adapting to life in Hispanic-Caribbean and Anglo cultures, it is impossible to know which or how much of these traditions were practiced in early Bermuda. Those stories and struggles were not written down; and they went largely unnoticed or disrespected by those recording history. And yet, as we see in the following section, hints of traditions can be gleaned, ironically, in the documents attempting to silence them.

3.1.3 Legislation of palmetto wine

Bermuda is home to the first colonial conservation laws in the Americas (Lefroy, 1881). Early Bermudians quickly recognized the limits to their resources, and those in power made laws regarding how and by whom the limited resources could be used. While on the one hand such laws made perfect sense, scarcity being a driver of conservation movements everywhere, on the

other such laws could be seen as a way of extending both economic and social control over both people and plants on the island (which was, after all, the order of the day).

A series of presentments reviewed by Bermuda's grand inquests³⁵ between 1627 and 1672 correlate with the increasingly confining legal structure of slavery that was descending upon Bermuda. They also reflect the ever-more conservative attitude toward alcohol that was a part of Bermuda's ever more Christianized culture. The intent of the laws could thus be divided into three categories: the need to conserve palmettos for thatching, fencing, and household goods; the need to control consumption of alcohol on the island, both for religious and economic purposes; and the need to control the movements of enslaved people (and all the ensuing racism and cruelty that accompanied such gestures) in order to maintain their economic value.

In July 1627, council meeting records express concern over the uprooting of palmettos to make bibby. The stated reason for their concern was the need to keep a number of palmettos as natural fencing along property boundaries, and to preserve palmetto use for the tenants, likely for thatching, household goods, rope, and even bibby for themselves. On a political (and therefore ethnobotanical) level, the proclamation targets certain segments of the population: 'servants and other ill disposed persons', 'tenants and halvers', all of whom would require 'a special license' from the landowner (who was generally overseas):

Upon complaint of the great abuses now used in grubbing downe³⁶ and cutting of Palmeto Trees for procuring of Bibbie whereby servants and other ill disposed persons doe meet, and spend much time and thrift in drinking thereof to the prejudice of their masters and undertakers and evill example unto other good inhabitants of this plantacon for redresse whereof it is ordered by the Governor and counsell assembled that from this time forward no palmetto trees shall be grubbed up or Cutt to procure Bibbie by any tenant or halver or any other person whatsoever without the speciall leave or license of the owner of the said land or his assigney or the approbacoen of the Councillor of the respective Tribes for the preservation of the grounds & fences where such trees shall bee grubbed up or set for the Tenants use and necessitie. And that no Bibbie shall be sould or exchanged by any person either for Tobacco corne Potatoe or any other provision whatsoever upon the paine and penaltie of one months imprisonment and 20 lb of Tobacco fine for everie time so offending. (Lefroy, 1871)

³⁵ A grand inquest was a group of Bermudians brought together twice a year to "serve on juries, settle disputes, punish criminals, and take stock of the social, moral, and physical state of the colony as a whole." (Jarvis 2010)

³⁶ 'Grubbe -up' or '-downe' means to uproot (OED), indicating that both boring and felling practices were in use. This type of felling for palm wine is described from many parts of West Africa, because for conserving the sap it is best to dig around the roots of the tree to carefully uproot it rather than cutting it down.

The proclamation also seeks to bar servants and others without means from trading bibby for other provisions, including tobacco, which was Bermuda's currency at the time.³⁷ The expectation and judgement on how people should be spending their time is also implicit: in this case, servants (in the masters' eyes) were spending too much time meeting together and having a drink. This was before slavery had been firmly established in Bermuda, but most of the settlers were in a position of indentured servitude – that is, having to work 7 years if they were 'white' and 99 if they were 'black', 'mulatto', 'Indian', etc.' upon arrival to pay for the cost of their passage.

The laws were clearly ineffective.

Twenty-three years later, in 1650, the population of palmettos had continued to plummet. This time the law forbidding the cutting of palmettos applied to everyone, servants (whether they be English, 'Negroes', or 'Indians') and masters alike. The intent seemed driven by the need for conservation. By 1652, the July presentments of the grand inquest read as ever more urgent. The writer notes that while at first bibby might have been made for a cup or two of wine, people are making 'aquavitae'. The inquest pleads that the governing bodies:

[...] take interest into the grievous destruction of Palmeto trees for Bibby, which doubtless was at the first innocently done by them who would drink a cupp or the like, and then but of trees growing upon waste places, yet as tyme and experience brings things to perfections soe now not contented are they But they say the highest trees yield the sweetest Bibby so that none are safe and the best Trees are cut, But if this mischiefe be not timely arrested all of our trees wil be destroyed And as we say, at the first, cutting of Bibby was done but in moderation for to drink a cupp or the like: But now they have learned to destill it into aqua-vitae and so for to make more of it that they now cut Palmeto trees in all manner of places. Idle negros in all parts of the island cutt most. And although all the Inhabitants knowe well of what great uses these palmetto trees are of in this plantation and that wee could not live without it, yet they not regarding posterity and aymeing at self end by making a pfitt [profit?] of Bibby by Aquavitae. And although this cutting of Bibby was foreseed by the last grand jury, And presented at the Assizes yet wee see no redress nor remedy thereof But rather increasing of their worke: Wee doe therefore desire and pray your worship and your council that some meanes may be found out to restrayne them so that if any shall presume hereafter to cut any palmetto trees only to distill into drinke unless they be trees either ready fallen or that they have a purpose to cleare them off to make use of the ground, be fyned and he or they that shall informe against shall have part of the fine. (Lefroy, 1871)

³⁷ The growing of tobacco was tightly controlled and monitored so that people, in effect, could not grow their own money.

The next item discussed in this meeting was a protestation of drunkenness itself, a corollary problem which likewise seemed out of control. The legislators associated drunkenness with sin, and granted magistrates and others in power the right to act on the perceived will of God, to “shew themselves valiant for the glory of God Causing all such offenders to suffer accordingly.” (Verrill, 1902) ³⁸

But in addition to religious, there were political and economic reasons for cracking down on alcohol consumption.

People were now distilling bibby and using it for profit – not surprising in a day when the trade currency, tobacco, was only allowed to be cultivated by the designated few, and even then was foundering as a crop. Distilled palmetto wine was likely a welcome trade item, enabling people to acquire much-needed imported goods. A further purpose for this law was likely to support the increasing trade in Caribbean rum; for while bibby could be procured for free, rum could be controlled for profit.

By making laws against bibby and against the free sale of alcohol, and insisting that people needed licenses to sell, the financial profit offered by habits and addictions was secured. In 1660, the court considered the issue of drinking once again:

At a Quarter Court, Watling Street, July 11, 1660. This court taking into consideration the manifold mischiefs and evils that are occasioned and bred by vending and selling of strong Drinke in the Somer Islands in an vnlicensed and illimited manner, to the growth and increase of the Odious sinne of Drunkenness amongst the Inhabitants there, to the high dishonour there of Almighty God, the great scandall of Religion and the Gouernment of the said Islands, Doe thinke fit and order. That noe person or persons whatsoever within the said Islands shall haue libertie to sell vende or utter strong drinke within anie of the Tribes diuisions or any partes or places thereof as an Alehouse keeper or victualler, or shall keepe any common Alehouse victualling or Tipling house there, except such person or persons onlie as shall have license for soe doing giuen or graunted vnto them, by the Gouernment & Councell of the said Islands. (Lefroy, 1871)

By this time, all people of African and Afro-Caribbean descent were enslaved; it was extremely unlikely that they would have been able to acquire licenses, nor easily purchase alcohol from

³⁸ The perception of drinking wine possibly held by many of the inhabitants of Bermuda and that of those writing the laws could not have been more different. It is possible that the people described in the presentment as ‘idle negroes’ sitting under the trees were actually people engaging in profound ritual. Smith (2004) cites Portuguese missionary Laurent de Lucques’s 1705 observation that the inhabitants of Soyo “do nothing but drink.” He then references anthropologist Georges Balandier, who believed Lucques misinterpreted the importance of drinking among the Kongolese, and argued instead, that “social necessity signified more than the pursuit of alcoholic stimulation; malafu [palm wine] was required on many occasions [especially at] rituals and ceremonies honoring the ancestors.”

those who had it. The access to palm wine and therefore to a whole set of cultural practices and relationships (to nature, spirit, fellow humans) was being systematically undone.

Between the 1650s and 1670s, Bermuda truly became a slave society. In 1656 all free people of African descent were banished from the island, ensuring that skin colour was now synonymous with social standing. That same year there was a slave rebellion, and the need of those in charge to control those enslaved grew more acute (Packwood, 1980). By the late 17th century, enslaved people, described as “Negroes, Mulattoes and Indians”, made up 38 percent of Bermuda’s population (Bernhard, 1999). In 1673, there was another rebellion plot which Governor John Heydon described as, “A barbarous and bloody design, tending to the destruction of the plantation.” (Packwood, 1975) By 1674, enslaved people were barred from leaving the land of the family who owned them, further limiting independent access to resources. The punishment was severe: if caught off the land twice without permission of their owner, they would lose an ear.

Conservation of resources continued to be another major issue for the struggling colony. In 1662, another law against unwarranted felling of trees for timber was passed attempting to officially stop the cutting of palmettos, preserving them for thatching:

For preventing the great mischief that is like to ensue to the plantacon for want of thatch by reason of felling of Palmetto Treese in the little Islands, wee have ordered that all the Palmetto trees be henceforth preserved, and that you the Gouvernor & Councell take care and give comand for planting of them in all the little Islands For the preventing the mischief & danger which otherwise is like to happen. (Lefroy, 1871, p. 178)

This is the first mention we see of enforcing preservation and reforestation of palmetto trees in Bermuda. The same appeal – to cease cutting and to replant was reasserted in 1666.

Two years later, another penal order was declared against destroying any palmettos at all. It enacted a fine for tenants or landlords caught cutting down palmettos; and ‘negroes or servants to be whipped.’ In 1671, a grand inquest lamented the lack of palmettos on certain smaller islands, “for want of which Treese, many Inhabitants have bin deprived of the leaves thereof (most useful for the Thatching of their houses).” (Lefroy, 1879) They ordered that the Councilors of adjacent tribes would determine who would be permitted to cut palmetto leaves and which islands they could access.

The population of Bermuda was growing, and clearly the need for palmetto leaves was acute. Stone quarrying had not yet begun in Bermuda and all houses at this time were still

thatched. The last piece of legislation pertaining to bibby was from 1672. It is brief and to the point, yet illuminating:

Upon the Grand Inquest presenting all such persons as shall willfully make waste of Palmetto by cutting them for Bibby or by unnecessary felling or firing them. (Lefroy, 1879, p. 28)

This note points to a few factors in Bermuda's social history. It indicates that despite continued legislation and punishment, early Bermudians persisted in making bibby from palmettos for at least 50 years. This speaks to the tenacity of culture a displaced colonial landscape.

Furthermore, it indicates that Bermuda's population wasn't static – people were arriving on the islands in waves, from all around the Atlantic Basin as well as from Southeast Africa and perhaps beyond, all the time. It is no wonder that the laws made in Bermuda were difficult to enforce – particularly when they pertained to cultural practices familiar to many of the new arrivals, such as the making of palm wine. In this last piece of legislation, we see a note about an additional way of procuring bibby with fire. 'Felling and firing' is commonly practiced in various parts of West Central Africa (Ghana, Burkino Faso, Ivory Coast) today. It differs culturally from the tapping and even uprooting processes described in earlier documents, indicating, perhaps, an influx of people from these other areas.

The story of bibby shows the loss of an ethnobotanical tradition due to several factors: the politics of carrying on a tradition, the constraints of limited natural resources, the pressures of a superimposed religion and new set of cultural values, the stripping of access to resources due to private property and access laws, and finally, the displacement of the traditional product with an imported one.

Over the course of decades, not only in Bermuda but in parts of the Caribbean and West Africa as well, imported rum from sugar plantations in the Caribbean soon fulfilled the needs – social, emotional, and spiritual – that palm wine had once met.³⁹ Not being able to freely access palmetto trees to make alcohol for themselves would have altered people's relationship to palm wine as a social and ceremonial tool. By using imported drink rather than tapping it from a living tree, the relationship with the tree would eventually be forgotten. If early Bermudians did in fact hold the palmetto in high spiritual regard, severing ceremony from landscape in effect severs that spiritual connection, and interrupts the directness of the relationship between people and plants

³⁹ In the Caribbean (and perhaps in Bermuda) bottles of rum were freely given to slaves by slave-owners as a type of currency, to win favours, or to 'soften the blow' of being enslaved (Smith, 2004).

with the insertion of laws, money and merchants. The transaction required to unite a person with their ancestors shifts away from a self-determined gesture reinforcing a relationship to the tree, towards being entangled with and contingent on that person's relationship with larger social and economic structures. This is one of the many ways that ethnobotanical knowledge continues to be lost today.

3.1.4 Bibby today?

While I have been unable to find mention of bibby-making in recent texts, it is slightly possible it was made into the 20th century. In *The Story of Bermuda* (1932), Hudson Strode writes, “The palmetto palm makes only trivial things like fans and ladies’ hats, door mats and funeral wine”⁴⁰ (p. 66). Note his use of the present tense. Indeed, Bermudians had a long tradition of spiced funeral wine, although the type of wine used has not been described:

The custom of drinking a particular preparation of spiced wine at funerals held its ground in Bermuda to a very recent date. It was attended by many excesses, and a stand against it began to be made about 1835. It is now extinct, but a peculiar barrel-shaped vessel used for the purpose may be sometimes seen among 'old time' possessions of families. (Lefroy, 1879, p. 158)

Was this spiced wine made of palmetto? And if so, was it made of the sap or the fermented berries?

In his *Botany of the Bermudas* (1913), H. B. Small mentions a drink made from fermented palmetto berries which I originally assumed was an error. However, Small was a resident of Bermuda in his later years, and *Botany of the Bermudas* includes many references to local plant uses that could only be known by someone who had spent time in local households (see Appendix A). I spoke with several Bermudians who, if they had heard of bibby at all, thought it had been made from the berries. They were surprised when I mentioned the sap.

Furthermore, I spoke to one man I met on a street corner, who, despite having had a few drinks himself, stated that he still “knew his stuff”, and began to list plants and their uses. When I asked about the palmetto, he said that one could put a tap in it (he made a gesture of turning a faucet) and “out the juice comes, drip drip drip, and it makes a sort of moonshine.” “Our grandparents taught us,” he said, “and we do it today.” If this is true, then the centuries-old

⁴⁰ This indicates how the perceived value of the plant to Bermuda's culture and economy had diminished.

tradition of making palmetto wine might have continued, quietly underground, and possibly unbroken, until today.

3.2 Torches: Unseasonable night-walking

Until at least the 1930s, palmetto leaves were used for torches in Bermuda. Visitor accounts and guidebooks from this era report palmetto leaves being lit to guide tours in limestone caves (Cooper, 1922). But in Bermuda's early history, palmetto torches were far more common, and may have served a range of purposes, from the political to the ceremonial.

A palmetto torch was made by wrapping palm leaves around the long petiole of the plant. The dry leaves are known to burn readily with a bright, clear flame. Torches were commonly used for night-fishing and turtling, a technique perhaps learned from or brought to Bermuda by indigenous people of the Caribbean (Jarvis, 2010).

But palmetto torches would have served multiple other purposes as well. With light, people can walk around at night; they can meet with people they may not have been able to meet with during the day; they can hold celebrations, funerals, and other nighttime ceremonies. They can also plan rebellions; or set fire to a house.

Just as the laws prohibiting the making of bibby were in part driven by the tightening grip of a slave society on the freedom of movement and independence of a group of people, so too were the presentments again torch-bearing a sign of the political times. By the mid 1600s, a law was proposed to ban the use of palmetto torches at night:

During this assize, it was also ordered, at the counsel table, that, whereas it had formerly bin a frequent practice to carry about in the night time palmitoe leaves, fired and flaming, to the much fear and danger of honest civil people, in firing their houses and grounds; that from thence forward the said ill custom should be absolutely left of, and that upon the penalty of one hundred pounds of tobacco, to be inflicted upon every master or a family or halver so offending; and that all hired servants, apprentices, and boys in the like case should be carried to the constable of the tribe and whipped.

This presentment tabled at the grand inquest in July 1670 elucidates further:

(2) Whereas the Grand Inquest hath presented the unseasonable walking in the night tyme with lighted leaves, to the endangering of the firing of houses, Timber, fences, and Sugar Canes (by Industrious Inhabitants planted.) By which inconvenience some Inhabitants may be utterlie undone, and others greatly prejudiced & disheartened. It hath bin thereupon unanimously ordered, That such Servants, Youths, Molattoes, Indians or Negroes as shall by night or dale presume to go with lighted leaves, or sticks of fire, in the highwaies or over mens grounds, shall be subject to be whipped upon

complaint or prooffe, according to the discretion of the Councellor of the Tribe where the offence shall be committed. And such Masters of Servants, Youths, Mollattoes, Indians or Negroes (if they shall presume to uphold or suffer them to act as aforesaid) are to forfeit Twentie Shillings Sterl, to be paid to the Sheriffe, or Councellor of the Tribe for publike uses. (Lefroy, 1879 p. 416)

The official purpose for the law was that torches were a fire hazard, particularly to the thatched roofs on the house (Figure 19; Figure 20; Figure 21). Certainly, fire was a great problem in homes in those days and many homes were lost. To what degree were these fires deliberately set? The implication in the presentment is that the people bearing torches might deliberately set fire to the homes of “honest, civil people”, or at least that was the fear of the colonial elite. Note that those who are being prohibited from walking with fire at night, the de facto “dishonest, uncivilized” people, are the “Servants, Youths, Mollattoes, Indians or Negroes” – in short, those who were not allowed to own homes, were enslaved, did not have leave to communicate with each other by day, would not have income to purchase imported food or alcohol, and who, yes, might have desired to destroy landowner’s homes and plantations. The date of the inquest (1670) falls squarely in the middle of at least two slave rebellions: 1656 and 1673. But they also might have been interested in meeting with each other, for any number of reasons.

Torch-burning was apparently not practiced by all Bermudians equally, and may have been more than a way to fish, make wine, or get around at night. It could have had a greater sub-cultural significance, perhaps connected to older African or European customs, many of which traditionally involved the burning of torches at night. The use of fire in some traditional African funereal customs has already been mentioned. In Ghana, palm inflorescences are burned so that the smoke will drive away bad spirits, and leaves of the palm *Raphia farinifera* are burned as incense at the church. Some British in early Bermuda may have practiced traditional pre-Christian rituals such as Samhain and Beltane, both of which involve burning torches and even lighting juniper fires, which would have been possible with Bermuda’s cedar. According to McCallan (1948), dried palmetto tops were used for bonfires and homemade firecrackers (especially on November 5th) well into the 20th century. What purposes had they served in earlier times? By controlling the burning of palmetto torches, what else was being controlled? We will never know all that happened when people walked these hills with torches. But what is certain is that by outlawing the practice there was one more piece of ethnobotanical knowledge, one more connection to earlier pre-colonial cultures, extinguished.

Chapter 4: 1680-1750: Maritime Trade: Hats and Plaiting

Since arriving in Bermuda, women wove palmetto to make multiple goods for daily life. The women who came from the Caribbean and Africa would have been very familiar with weaving palm leaves; many were highly skilled. Writing around this time, European traders and missionaries in West Central Africa describe finely woven fabrics akin to silk made of palm (Kopelson, 2014) in addition to exquisite basketry, bridal hats,⁴¹ and daily essentials. While palmetto was a new species for these women, using it would have provided no significant challenges.

Likewise, many women who came to Bermuda from the British Isles would have been highly adept weavers with a wide range of plant fibres, but palm leaves would likely have been a new material for them. Based on the output of palmetto products in Bermuda's early years, it is clear that British women also adapted their knowledge to this new plant fibre. During early settlement, local women from many backgrounds made hats, mats, brooms, brushes, fans, rope, beds, and other daily essentials from palmetto.

But by the end of the first fifty years, life was so difficult, they turned to exporting their wares. Reports written in 1687 describe Bermuda's agriculture as no longer profitable. So many cedars and palmettos had been cut that the fields were lacking windbreaks. Orange trees were 'blasted' by winds and the ground was barren. A great influx of ants had taken over the island, and it was no longer possible to grow maize, the primary staple (Verrill, 1902).⁴² Corn was now imported at a high price. Likewise, the cultivation of tobacco, never greatly successful, was even less profitable now. Many Bermudians had once paid their rent and other debts with tobacco, but due to increased duties this was no longer an option (Bernhard, 1999). In short, most people were hungry and poor.

Compounding these issues was the fact that there were ever fewer men on the island. Although Bermuda once imported women as settlers' wives, the ratio of men to women, in the population of both the enslaved and enslavers, started shifting dramatically. As a maritime economy in the late 1600s, Bermuda's cultural connections had spread to Turks and Caicos, the Bahamas, the Carolinas, and even up to the Canadian Maritimes, as if it were a single colony united by the sea. By the beginning of the 1700s, there were 3 women for every man in

⁴¹ In Namibia, palm leaves are used in a ritual preparation of bridal hats among the Ovambo (Gruca, 2014).

⁴² Everyone ate what is known as 'maize meal mush', a porridge of maize meal and water (Verrill, 1901).

Bermuda. Records in 1727 show that for every unmarried bachelor there were 9 unmarried women. By 1746, 20 out of 38 households in St. George's were headed by a woman (Jarvis 2010). This gender disparity was due to a number of causes, primarily the sea. Most of Bermuda's men, both free and enslaved, spent much of their lives at sea. Even when (non-enslaved) women were married, they would see their husbands only occasionally and would run the household and conduct business on his behalf. Many men perished in shipwrecks and storms, while others met wives in ports, perhaps through extended family. Some have posited that when the gender ratio is so imbalanced, [heterosexual] men are less likely to settle down, preferring to opt for a lifetime of bachelorhood: rum, many women, and the sea (Crane, 1990).

Not only were Bermuda's homegrown men flung far afield, but few foreign mariners visited the island, and soon Bermudian women adjusted to living in a default matriarchy (Jarvis, 2010). Then as today, Bermudian women were extremely capable and independent; they travelled between the islands in small boats, and they were frugal, hard-working, and resourceful. And by the late 1600s, amidst the failure of crops, high import prices, and starvation, they needed to find a way to survive on an island with limited resources and a tremendous dependence on the outside world.

They found their answer in plait. Palmetto plaiting was a simple art of making very long, $\frac{1}{2}$ to $1\frac{1}{2}$ inch wide strips or tapes of woven palmetto leaves that were then coiled and sold in 20 yard lengths (Figure 35). The newly grown leaves that grow up from the heart of the plant are first split into their natural sections, and then along the mid-vein into long, even strips with the narrow side strips and mid-vein put aside (Figure 25). Up to 15 strips are then plaited, or braided, into a number of patterns. The wide tapes of plait can then be placed alongside each other and, overlapping slightly, sewn into various products such as coiled hats, purses, and baskets (Figure 26). Nell Johnston, who learned how to weave as a child in Bermuda in the 1950s, reports that the leaves should first be dipped in saltwater to maintain their colour and strength when dried. In the late 19th century, Jones describes one way of processing leaves in detail. He doesn't mention the salt water dip, but does say they should be smoked, clearly a process dictated by fashion and the export needs of the times:

It is from the strong leaves of this tree that the well known "Mudian plait" is made. It is prepared in the following manner. The young leaves are tied about their centre to prevent them being torn into strips by the wind. When these leaves are fit to use, i.e., before they have grown too hard and coarse, they are cut from the tree and placed in the sun to bleach. When sufficiently dry they are smoked

with burnt brimstone in casks to render them white. When ready for use they are cut into strips and different forms of plait made according to taste. Of the courser plait is made labourers' hats, the finer and more difficult of manufacture being used only for the ladies' bonnets and fancy basket work, specimens of which are sometimes produced of exquisite finish. (Jones, 1873, p. 274)

It often takes a visitor to observe and document residents' daily habits. Bermuda is fortunate that, as a hub of trade and travel, details such as these were recorded and are available to residents today.

4.1 The origins of plait

“One over, under two, pull it tight and that will do”⁴³

It is unclear how Bermudian women came to be part of the larger plaiting cottage industry which operated in parts of mainland Europe (France, Spain, and Portugal), England, Scotland, North America, and the Caribbean – and possibly also parts of North and East Africa and the Seychelles, where it is still practiced today.

In the late 16th century, a few decades before Bermuda was settled, plaiting had been brought to in England as potential employment for impoverished villagers. The story goes that in 1562, Mary Queen of Scots travelled to Lorraine, France, where she noted women and children engaged in plaiting straw for hats. The art was so simple a handicraft that children could participate with ease. Wherever people were thus employed, noted the Queen, they seemed to be doing better than in other areas. She brought some plaiters with her back to Scotland in hopes that the craft provide supplementary industry to agricultural areas. She did not accomplish her plan, but her son James I picked it up and in 1608 transferred plaiters to Bedfordshire where there was easy availability of straw⁴⁴ (Strickland, 1886). Plaiting schools were soon established throughout the Bedfordshire, Buckinghamshire, and Hertfordshire counties. In 1689, the English government tried to pass a bill encouraging the wearing of woolen hats, possibly to support the felt hat industry in northern England. Thousands of straw plaiters marched in protest. Over 14,000 people in the Luton and Dunstable areas alone were already making a living solely through straw hats (Tansley, 1860). By the early 1700s, during the reign of Queen Anne, straw hats had become a fashion trend among women in the court; wealthy women strove to dress like

⁴³ English seven-straw flat plait rhyme (Luton, 2003).

⁴⁴ This origin of plait is viewed as romantic and unlikely by some historians.

country girls and a wide-brimmed straw hat – such as the bergère (French for ‘shepherdess’) or milkmaid hat – was the perfect accessory (Figure 31).

Bermuda’s contribution to this fashion trend is not mentioned in any English, fashion, or straw-plait histories. It is possible that some of the early 17th century Scottish and English settlers were already accomplished straw⁴⁵ plaiters when they arrived in Bermuda and adapted this skill to the palmetto. Likewise, it is possible that African-Hispanic-Caribbean Bermudians were already intimately familiar with plaiting and weaving hats and other objects from palm. Tracing the exact origins of this artform in Bermuda and elsewhere is beyond the scope of this paper, but a cursory glance reveals that such plaiting with palm is considered traditional – at least today – in many parts of the world, particularly around the Atlantic Basin. It is possible that, just like in Bermuda today, these traditions date back only hundreds, rather than thousands of years. But it is still worth noting a few groups who practice a similar type of weave: the Houma people, an indigenous group in Louisiana, and the Pequot⁴⁶ from the east coast of North America.

Weaving palms into plaits is also known in the mountains of Portugal. In Mallorca, the art of such palm weaving, identical in style, is called *Obra de llatra*. Tall plaited hats (of straw or palm) covered in flowers are part of the traditional female ceremonial dress of the Extremadura region of Spain, a region that flourished and played an integral role in 15th and 16th century Spanish colonial activities in the Americas. But perhaps the most elaborate type of palm plaiting practiced today can be seen in the work from Elche, Spain, a city on the east coast of the Iberian peninsula with a long history of all things palm. In and around Elche is a famous *palmeral*, presently a plantation of over 200,000 date palm trees (*Phoenix dactylifera* L.) that dates from at least the 5th century BCE with a 10th century CE irrigation system created by people of Islamic descent when they controlled the area. At various points in history, it was likely valued for its dates, sugar, wine, paper, and weaving materials. By the 13th century after a Christian take-over, some palm leaves were repurposed to make sculptures in celebration of Palm Sunday. The sculptures made today are tall, highly ornate, and elaborate artefacts. Looking closely at the

⁴⁵ Straw was an inclusive term that was extended to palm and palmetto when it arrived in England and America. It is therefore not possible in early histories to distinguish hats made of wheat straw from those made from imported Bermuda palmetto. Bermuda has generally been left out of the many histories of straw hats, and there are numerous examples of hats and bonnets in American and English museums. None of these are attributed to Bermudians. And yet, if Bermuda exported so many thousands of yards of plait, were famous for their fine work, and their hats were sought after specifically, one would guess that some of the ‘straw’ hats preserved in museum are, in fact, palmetto.

⁴⁶ Pequot people came to Bermuda at various times as slaves and prisoners of war; Houma people are active in Louisiana near what used to be major slave-trade ports.

weaving patterns, one recognizes weaves similar to those made for Bermuda's hats – fishtail weave, three strand edge band, herringbone, and so on. The palmeral of Elche is a UN World Heritage Site, in part because of how it shows a repurposing of an area or resource. This highlights again just how pan-cultural certain types of technology are; tracing them to their 'root' origins is a moot endeavor.

Whether plaiting came to Bermuda by one channel or by many, Bermudian women quickly adapted their skills to appeal to the English and American markets. Instead of the practical hats and materials already in production, they began weaving very fine and elaborate plaiting patterns and exporting coils of unsewn plait as well as sewn hats and bonnets to America, the Caribbean, and England. Soon they were famous, and, as Governor John Hope observed, "English ladies never thought themselves handsome or well-dressed unless they had small Bermuda hats" (Figure 32).

4.2 Mrs. Hayward, Queen Anne, and fishpots

As early as 1700, Bermudians were famous for their weaving. The following piece, written that year by John Lawson, lends insight into their widespread reputation for palmetto industry. In the following passage, the author describes a trip he took "from Charles-Town to North Carolina" in a large canoe with 11 other people. On December 28th at 4:00 in the afternoon, they passed over the breach, left Sullan's Island, and headed to the Santee River, where there was a colony of French Protestants. At night they got to Bell's Island. He describes it here:

[...] a poor Spot of Land, being about ten Miles round, where liv'd (at that Time) a Bermudian, being emply'd here with a Boy to look after a Stock of Cattle and Hogs, by the Owner of this Island. One Side of the Roof of this House was thatch'd with Palmeto-leaves, the other open to the Heavens, thousands of Musketos, and other troublesome Insects, tormenting both Man and Beast inhabiting these Islands. The Palmeto-trees, whose Leaves growing only on the Top of the Tree, in the Shape of a Fan, and in a Cluster, like a Cabbage; this Tree in Carolina, when at its utmost Growth, is about forty or fifty Foot in Height, and two Foot through: It's worth mentioning, that the Growth of the Tree is not perceivable in the Age of any Man, the Experiment having been often try'd in Bermudas, and elsewhere, which shews the slow Growth of this Vegetable, the Wood of it being porous and stringy, like some Canes; the Leaves thereof the Bermudians make Womens Hats, Bokeets, Baskets, and pretty Dressing-boxes, a great deal being transported to Pensilvania, and other Northern Parts of America, (where they do not grow) for the same Manufacture. The People of Carolina make of the Fans of this Tree, Brooms very serviceable, to sweep their Houses withal. We took up our Lodging this

Night with the Bermudian; our Entertainment was very indifferent, there being no fresh Water to be had on the Island. (Lawson, 1709, p 7)

From the 1680s onward, all manner of palmetto products were exported from Bermuda, including rope, brooms, and baskets. Even whole palmetto tops – unprocessed leaves cut from a tree, (thereby killing it) – were sent to New England so that women there could make similar products for themselves. Note that the laws that had been put into place in the 1620s forbidding the export of palmetto leaves to keep them available for thatching were then lifted less than a century later, the need being so acute (and the thatching being replaced by stone!). In 1688, 31 Bermudian ships exported 60 dozen palmetto hats and brooms to the Caribbean, and 70 fine cedar chairs and chests (Jarvis, 2010). Some of the chairs may have had palmetto seatwork (an adaptation from an Asian style that usually uses sedges).

By 1691, however, the export of palmetto plait was so lucrative that the Bermuda government passed a law forbidding the export of leaves and other products made from them (Jarvis, 2010). While export to the Caribbean and America was successful, it was initially difficult for Bermuda to break into the English market, and the English straw weavers were protective of their monopoly. According to Bermuda lore, however, one woman made a hat so beautiful that it won the favour of Queen Anne and the ladies in her court. Mrs. Martha Hayward (nee Carter) (1675?-1791) was a descendent of one of the ‘Three Kings’ who had stayed alone on the island from 1610-1612. Mrs. Hayward lived in Carter House on St. David’s Island, one of the earliest stone houses built in Bermuda.⁴⁷ (Figure 30) The Royal Gazette (Bermuda’s local paper) wrote this about Mrs. Hayward when she died on May 19, 1791:

On Tuesday died Mrs. Martha Hayward of St. David’s Island at the extreme age of one hundred and fourteen years. She retained her faculties to the last, had been a regular liver, and knew very little sickness until a few days previous to her death. She had a most extraordinary memory, could remember every remarkable event during her life, and relate it with great correctness. In some years before she was 70 she wore spectacles, but after that time her sight came perfectly to her, and she could read the smallest print without ever since. She desired to live longer, but when she understood her dissolution was drawing near, she resigned her mortal life without a groan. She plaited palmetto hats for a living, some of which have been lately sent to England, as a curiosity [...]

Island tradition says that in her younger years, Mrs. Hayward sent one of her finest hats to Queen Anne, launching Bermuda into England’s straw hat trade. An alternative and less-told

⁴⁷ Carter House still stands as a small historical museum, featuring palmetto weaving and other early arts and knowledge of native Bermudians.

story is that of a young French woman who travelled to Bermuda with her fiancé and fancied a lace hat such that they had in France; he arranged for one to be fashioned for her out of a local material, and the palmetto hat was born. Perhaps, however, it was Mrs. Hayward who made it.

Before devising ways to split wheat-straw for weaving, the English experienced difficulty with the weight of their straw hats. This would have been particularly problematic as the hats were commonly laden with flowers, fruit, beads, and other accouterments. Bermudian palmetto plait provided a very strong and light-weight alternative to straw. It is unknown what Mrs. Hayward's hat looked like that so moved Queen Anne and her ladies, or what it was that appealed to them. One possibility is that she used a special type of weave that the English had never seen before: a weave commonly found in palm products, but not in those of wheat, and one designed to be strong even in great widths and spans. This brings us to another ingenious ethnobotanical adaptation that Bermudians made to their social-ecological circumstances – applying traditional skills to novel needs: the fishpot weave.

4.2.1 The fishpot weave

The Oath of a Fisherman: I, A.B., do swear by my Old Fishpot that I will not give, barter or sell one grain of fish to any person who has had any hand in petitioning, making or contriving the fishpot and seine law, if they were starving, so long as the act is in force. So help me, Fishpot. (McCallan, 1948)

The 'fishpot' braid appears to be among the most common patterns of weaving with Bermuda palmetto; appearing on hats, handbags, and on the capes and hats of palmetto and banana leaf dolls. It is an open weave of trihexagonal tiling, with strands crossing each other in such a way as to create strength and allow a lot of air (or water) to pass through.⁴⁸ It is also called a 'fishpot' braid in Cooke and Sampley's book on palmetto weaving, written in South Carolina in 1947 (1947/2013). The authors note that the braid is named after a "fishtrap of the same weave made by the Atlantic islanders." While Bermuda fishpots today are strictly regulated and made with wire mesh, they were traditionally very common and made with allspice (*Pimenta dioica* (L.) Merr.) sticks with a palmetto leaf or cedar root weave. Chevron or arrowhead shaped traps (Figure 27; Figure 28) were common both in Bermuda, as were Z- or S- shaped traps (Slack-Smith, 2001), such as the lobster pot on display at the Carter House Museum (Figure 26). All three shapes of trap were also found in the Caribbean; the older ones, made of organic fibres and of the same

⁴⁸ In Japan this weave is called 'kagome'.

‘fishpot’ weave, are occasionally found lost on the ocean floor. In conducting this research I became curious as to the origins of these fishpots – their design ending up on Queen Anne’s head.

I found no record of this style of fishpot made in pre-Columbian Americas or the Caribbean. Looking further afield, I found fishpots from West and West Central Africa, but these too looked nothing like the arrowhead and Z- or S-shaped pots, and did not have a ‘fishpot’ weave. Then I happened upon an image of the very same fishpots as those in Bermuda on a postcard from Lake Victoria, Kenya from the early 1900s. The design of Caribbean and Bermudian fishpots, it seems, could have originated in Southeastern Africa!

I began searching for images of fishpots from the surrounding area, and found that fishpots of this style are still made both on the Kenyan and Tanzanian coasts, including on the island of Zanzibar and further east in the Seychelles, Indonesia, and the Philippines (Figure 28).

While the design is different, the same type of weave is found in Chinese and Japanese fish and shrimp baskets, and even in traditional prawn traps in British Columbia. The islands of Madagascar, Zanzibar, and this whole coast has a rich, very culturally-diverse history as a hub of maritime activity for millennia. The historical traffic of people between Southeast Africa and the parts of Asia, such as the Philippines and Indonesia, explains, perhaps, the similar design of fishpot used in these nations as well.

The presence of the fishpots in Bermuda highlights the fact that many enslaved people, in early British colonies in Virginia, Barbados, Jamaica, and Bermuda, came from Southeast Africa and Madagascar. This is supported by recent DNA tests of people on St. David’s which indicate that many are descended from people from that region (Gaieski et al, 2011). The presence of the fishpot weave perhaps lends cultural, tangible evidence to this history.

History generally has it that enslaved people who were brought to Bermuda came from West Central Africa, primarily Angola. In order for the fishpot style to have spread around the Caribbean, however, I reasoned that it must have arrived early and then been passed on through successive generations of people born on the islands. Sure enough, I found that the slave trade in the mid-1600s Bermuda, Barbados, and Virginia, Boston, and New York was mainly from ‘illegal’ Bermuda-run pirate outposts in Madagascar and Southeastern Africa generally; a triangle trade route set up between the Caribbean and these regions of North America, England, and Southeast Africa. Many small British ships were coming and going during the 1680s-1690s;

trading directly and also intercepting Muscati ships (Barendse, 2002; Jarvis, 2010; McDonald, 2015). Close to a third of enslaved people brought to mainland North America during that time were from the Southeast coast of Africa, and a majority of people who came to Barbados (“Trans-Atlantic Slave Trade Database”, 2017). There are no statistics for the number of enslaved people who were brought to Bermuda at that time, nor their origins, but the pirate base in Madagascar was run by Bermudian-born pirates John Bowen and Nathaniel North and their fellow pirate George Booth. Indeed, early records in Bermuda and in Virginia (and up into the east coast of what would become Canada) make mention of ‘malagasy’ slaves, either when sold or more often when they’d escaped.

The design of the fishpots used in Bermuda and elsewhere are unfortunately too effective and as fish populations dwindle, their use is strongly regulated. Fishpots in use today are purchased and government issued. A few older Bermudians still know how to make them with an allspice frame and wire mesh (Appendix A), but I found no one who could make the weave. Wonderfully, however, the ability to create a fishpot weave from palmetto leaves has been kept alive through palmetto hats made for dolls, primarily by Ronnie Chameau (Figure 47). This is a prime example of adapted knowledge persisting in a culture, though in a markedly modified form.

4.3 Sybilla Masters and the patenting of adapted knowledge

While stories swirl about how and why Bermuda’s plait became a fashion trend in England, there is a third explanation that is worth exploring. There is no doubt that Mrs. Hayward sent her hats to England, possibly as a gift for Queen Anne, possibly igniting a fashion rage. And perhaps the very first idea for a fancy ladies’ hat of palmetto was born from a young French woman looking for lace on a subtropical island, far from home. But another Bermudian woman, Sybilla Masters, also played a role in Bermuda’s success in the English plait market, possibly brokering the idea from the beginning. It is unclear to what degree Masters helped to introduce the palmetto hat and bonnet to England, or if she was simply pivotal in promoting the export of plait only, rather than of fully sewn hats, but her efforts appear to have determined the control and market of Bermuda palmetto products in their heyday, for 14 years, from 1716-1730.

Unlike the story of Mrs. Hayward, however, the story of Sybilla Righton is rarely told in relation to Bermuda. Many history books, books on patents, and on women inventors tout her as

the first American inventor (and first American woman) to receive a patent. This is problematic for a couple of reasons; America was not yet technically America when Sybilla Masters applied for her patents in 1712, and on her application it clearly says, more than once, “Bermudean-born” (Figure 33). She is also occasionally listed as the child of William and Sarah Righton (Waldrup, 2004) – who were actually her brother-and-sister in law in West Jersey.

In fact, we know from looking at archival records in Bermuda that Sybilla was a descendent from one of the earliest Bermudian settlers – her grandfather, George Stirk, immigrated to Bermuda as a minister in 1623. His daughter (also named Sybilla) and son-in-law William Righton were among the so-called “Eleutheran Adventurers” who left Bermuda in 1648 as religious independents, led by the once-and-future Governor of Bermuda William Sayle, and Stephen Paynter, Sybilla Righton’s uncle. Upon returning to Bermuda several years later, Sybilla and William had a daughter also named Sybilla (sometimes written as Sybella, Sibella, or Sibbill), who, like all Bermudian women of her time, gained palmetto-weaving skills. The younger Sybilla married Bermudian merchant Thomas Masters and they immigrated to Philadelphia in 1687.

Thomas Masters became one of the wealthiest men in early Philadelphia, owning great tracts of real estate within and outside the city limits. He became mayor of Philadelphia in 1708 and was provincial councillor from 1720-1723. Thomas and Sybilla kept society with the Penn family and were clearly among the most powerful merchant and political families both in Pennsylvania and in Bermuda (Needles, 1884; Mercer, 1982; Hughs, 1828).

Straw hats were popular at the time, and Bermuda had already been exporting palmetto products, including hats and plaiting, primarily to America (Jarvis, 2010). Sybilla Masters saw an opportunity to monopolize the trade from Bermuda (and possibly from the West Indies) to both America and England, and in 1712, leaving her five children behind, she travelled to England to petition Queen Anne for a patent for a method of weaving Bermuda palmetto into hats and bonnets, and another for a machine she invented for crushing maize into what she called ‘Tuscarora Rice’ (touting its dubious health benefits).

While there is a drawing of her maize-crushing machine, there is unfortunately no image in the patent application documents for her palmetto hat and bonnet patterns. It is impossible to know if she indeed invented a way of making hats from palmetto – perhaps it was Masters, and not Hayward or the anonymous French woman who first thought to use palmetto to compete in

the straw hat trend of the times.⁴⁹ It would be nice to think that the exact pattern for which she applied for the patent was her invention, but clues in the applications themselves hint at a bit of hyperbole. For example, the application says that palmetto leaf in Bermuda was “but of little use” before Masters thought to make bonnets of them. Perhaps she meant commercial use, but even that we know is not true. Here is an excerpt from one of the patent application letters:

There is a woman (a Bermudian born) who hath been very successful in many things, which has proved for a general good [...] The same woman has invented to make out of the leaf of a tree which grows in Bermudas, and which was but of little use before a conveniency of a bonnet for the head which is mightily like to [take?] in America and would no doubt in England if encouraged. This person coming into England, and liking the country, and observing how Cheap they work here to what they do in America, and the need the poor have of being employed here, being so numerous to what they are there, would be engaged to employ a great number in this commodity, which now being chiefly in their own family hands, and having a mind to settle in England. If encouraged, with the consent of the island, leaving the platting part of the commodity to them, which by the invention of this woman, employs most of the people of that island, who desire to be supply'd with English commodities, and would willingly petition in favour of it. The working of it up being done in their own family in Pennsylvania, which then would only be transported to work here. And she knowing best where they will turn to best account in all America will be engaged to bring in this part of the work into England, where having it done cheaper, can be translated into those parts. And this person being desirous of settling here in England. If she could have a patent for those two inventions of her own which no other person ever invented before, for making those bonnets whether of pometa or chip or anything else, or whether covered or uncovered, and for the refining and importing the said grain as aforesaid, which would be universal advantage for exchange of English commodities. (Figure 33)

The application confirms that palmetto hats had been exported from Bermuda to America prior to coming to England, a business perhaps controlled by the Righton/Masters family who, it says, employed ‘most of the people’ in Bermuda to this end. Jarvis echoes this arrangement:

“poorer inhabitants made most of the plat, but in partnership with landowning families who had access to the leaves. Propertied Bermudian mistresses were apparently farming out much of the weaving to their landless, poorer neighbours – esp. those with many female residents.” (2010, p. 290)

The export to Pennsylvania is supported by Lawson’s remark first written in 1700:

the Leaves [of the palmetto] the Bermudians make Womens Hats, Bokeets, Baskets, and pretty Dressing-boxes, a great deal being transported to Pensilvania, and other Northern

⁴⁹ It’s hard not to wonder if Masters knew Martha Hayward and what their relationship was – perhaps they invented the hat together, or perhaps the more socially powerful Masters took the idea from Hayward and brought it to England as her own.

Parts of America, (where they do not grow) for the same Manufacture. (Lawson, 1709, p. 7)

The Bermuda plait industry was clearly thriving in the early 1700s, with hundreds of Bermudian women employed in plaiting. But it really took off after Masters opened up the English market. In 1716 she was granted not a patent, but the rights to control the palmetto hat and plait market from Bermuda for the next 14 years.⁵⁰

Within a month of receiving the patent, Sybilla Masters opened a shop in London that sold exclusively West Indian palm products: “The West India Hat & Bonnet”, against Catherine-Street in the Strand. Here, according to the London Gazette for March 18, 1716, she sold hats & bonnets at prices from one shilling upwards, as well as “dressing & child-bed baskets, & matting made of the same West India for chairs, stools, & other beautiful furniture for the apartments of persons of quality, etc.” (Waldrup, 2004) That same year, Hannah Penn, the wife of William Penn (real estate entrepreneur and founder of the state of Pennsylvania), wrote in a letter to her cousin, “I hope Sybilla Masters will also return to hers, all her friends, I believe, in these parts wish it and I hope she is prevailed on to attempt it for the good of herself and family”. (Hughes, 1828)

By May of that year, Sybilla Masters was back in Philadelphia. On July 15, 1717, the provincial council, on Thomas Masters’ petition, granted permission for the recording and publishing of her patents in Pennsylvania as well. The patent was clearly for making any kind of straw hat, regardless of materials, as in 1724 one William Heaton had “discovered a certain vegetable of grass of the growth of Great Britain for the making of women’s hats much finer thereof Leghorn, Bermudas etc.” Heaton was prevented from taking his idea to market as according to the Pennsylvania courts, it was an infringement of Masters’ 1716 patent. (Dony, 1942, p. 27)

While touted as an inventor, it might be more accurate to call Sybilla Masters an entrepreneur. From 1716-1730, under her monopoly on the export of plait to England, Bermudians switched from making completed products to producing only plait, as per Masters’ proposal. Plait brokers soon emerged, distributing leaves to households and then returning to collect the plait, coiled into 20 yd ‘scores’ and divided according to grade (Figure 34; Figure 35).

⁵⁰ Note: the patent for maize crushing and the export rights to palmetto plait were not granted to her specifically, but rather in her husband’s name (patents not being available to women at the time). Nonetheless, she is openly credited with the ‘inventions’.

Plait soon became a form of currency. Trade merchants advanced goods to weavers on credit and accepted plait for payment (Jarvis, 2010). These debt obligations forced households into a factory-like production of plait. The cottage industry had become a nation-wide economy.⁵¹ By the 1720s, plait export brought Bermuda twice as much income as tobacco in the previous century, and made five times more than the export of cedar sloops, the boat for which Bermudians would become famous (Jarvis, 2010). Thousands of scores of plait were sent to England, where English women and children sewed them into any number of goods.

The great popularity of the ‘Bermudas Hat’, as it was called, becomes evident with a quick search through British and American court records from the 1720-30s. It seems the hats were a popular target for thieves. For example, England, 1720: John Anthony and Ann Collins were indicted for stealing 15 Bermudas Straw Hats, value 39 s., for which crime Anthony was sentenced to ‘transportation’; in 1723, 7 Bermudas Hats were stolen from a shop window; in 1726, Sarah Dickens was indicted for stealing 150 yards of Bermudas Cane Plat, value 15 s.; in 1726, Hannah Rogers and Elizabeth Collier were indicted for stealing a Basket, 2 Shaving Hats, 2 Bermudas Hats, 5 Straw Hats, 20 Yards of Bermudas Plot [plat], and other Things; in 1729, Elizabeth Sheldrick stole a Bermudas Hat; in 1731, a blue silk lined Bermudas Hat was stolen off a woman’s head. (“The Proceedings of the Old Bailey”, 2017)

Meanwhile, in Maryland, a 1736 newspaper describes a runaway indentured servant who sailed away with two other servants – a Bermuda Hat, and other Things. in hand:

[...] named Sarah Miers, a Dutch Woman, and talks broken English, pretty Tall, Round Shoulder'd. Likely in the Face, and had a Flat Nose: They took with them some Wearing Apparel, viz. a dark Grey Coat trimm'd with Black, a Woman's Blue Cloak, fac'd with White Silk; a Seersucker Gown, one White Linen Ditto; one strip'd Calimanco Ditto, a brown Camblet Petticoat, *a Woman's Bermuda hat, lin'd with Blue Silk*, and several other Things, viz. Bedding, Linnen, and in particular a Red Rugg. They went in an old carvil Work Long-Boat, with one Mast, and a Square Sail. (Haygood & Bly, 2015) [italics mine]

One can only imagine the adventure these three had, and what might have become of the hat.

⁵¹ The plait trade was not free from peril, however, and income from plait was not guaranteed. For example, Richard Castleman describes the fatal shipwreck of a boat bound from Bermuda to England via Virginia to pick up tobacco. While the other survivors were recovering the bodies of their loved ones from the waves, Castleman was looking for his shipment of cotton, indigo, and plait wear. “The beach”, he said, “was covered with ‘Bermuda hats’”. (Chetwood, Victor & Defoe, 1726)

4.4 Social and ecological effects of the plait trade

The patenting of traditional knowledge and skills was a relatively new concept in Britain and became a fundamental building block of the industrial revolution. At the time that Masters applied for her patents, patents had more to do with limited-term industrial monopolies than they did for new inventions. The monopolies were generally granted for 14 years, as was her claim on palmetto hats. The patents were also granted for imported skills or machinery that had been invented elsewhere (in Italy, for example), but had not yet been introduced to the British Empire, as is alluded to in her document (Mossoff, 2006). This could explain how the Masters' application reads more like a trade deal than it does like an invention.

Master's attempt to patent palmetto plaiting marks the first and possibly only time anyone tried to own the cultural knowledge connected to the Bermuda palmetto. The trade was so powerful that by 1716, palmetto products been turned into currency. If the relationship to the palmetto tree was ever one of reverence, either as an embodied spirit in its own right or a gift from God, it seems that sheer desperation and a society with a secular, material, and exploitative system of power was quickly squeezing the palmetto into objectification and commodification. There simply was not the time or the space in Bermuda to have a respectful relationship with the tree. People needed money, the palmetto would provide it, and it was a disappointingly finite resource.

Weaving palmetto plait was, for all Bermudian women, a cultural adaptation of skills they would most likely have inherited from their mothers. It is important, however, to question what elements of culture are lost when a skill is commercialized. There is a difference between weaving a hat for your daughter to wear, and weaving endless strips of plait, day after day, for export to strangers. Today the United Nations has a mandate to preserve what they call "intangible cultural heritage" (UNESCO, n.d.). In doing so, they draw a distinction between skills used for commercial purposes and those for strengthening social and cultural bonds.

The question of how commercialization of a skill affects the social bonds that that skill once reinforced is an important one. If weaving was once a way to care for oneself and others in a community, what is the effect on the community when the skills (and the personal care that attends such craftwork) are now diverted for export? Is personal meaning lessened? Is it lost? This question is particularly poignant for people who were trapped in slavery – so little of their time and energy could be spent caring for loved ones. By extension, how does the commercialization

of a plant-based product affect peoples' relationship with that plant, particularly in times of desperation? When we are dependent on a finite natural resource for money, the rate at which we use it far exceeds the rate at which we would need it if we were only using it to support daily needs. Such urgency can affect how we perceive that resource, reducing it to a commodity rather than a living thing. (Even the word 'resource', still bandied about today, betrays such a point of view). If Bermudians had been able to sustain themselves on the island independent of imports, it is possible the relationship with the palmetto could have remained sustainable and respectful, and the relationship to the objects made with the palmetto could have retained social and spiritual significance.

In *Faithful Bodies* (2014), Heather Kopelson presents the possibility that weaving remained a spiritual practice for Bermudians, even while it was commercialized. She contends that while it no longer directly strengthened social ties (i.e. making a basket as a gift for a daughter), just the act of weaving would have evoked a sense of connection to ancestors, deities, home.

Likewise, while the plait was woven for export, there are direct social benefits of gathering together with others to engage in a like activity, such as knitting, quilting, or gardening. It is common knowledge in human societies that working with one's hands creates a type of open-minded meditative state that naturally elicits storytelling and social communication on a level that would not otherwise occur. Keith Hall, an American collector of Bermuda cedar furniture, recently discovered a 'low chair' made of cedar with a woven palmetto seat, dating to the early 18th century. He posits that this type of low, armless chair was used by women when weaving palmetto (K. Hall, personal communication, July 8, 2016). Did extended households and communities of women, both enslaved and free, sit together on just such chairs, and tell stories? Did they sing? What was the experience of weaving together?

It is unclear how much insight we can gain into Bermudian home culture based on records from England, and from a different era. Certainly there was frequent traffic between the two groups, although the English and Bermudian cultures, even by the 1700s, were likely fairly divergent. Here is a description of a plaiting group from Luton, England in the 1920s:

The atmosphere was absolutely superb – I miss it. Everybody knew everybody else and everybody talked to everybody else. We used to sing – I went out with one boy before I met my husband and he used to go by the factory in the job he was doing, and he'd say, 'I often used to stand outside and hear you lot singing!' All the fashionable songs that were about in those days, all of them. That is something that has died out, because you don't often hear young people singing, do you? But we used to sing every song that you could

think of. [...] And once we'd sung one, somebody else would start off with something else and so we'd keep on. And then every song that was heard – somebody had heard it on the wireless or something like that, and they'd sing it and everyone else would soon know it, you see. Because everybody was working while they were doing it, so it didn't matter. (Luton, 2003 p. 67)

This may or may not be connected, but in my experience spending summers and Christmases at my grandparents' in Bermuda, it was always the women who were working in the kitchen, and we would always sing. We had just the same pattern as the one described above: someone would start the first few lyrics of a song we all knew and everyone would naturally join in, harmonizing while we prepared dinner or washed the dishes. We had many more women in the extended family than men, more female cousins than males, but as this was the 1980s, the male cousins felt free to pull themselves away from the somber drinks and discussions of the men in the living room, and drift over to the kitchen, hovering by the door and occasionally joining in.

In English society in the 1700s, however, gender roles were strictly drawn and straw plaiting was seen as a threat to the social order. Women's income was suddenly greater than their husbands', and it was said that plaiting made men idle and resentful. Unmarried 'plait girls' were seen as vulnerable. Plaiting could be done anywhere – in a field or in a barn, so girls were seen as less controllable and therefore more vulnerable. Poetry and songs were written, warning the young plait girls about the plait merchants who travelled from town to town purchasing plait, such as this refrain:

In Buckinghamshire and Hertfordshire
Mind maidens what you're at
And shun the naughty married men
Who deal in ladies' plait. (Luton, 2003, p. 29)

With a female majority in Bermuda's population, and many households in debt to corrupt plait merchants, it is possible that similar warnings would have been necessary for young Bermudian women as well, but those were the sorts of stories that would not have been written down.

As with all economic endeavors pursued by the denizens of this small and stormy island, Bermuda's plait industry was at the mercy of social and ecological forces beyond their control. The first obstacle plaiters encountered was a shortage of material. While in 1717 a law was enacted banning the harvest of leaves from immature trees, it (like many laws before it) was

largely ignored. Landowning women had the clear advantage in the industry, and those without land were dependent upon them and the plait brokers to procure leaves. People were so desperate, however, and their state so impoverished, that they were stealing whole heads of palmettos in the night, thereby killing the trees (Jarvis, 2010).

The palmetto, as we know, is remarkably slow-growing. In the 1720s, while lauding the plaiting boom and even agreeing that plait should be used as payment in rents and debts, Governor John Hope expressed doubt that the industry could continue for much longer: “In sixty to seventy years it is not perceived that any plant has advanced an inch,” he lamented (Collett, 1987). Two severe hurricanes in 1724 further diminished supplies, for while the palmettos themselves are strong and can withstand nearly any storm, the high-quality plait was dependent upon the preservation of the new leaves that were, as mentioned, carefully tied to protect them from being shredded in the wind.

Despite the booming plait economy, Bermuda’s farmland was increasingly barren and many people were impoverished. In 1724 Hope wrote, “This place is in very great want of provisions of all kinds though nothing ever comes to a good market but Indian Corn” (Collett, 1987). The lack of provisions and the threat of decreasing numbers of palmettos caused large groups of Bermudians to emigrate in the 1720s to South Carolina, the Sea Islands, and the Bahamas. All of these locations had plenty of palmetto trees – not the same *Sabal bermudana* endemic to Bermuda, but its near relatives in the same genus. Bermudians in all locations set to work plaiting once again. At first some sent leaves back to Bermuda, but in soon they simply continued plaiting and exporting directly back to England. In 1724, George Phenney, customs collector and governor of the Bahamas (1721-1727) brought Bermudian women to the Bahamas to seed a plait weaving industry there. He vocally advertised that Bahamian plait rivaled that of Bermuda, which had clearly set the standard (Tinker, 2011). Palmetto is plaited in the Bahamas to this day.

In the 1730s, the Bermuda plait bubble burst, not due this time to ecological factors, but that more changeable (and dangerous) thing: human whim. Although the English had devised techniques for splitting straw to make their hats lighter and more comfortable to wear, the Italians introduced the Leghorn hat into the market and it was soon desired above both English and Bermudian plait (Inwards, 2015; Dony, 1942). I could go into the details of the colour of the straw in Tuscany, and how their plaits were sewn seamlessly together, rather than overlapping

like the others, but these are unnecessary details; it was fashion. It caught fire in the minds of the aristocratic women of England. And the people, particularly the women, of Bermuda were left destitute once more.

Within the next few decades Bermudian plaiters redirected their attention to the American markets. During the latter half of the 18th century, they exported many thousands of yards of plaits to their Western neighbours, but the industry was never as successful as it had been in the early part of the century. The legacy clearly continued, however, into perhaps the 1930s, for there are numerous mentions of it in the 19th century natural history writings from the island, and in multiple visitor accounts. William Frith Williams writes:

The Palmetto is the only indigenous palm-tree: of late years their number has diminished, although they are easily raised from the seeds if protected from cattle: they afford good shelter from the winds which is of importance on all small islands. Hats and bonnets of the palmetto are nowhere better made than in the Bermudas, and most of the plait for these is now sent to Europe as presents. (Williams, 1848, p. 166)

Nicholas Belfield Dennys, a visitor to Bermuda in 1862 writes,

I must not omit to mention the straw plait and arrowroot [*Maranta arundinacea* L. See Appendix A] for which Bermuda is so famous. The former is made in great quantities by the women of the islands and is, I believe, much valued by the feminine creation in England [...] Baskets, beautifully decorated with straw leaves and flowers, are also an article of manufacture, and command a high price. (p. 116)

Between the 1930s and today, for reasons unknown, the memory of the plait trade was almost completely erased. One explanation might be the shift in values that occurred, perhaps after the Second World War. As my Bermudian friend Laurel noted (see introduction to Appendix A), in her grandmother's generation all the old traditions were looked down upon, seen as inferior to newer technological innovations. The example she gave was their interest in giving birth in hospital rather than at home; their use of store-bought medicines rather than home-made.

4.5 Intermission: 1730s-1840: The Bermuda sloop

This section will be brief as from the end of the plaiting heyday, in the mid 18th century, to the late 19th century, palmetto is all but left out of the historical documents. Bermudian women continued to make and export palmetto plait through the 19th century, but never to the great extent that they once did.

In 1735, Governor John Pitt wrote that the price of plait had fallen so low “that it’s esteemed not worth the labour of making, whereby the poorer sort of inhabitants are reduced to great extremity”. (Headlam, 1953, p. 351) He elaborates on Bermuda’s economic situation in the following letter, also from 1735, neglecting to mention piracy exactly, but still painting a rich picture of the trade market in which Bermuda was engaged:

It now remains, that we give your Lordships an account of the like particulars in the Bermuda or Summer Islands, whose productions are cedar, palmetto trees and train oyl drawn from the small whales that are taken on their coasts, with small quantities of tobacco, pineapples, oranges, onions, potatoes, and cabbages. Of the tops of palmetto trees they make the above mentioned straw called plat, which is worked up in hats, for the use of women, which bear the name of these Islands; but the most material article in their present trade, is that of sloops built of their own cedar, which are distinguished likewise by the name of the Islands, and are equally remarkable for their form and the excellency of their sailing. The people of Bermudas build annually between twenty and thirty sloops, which generally sail out in ballast to the Salt Islands, from whence they carry salt to some parts of the English Continent of America, where they traffick from [for] lumber and provisions, and when they are not able to purchase a cargoe, they take one in upon freight, and so sail to the British Islands in America, or from one part of the Continent to another, and having at last disposed of their sloop they return to Bermudas in order to build a new vessel for an adventure of the like nature. This is the ordinary round of trade pursued by four parts in five of all the vessels that are sent out of the Summer Islands, and by the sale of these sloops the Bermudians are supply’d with peices of eight, and with sugar, rum, rice, cocoa, pitch and tar, logwood and other dyeing stuffs, deer skins and other productions of America, which being added to their plat, and sent to England, they are thereby enabled to take off large quantities of our woollen manufactures, East India goods, linnen, household furniture, haberdashery, and in general all those commodities which are comprehended by merchants under the denomination of dry goods. (Headlam, vol 41, p 351)

As Pitt notes, between the early 18th century and the mid 19th century, Bermuda’s other major endemic tree, the cedar, came to the fore as the source of wood for the Bermuda sloop, a highly successful design of ship that had a considerable impact on Atlantic trading and wars. It is unknown who exactly came up with the design for the sloop – some say there was a Dutchman who thought it up. I would also offer that as so many of the early slaves were from Southeast Africa, in particular Madagascar and Tanzania, they would have contributed their knowledge of shipbuilding, as those regions are known for the fantastic mtepe, a sewn boat with raked masts similar to the Bermuda sloop. The 19th century saw the rise in privateering in Bermuda – a lucrative and dangerous trade of overtaking other ships and stealing all onboard. This was done

ostensibly in the name of the crown, but in reality many privateers bypassed government rules, skirting around customs, for example, when returning to Bermuda, and stashing goods in their own cellars before declaring their earnings (Jarvis, 2010). This boost in wealth was made possible in large part because of the design of the ship and the wood it was made from. Bermuda sloops were built and sailed primarily by enslaved men (Maxwell, 2009; Bernhard, 1999) which of course contributed to the great wealth of the slave-owning elite who would also hire out their slaves to perform labour for which the owners collected the wages (Maxwell, 2017). The ships were used to support the American Revolutionary War and the Napoleonic War, both of which would have brought in revenue to Bermuda, while their brilliant design likely affected the course of a larger history.

Some say palmetto leaves were used as rigging for the Bermuda sloop, but I imagine in Bermuda's many ropewalks they were also relaying recycled hemp and agave fibres, or perhaps imported New Zealand flax (*Phormium tenax*) from St. Helena (via the UK); all of which are much stronger for sailing rope than palmetto. Palmetto leaves were likely still used as rigging for smaller craft (Figure 18), and for household goods, of course, but for this era of Bermuda's history, the palmetto's reputation as one of Bermuda's most important trees receded into the past.

Chapter 5: 1840-1930: Agriculture, Tourism, and the Rise of Western Science

There are two major events that I will place in this era although their roots are in the last. They are inherently connected, although not obviously so, and both dramatically changed how Bermudians related to the palmetto. The first is the industrial revolution and invention of the steamship. The second is the rise of Western science. Both phenomena were, in part, a product of the Protestant Reformation, and close inspection of the key players in the church, politics, industry, and science of the times show that they were often in correspondence with each other, and, perhaps even more telling, often blood relations (Stearns, 1970).

In this era, we can see the impact that the steam ship, with the concurrent rise of economic globalization and tourism, had on societies, particularly on their relationship with the landscape. Between wage labour and loss of time, the importation of new products, the introduction of tariffs and trade deals, and an increasing population, Bermuda was once more at the hub of international commerce, but this time with no need to depend on its natural resources. Such a shift was fatal for plant knowledge.

The industrial revolution was entwined not only with patents and trade monopolies, as we saw earlier, but with technological discoveries and the rise of Western science. The perspective that science brought to the Bermuda palmetto was invaluable; and while the palmetto is mostly ignored or forgotten by Bermudians today, the limited relationship people do have with it is often through the lens of Western science: people look upon the tree with an eye to its endemism, its ecology, its status as an endangered species. These relationships create a solid foundation for conservation and restoration of Bermuda's remaining green spaces, giving hope in the face of the loss of traditional ecological knowledge. But like every point of view, it is worth placing science – and industry – in their cultural and historical contexts to gain a sense of their strengths and limitations.

5.1 Agriculture: Minding the onion seed

By the mid-1800s, Bermuda once more remade itself, again with the women taking the lead. As the men were engaged with ship-building and still largely at sea, the women renewed Bermuda's agriculture and export industry (Collett, 1987). The advent of the industrial revolution and the birth of the steamship both challenged the economic success of the Bermuda sloop, and

facilitated an export economy of Bermuda's agricultural products, namely arrowroot (*Maranta arundinacea*), onions, and Easter lilies (*Lilium harrisii*) to places like New York City.

Because of its location in the Gulf Stream, Bermuda had an early harvesting season and could grow these desirable luxuries, exporting them to areas still in the clutches of winter. All three crops garnered international reputations and were exported from Bermuda in vast quantities. By the late 1800s, for example, a single ship exported to the United States up to 40,000 boxes of onions per week (Figure 36). This time, palmetto took a practical rather than fashionable role in Bermuda's material culture, and was used to make large, loosely-woven baskets in which to ship the onions (Figure 37). Interestingly, Cooke and Sampley (2013) reference Bermuda's onion baskets as having tumplines, long straps to place around one's forehead for carrying, but present-day weavers do not recall this design.

The palmetto was used in other aspects of agriculture as well. Small children were tasked to keep birds away from the onion patches by using palmetto switches. This story was told by Mrs. Julia Place about her great-great-grandmother, Mrs. Mary Elsie Tucker, "Grandmother Ashie" (1813-1917):

One hot summer day, Ashie was told to go and 'mind the onion seed' – that meant to keep the birds away from the garden. In those days, palmetto trees grew in abundance. Many items such as brooms and fly and bird swats were made from palmetto leaves. To make a bird swat, Ashie tied some of these leaves at the end of a long stick. All day long, she would have to run up and down the garden with the palmetto bird swat shooing the birds away from the onion patch. (Musson, 1979, p. 26)

It is stories like these that make one realize how use of the palmetto was a simple and integral part of people's daily lives.

In the 1930s, the United States imposed a tariff on its trading partners and blocked Bermuda's exports. Between the fall of the agricultural export economy and the increasingly modernized (and therefore rapid and comfortable) transportation systems, tourism became Bermuda's primary source of income.

The last written references to Bermuda's palmetto plaiting trade I have been able to locate is found in visitor accounts and guidebooks from the early 20th century. Rider's Bermuda, a 1922 guidebook for steamship tourists, describes the scarcity of genuine artefacts in Bermuda, as compared to other islands:

The range of articles, natural and manufactured, which may be classed as genuine Bermuda productions, is quite limited. The curio shops display a wide variety of woven

baskets, bead work, coral, pearl and amber strings and jewelery, shell ornaments and the like; but a large proportion of all these are imported from the West Indies and elsewhere. Among the genuine Bermuda products are carved wood articles from Calabash and native Bird's-eye Cedar, such as napkin rings, paper cutters, trays and trinket boxes. Cedar walking sticks, with or without handles and insets of Lemonwood, are abundant at reasonable prices. Baskets, mats and a variety of other articles, woven from the fibre of the Bermuda palmetto (a species of palm peculiar to these Islands), form the oldest and best known of the native industries. More than a century ago, a Bermuda palmetto hat was, for a time, the fashionable fad in London. (Cooper, 1922, p. 29)

The effects of tourism on Bermudians' relationship with the palmetto was marked. Once-well-respected woven products were now souvenirs; the plant had become a cheapened symbol of the place rather than a genuine expression of craftsmanship. Again, this touches on the question of the integrity of 'intangible cultural heritage' when exploited for commercial purposes. While palmetto-craft certainly had been monetized before this point, the types of souvenirs created for cruise ship tourists were often the likes of cloth dolls with black faces, red lips, and palmetto hats, with 'Bermuda' written across the brim. It was another level of degradation or self-objectification, potentially divorcing people from their sense of selves as well as from their history.

Tourism also meant that more and more Bermudians were needed in the service industry. While this might have been good for pocketbooks, it was at the cost of having time – time to spend with family, time to work a garden, time to make medicines and food, to care for oneself and one's community in the traditional (and therefore socially-bonding) ways. In other words, time to practice and pass on traditional ethnobotanical knowledge. Wage labour traded time for money and the hidden costs were multifold.

5.2 The natural historians

The industrial revolution and the increased importation of foreign goods, coupled with the loss of time to make things (not to mention the population boom and loss of natural habitat, and therefore of palmetto trees themselves) in some ways marked the end of common-knowledge use of palmetto in Bermuda's turbulent cultural history. But while this once-ingenious, adaptable, practical, and hitherto persistent folk knowledge was coming to a close, a new kind of knowledge was gaining ground, this time held not by the many, but by the rarefied few, and not so much rooted in Bermuda as with its cultural base still firmly far afield: palmetto was becoming known to the realms of science.

Beginning in the late-1600s and peaking in the late 1800s, Bermuda was visited by a series of inquiring individuals seeking to understand the palmetto (and other Bermuda flora) from an objective point of view; that is, to study the plant's physiology, habitat, and ecological community – free, in a way, of human daily needs. One of the objectives of early botanists was to categorize the palmetto in relation to other palmettos they had encountered.

Linnaeus's system of nomenclature, and the broader trend of international botanizing, was closely connected to European colonial expansion, and generally based in European hubs such as at the Royal Botanical Gardens, Kew (Schiebinger, 2004). While many plants had always had local folk names, with the rise of plant collections from around the globe, European botanists were striving to name all plants (even those without apparent 'use') systematically and group them into genera and families to reflect and establish their relationships to each other and to larger ecological communities. Tied in with the earliest botanists' quests was the crown's hunt for plants of economic potential. In the 18th and 19th centuries, the science of botany was still largely under the umbrella of medicine, with doctor-naturalists emerging from university medical programs. Most ships circumnavigating the world carried one such graduate who served as both ship's physician and naturalist. These men, in addition to bringing back samples of native flora and fauna for scientific analysis, were generally directed to determine what the indigenous people in each area were using for dyes, medicine, food, and so on. Bioprospecting for the powers that be was (and often still is) conflated with science (Shiebinger, 2004).

The early naturalists who studied the palmetto were linked to a social and professional network of political, business, religious, and scientific figures both in England and America. Earliest, perhaps, among these in Bermuda was George Starkey (Stirk, Stirke) (1628-1665), the son of George Stirk(e), a minister who arrived in Bermuda in the 1620s.

When the elder Stirk died in 1637, family friend Pat Copeland wrote a letter to John Winthrop, then governor of the Massachusetts colony, detailing the 14-year-old Starkey's parentage and religious affiliations and requesting that he be taken in at Harvard (Stearns, 1970).

Starkey graduated from Harvard in 1646 and went on to become an influential alchemist. Writing under the name Eirenaeus Philalethes, he was a tutor to Robert Boyle, and his writings went on to influence Robert Hooke and Isaac Newton. Starkey was also a correspondent with Samuel Hartlib, one of the early 'intelligencers' of Europe whose vast correspondences and philosophical circles led to the creation of the The Royal Society of London for Improving

Natural Knowledge (generally known as the Royal Society) (Stearns, 1970). This connection appears to be the beginning of a long-standing relationship between the Royal Society and Bermuda, with Society-funded botanists arriving, collecting, and sending back specimens for more than two centuries. The palmetto, of botanical and possible commercial interest, featured in much of their work.

In one letter, Starkey discusses Hartlib's adherence to the then-common notion that bees emerged directly from rotting cattle. Starkey refutes this assertion, referencing his youth in Bermuda, during which he was a 'great Observer' of insects:

Also my ingendred Curiosity was so great, that I took the pain to observe and collect the Generation of several insects, with their various mutations from kind to kind [...] a third very anomalous Generation, which I have noted, is of a sort of stinging Flies out of rotten Trees; these, in the Summer Islands, I have observed out of the rotten Palmetoe [...] I find by more than seldom or fortuitous observations that the Celestial influx doth sport itself in nothing more seriously than in producing of living beings, which are aboveious almost in Every thing, as for instance, the palmetoe or wild Date tree when rotting is at certain seasons of the year filled with a Bloudsucking fly, that the whole trunk if Cut or broken will appeared as I may say Hunny Combed with those animals, some newly forming, others more mature, & some fit to fly. (Newman, 1994, p. 17)

By the 1660s, Bermuda was one of the earliest foci of the Royal Society. In pursuit of scientific knowledge, they sent a list of questions to Richard Norwood, Bermuda's lauded man of learning (he who had made the early property surveys of the island (1613-1615), and once set sail with a palmetto leaf). The letter, written to Norwood on February 10, 1667, in addition to posing questions about Bermuda's plants, whales, tides, stars, etc., contained the following statement:

I hope, the English Plantations in America, and every where else, when they shall know the end and work of this Institution [The Royal Society], how it aimes at the Improvement of all usefull sciences and Arts, not by meer speculations, but by exact and faithfull observations and Experiments, will not onely congratulate this felicity to England, but emulate the same method everywhere for attaining the same end. By it, I am persuaded, England may become the glory of the Western world, making it selfe the seat of the best knowledge, as well as it may be the seat of the greatest Trade: And that Almighty God would Crowne it with his blessings for that end [...]. (Stearns, 1970, p. 224)

Norwood passed the letter on to colonist Richard Stafford who sent a package back to the Society containing cedar berries, palmetto berries, castor beans, poison ivy, and spider's silk (from the golden orb weaver), which was still being considered a merchantable product.

From a cultural perspective, it appears that the members of the Royal Society were striving for a ‘top-down’ understanding of nature, thereby allowing for neutral understanding, better science, and, on some level, greater mastery of the physical properties of the world around them. There is a strong sense in the quote above that this was considered superior to other forms of knowledge and would make England the pinnacle of knowledge, and therefore trade, through scientific accuracy. This desire to ‘understand’ plants and whole ecosystems, at a distance, even from overseas, rather than being in a living, daily relationship with them is still at the heart of scientific knowledge and contrasts in many ways with ethnobotanical relational knowledge, often termed ‘folk’ or ‘traditional’ knowledge⁵².

This philosophy is evident in the Royal Society’s motto: *Nullius in verba*, ‘Take nobody’s word for it’, reading as a strong refute of tradition; the desire to see anew. The benefits of such a mandate are the benefits of the scientific method generally – the gaining of insights into how the world works, free of false equivalencies, subjective experience, and superstition. As such, it is a type of knowledge that is universal, repeatable, and, perhaps, objectively true. There is no doubt that this distinguishing of cultural bias from observable fact has been of great service to humankind. And yet, the rise of ‘scientism’ – the belief that science provides the *only truth*, and that other forms of relational knowledge are somehow *tainted* has been a major loss for both human and natural systems.

Following Starkey and the birth of the Royal Society, there was ongoing interest in Bermuda’s flora. While many of the naturalists were dropping in on Bermuda, there were also local Bermudians observing their surroundings and in constant communication with scientists overseas.

The first such Bermudian botanist on record was John Dickinson, a member of one of Bermuda’s ruling families⁵³, who collected plants between 1692-1700 and sent them to James Petiver of the Royal Society in England (Figure 38). As the first herbarium collections made in Bermuda, they became the basis for much of the flora’s nomenclature, and were referenced by Linnaeus and others.

⁵² Although there is certainly a lot of empirical thinking and deductive reasoning in folk ethnobotany, and science is rife with cultural values and mores.

⁵³ Likely the same John Dickinson who built Verdmont from money brought in by the captive ship Amity off Southeast Africa, and a member of the Dickinson family who ‘owned’ the enslaved Sally Bassett, one of Bermuda’s great historical figures.

One of the most well-known naturalists to visit Bermuda was Mark Catesby in 1714 and again in 1725 (Nelson, 2015). Catesby made collections and drawings of Bermuda's flora and fauna, and collected vouchers of palmetto flowers and leaves, now a part of the Sloane Herbarium in the Natural History Museum in London. Catesby subsequently spent the next 17 years writing his *Natural History of the Caribbean*, funded by the Royal Society.

But the study of Bermuda's natural history really flourished in the late 19th and early 20th centuries, beginning with the work of John Matthew Jones who wrote, *The naturalist in Bermuda; a sketch of the geology, zoology, and botany of that remarkable group of islands; together with meteorological observations* (1859). This was followed by the work of John Henry Lefroy, who served as Bermuda's governor from 1871-1877. In 1872, Lefroy made a list of Bermuda's plants and their habitats, and sent specimens to Joseph Hooker of the Royal Society and the Royal Botanic Gardens, Kew for identification. Also in the 1870s, John Matthew Jones drew upon Lefroy's list to write his *On the Vegetation of the Bermudas* (1873), in which he describes, among other things, a detailed method of processing palmetto leaves for plait by smoking them in casks with burnt brimstone, as noted earlier. In 1883, Oswald Reade, a pharmacist with the British Navy, also wrote a flora of Bermuda; in his notes on the palmetto he writes that it was "once indispensable", but was presently only used for making the occasional fan (Reade, 1883).

In 1873, the HMS Challenger visited Bermuda as part of a Royal-Society funded expedition (1872-1876) circumnavigating the globe with a focus on deep sea oceanography and marine life. On board was H. N. Moseley, who made extensive notes on, and collections of, Bermuda's flora. The subsequent *Report on the Botany of the Bermudas* (1885) was written by W. B. Hemsley based on Moseley's notes and supplemented by notes, drawings, correspondence, and accounts from J. D. Hooker and others at Kew and the British Museum. Much of the report is concerned with the native or introduced status of Bermuda's plants. The palmetto in the report is considered native to Bermuda, although not considered endemic, and is referred to as *Sabal blackburniana* Glazebrook, after a specimen, growing in Kew, that was supposedly collected in Bermuda. While the palmetto had earned the name *Sabal blackburniana* in 1829, Hemsley further interpreted it in his report, confirming that the specimen at Kew was the same as that in Bermuda, and including drawings of the Kew specimen (by Matilda Smith) in his report (Figure 39).

It wasn't until 1934 that L. H. Bailey questioned Hemsley's interpretation and showed that the tree at Kew differed in many ways from the Bermudian species. At this time, Bermuda's palmetto gained the name *Sabal bermudana* L.H. Bailey. This confirmed the palmetto as a species endemic to Bermuda, and put to rest the long-standing idea that there was more than one palmetto species on the island (Bailey, 1934; Hodge 1960).

Other early naturalists who observed and documented the palmetto include C. F. Millspaugh (1899) (Figure 41); H. B. Small (1913); J. W. Harshberger, who wrote an analysis (1905) on the hourglass shape of the palmetto (Figure 43); and Nathaniel L. Britton, whose notes appear in his *Flora of Bermuda* (1918) (Figure 40).

The scientific interest in the Bermuda palmetto has continued, in its quiet way, into the 20th century.

Verrill (1902) and Jones (1859) both commented on the unusual holes in Bermuda's aeolianite cliff rock by the ocean, commonly thought to be fossilized palmetto stems (Figure 44). Jones writes, "They are very frequently arranged in groups of from twenty to fifty, as if they had once been the roots of as many trees. It is the general surmise that these curious cylinders are the remains of the Palmetto [...]" (p. 31). While many Bermudians still refer to them as fossilized palmetto roots and stems, Verrill (1902) hypothesized that they were formed from rainwater (likely carrying dissolved limestone) trickling down the sides the trunks of palmettos, or other species of palm, that had been overwhelmed by shifting dunes, "so that when the wood decays a hollow mould is left, which may then be filled with loose sand, producing a cast of the trunk or roots of the trees." But more recently, Herwitz (1993) submitted the hypothesis that the holes are 'solution pipes' created by stem flow drainage, not necessarily of palmetto, but of any number of species of tree, including *Sabal bermudana*, *Juniperus bermudiana*, *Eugenia axillaris*, or an even more frost-tolerant tree, yet to be discovered, that could have flourished in Bermuda during the Pleistocene glacial maxima when temperatures in Bermuda would have been prohibitively cold for subtropical flora.

In 1960, botanist W. H. Hodge wrote an excellent paper on the Bermuda palmetto published in the journal *Principes*. While Hodge was a scientist, he had a broad range of interests including photography (Figure 43) and ethnobotany. His paper encompasses the morphology and ecology of the palmetto and describes the stands he encountered in Paget Marsh and their surrounding plant community. He also delves into the historical uses of the palmetto, noting its

early contributions to the survival of the colony. Hodge concludes his paper asserting that the only hope for the palmetto, with its rapidly diminishing habitat, is for Bermudians to prize it for its ornamental value and plant it in their gardens. He concedes that it is not a beautiful plant, and that it is indeed very slow growing, but argues for its value as a true Bermudian:

The palm has demonstrated that it can thrive on any soil that the island can offer. And in February when gales take over, whipping everything green that grows with a desiccating incessancy and at the same time carrying destructive salt spray across the whole island, the Bermuda palmettos never having known anything different, merely shrug their boles, rattle their leaves, and take it in their stride as they have had to do down through the centuries. In brief, they are thoroughly acclimated. (Hodge, 1960, p. 100)

Chapter 6: 1930-Today: Tax Haven and Conservation

On almost every scale over the last 400 years, both ecologically and socially, Bermuda and its people have been on a turbulent rollercoaster of cause and effect, governed by internal and external shocks and drivers (Figure 1). While in hindsight the regime shifts might appear obvious, for those involved at the time there is no doubt they seemed unpredictable. Bermuda's social and biogeographical climate was new to all early settlers. Its idiosyncrasies had to be learned. This unpredictability, as well as the myriad other forces affecting the colony, lead to a series of ecologically terrible decisions that forced major shifts on an economic scale. Thus, since its inception, Bermuda's economy has shifted dramatically from Tobacco to Hats to Sloops to Agriculture to Tourism and now, giving up on natural capital altogether, Bermuda has become a Tax Haven. One of the benefits of being this developed and urbanized, this seemingly independent of resources is that there is time for reflection on what happened in the past, for reconsidering trajectories on both social and ecological levels, and for trying to put things right.

6.1 Conservation and ecological restoration

In the first few hundred years of Bermuda's history, the presence of the palmetto had a significant impact on Bermuda's burgeoning culture. For some, it provided a familiar material that helped them to feed and shelter themselves, for others it was a new resource to which they adapted their knowledge and skills. The ubiquity of the plant determined Bermuda's early economy. Its subsequent scarcity due to high demand began to shape the law and the emigration of Bermudians to other geographic regions, seeking more palmetto to work with. As much as the plant was shaping the history of the people, the people were shaping future of the plant.

Humans had a dramatic effect on Bermuda's ecological balance in a very short period of time. There are well-known stories about the decimation of seabird and turtle populations. As deleterious as such extirpations were, so too were the inevitable introductions of non-native species equally devastating.

From 1614-1616, around when the hogs were extirpated, Bermuda suffered from the introduction and explosion of a population of rats. The rats fed on the immature seeds of palmetto, cedar, and other native and endemic plants, crippling the plants' ability to reproduce. They also nested in the head of the palmetto. To try to eradicate the rats, people moved to a few

remote islands and set fire to the main islands, burning the trees so the rats could not feed and nest there. This, of course, had a further deleterious effect on the trees (Verrill, 1902).

Deforestation generally was a problem on the island, early on. As a particularly useful plant, the palmetto suffered directly from over-harvesting and indirectly from other human activities. It is possible that Strachey was exaggerating when he wrote that the Sea Venture party had felled thousands of trees, but by the first decade of settlement in Bermuda it seemed this was close to the truth.

The first settlers remained in the St. Georges area of the island where they had first set foot, and the land was said to be barren within a very few short years. By cutting down cedars for wood and palmetto for food and drink, the land was soon exposed to salt spray in a way it had never been before, and the smaller native plants were suffering. Additional deforestation to make space for agriculture further disrupted the native forests. Conservation laws – the first in post-contact North America – were enacted early on to protect the trees from wanton destruction. In addition to being protected by law, palmettos were also planted. Theodore Godet (1860) lists “palmetto nuts” in his almanac of what to plant each month in Bermuda gardens, and recommended to sow in March, May, and November. (He also mentions to pick palmetto tops for baskets in March). It is unclear if planting palmetto seeds was common practice, but the author certainly treats the plant as any other crop. Susette Harriet Lloyd (1835) also mentions seeing ‘palmetto plantations’ in her Bermuda peregrinations. Going by early laws to “plant out the small islands with palmettos” and the above references, one can infer that it was common practice. Nonetheless, between being very slow-growing and having to compete with greater forces of deforestation, housing development, and the introduction of competitive invasive species, it has been impossible for the palmetto to regenerate its population to anything like pre-colonial times.

In 1942 perhaps the greatest human-caused ecological disaster hit Bermuda. Two scale insects *Carulaspis minima* (Targ.) and *Lepidosaphes newsteadi* (Šulc), were inadvertently introduced with imported plants and the great cedar forests of Bermuda, which had supported the people for so long, in whose shade families had once picnicked or simply sought refuge from the relentless heat of the summer day, were turned to silver skeletons in the course of a few years. 95% of the cedars perished. Huge light gaps were opened in the now non-existent canopy. And introduced species, which had once been kept at bay by the age and the strength of the good old cedars, saw

their opportunity to thrive. And they did. In addition to the sudden increase in light gaps/botanical real estate, the arrival of the European starling and the introduction of the kiskadee flycatcher, both of whom served (and still serve) as major seed dispersers, cemented Bermuda's wilderness as a place almost exclusively for invaders (Wingate, 1990). Fast-growing and successful plants, predominantly Chinese fan palm (*Livistona chinensis*), allspice (*Pimenta dioica*), Suriname cherry (*Eugenia uniflora*), fiddlewood (*Citharexylum spinosum*), and Brazil pepper (*Schinus terebinthifolia*) now dominate Bermuda's open spaces. All of these plants easily outcompete the seedlings of the few surviving cedars and the slow-growing palmettos. And while the two endemics once created a somewhat open canopy that left opportunity for endemic groundcover to grow (such as *Carex bermudiana* and *Peperomia magnoliifolia*), this new suite of invasives grow in dense monocultures. Walking through an allspice forest in Bermuda is like walking through a wasteland. There are only the thin trunks of the trees growing densely together, with their own leaves littering the ground.

The primary reason for declining numbers is no longer overuse, but rather the condition of its habitat and habitat loss (Copeland & Roberts, 2016). The palmetto has been overrun by the rapid rate of human development, and the almost blanketing invasion of introduced species. Recent introductions *Ficus retusa* L. and *Schefflera actinophylla* (Endl.) Harms are particularly threatening because they grow as 'stranglers', wrapping themselves around sometimes ancient palmettos and eventually over-shading them (Figure 51). In recent years, sea-level rise has also contributed to the depletion of low-lying brackish swamps where palmettos have, to date, found refuge.

One of the greatest threats to the future of the palmetto is the introduced *Livistona chinensis*, the Chinese fan palm. The threat from this species is two-fold. Not only has this highly invasive species displaced the physical terrain once inhabited by the palmetto, but it has likewise begun to occupy the place in people's minds where the palmetto once dwelled. Many Bermudians today cannot distinguish the palmetto from the Chinese fan palm. Recent educational efforts by both local and international educators show photo comparisons, for example, of the shape of the petioles, the fruit, the tips of the leaves, and the presence of spines on the Chinese fan palm petioles, where palmetto has none (Figure 52).

The advantages of planting the palmetto over the Chinese fan palm are many. One in particular is that the palmettos, though slow growing, will eventually grow tall and let light and

space into gardens that can then support a healthy and diverse understory. The fan palm, by comparison, is dense and thorny, allowing neither humans to pass nor seedlings to germinate (D. Wingate, personal communication, August 12, 2016).

Today while there are several nature reserves set aside from ever-ballooning development, there is very little apparent effort made to control the invasive species. Most if not all of Bermuda's endemic plants are on the endangered species list (Copeland & Roberts, 2016). The cedar is still valued and planted in many yards. The descendants of the 5% that survived the blight have at times been crossed with the related juniper from Virginia, making for a hardier disease-resistant strain of tree. While cedar wood was once a part of every household – famously used for everything from cradle to coffin, it is now used sparingly, its exorbitant prices generally making it available only to the wealthy. Cedar doors, windowsills, and beams in houses are now a sign both of wealth and of tradition, a piece of the old Bermuda for those who can afford it. Its heady redolent scent is beloved by most, however, and the smell of the now very rare cedar wood fire burning in a hearth at Christmas will make most Bermudians fill with nostalgia.

The palmetto, on the other hand, is all but unknown to today's Bermudians (Bell, 1906). One woman, Ronnie Chameau, has kept alive the tradition of making dolls from woven palmetto and banana leaves. She knows some of the older techniques for how to plait the leaves. And if a few other elderly women still know how to plait, there is no sign of their work in public spaces, and no evidence of the knowledge being passed down. The many household goods that were once made of palmetto, such as brooms, fans, rope, and buttons, are now all imported from faraway lands; their origins obscure. Nobody has the time or knowledge of how to make them; and most can afford to buy.

One of the results of this loss of knowledge is the loss of a relationship with the tree. Most Bermudians today cannot tell the difference between the palmetto and the Chinese fan palm, which is far more ubiquitous and much faster growing. Many have not heard of the important role palmetto played in Bermuda's history. Most have never heard of bibby, or plaiting, or the Bermudas Hat – still famous as of the early 1900s, but now forgotten.

Since the mid-20th century, conservation efforts by individuals, government bodies, and numerous NGOs have increased in Bermuda. Native and endemic plants have been reintroduced to and encouraged in nature preserves. Some plants, such as the endemic *Diplazium laffanianum* (Baker) C.Chr, that were extirpated or on the verge of extinction are now being

cultivated and transplanted into the wild. In a few reserves, such as the Nonsuch Island Living Museum project and, more recently, Trunk Island, conservationists such as Bermuda's pioneering David Wingate have endeavored to create 'living museums', examples of self-seeding forests that mirror, as closely as possible, the Bermudian forests of pre-colonial times. As one of only a few tree species native to Bermuda, *Sabal bermudana* is an important tree for such conservation and reforestation projects.

In conjunction with the Bermuda Department of Conservation's efforts, Kew Gardens' UK Overseas Territory (UKOT) Conservation Science program, the Millennium Seed Bank, and the IUCN are all working to clarify the status of and bring awareness to the plight of the Bermuda palmetto. Along with most of the other endemic species on this densely populated archipelago, the palmetto has now been declared an endangered species. But while planting helps raise the numbers of individual trees in nature reserves as well as on golf courses, in gardens, and as street trees, the overall population of palmettos continues to decline. In 2016, there were 3609 palmetto trees on the island of Bermuda (Copeland & Roberts, 2016).

6.1.1 Nonsuch Island

Bermuda is very fortunate to have a tried and tested example of a native forest restoration project that has been managed now for over 50 years. In 1962, David Wingate began planting Nonsuch Island, a once completely denuded 14-acre piece of land, with only native and endemic plants. The initial reason for Wingate's acquiring the island, as Bermuda's first and newly-minted conservation officer, was as a nesting ground for the endemic cahow, or Bermuda petrel. The cahow is a pelagic bird, spending its life at sea and returning to Bermuda each year to breed. It prefers long burrows in the sides of Bermuda's soft limestone rocks. It was likely the cahows that early Bermudians gorged themselves on in early settlement times, so much so that the bird was thought to have been extinct for three hundred years. In 1951, Wingate, then a young man, was part of a small group of people who discovered that the cahow was still extant. He dedicated his life to the protection of those few nesting pairs. His project to save the cahow has continued to be successful, and the spinoff creation of a precolonial forest on Nonsuch is just one of the benefits to Bermuda.

Wingate soon realised that to support the cahow's nesting areas he could plant the island with a forest, recreating almost all of Bermuda's native pre-colonial ecological habitats, including

a mangrove stand, freshwater pond, and salt marsh. Wingate did not initially think his project would be successful, but when I first met him in the early 2000s I had the privilege of walking with him on Nonsuch Island, and him remarking, in wonderment, “I have created a forest: a self-seeding, functional native plant forest – all in my lifetime.” He never thought he would live to see it work. The major hitch in such a project is that, while the native plants do seed themselves and grow more lushly and in greater abundance than those on the mainland, such a project requires constant maintenance. Wingate set up regular routines for trapping rats, pulling seedlings, trapping the introduced cane toads that swam from neighbouring islands (attracted by the fresh water in which they breed). He shot introduced crows and kiskadees, and was careful about not introducing the invasive whistling frogs (*Eleutherodactylus johnstonei* and *Eleutherodactylus gossei*) which still hadn’t made it out there.⁵⁴ He and his family (for they lived on the island in a little house) also cultivated a friendly relationship with the population of skinks on their porch, still the only place in all of Bermuda one is almost guaranteed to see this endemic and highly endangered species (Wingate 1990; Wingate 1992; Wingate 2000).

The forests on Nonsuch set a clear example for what is possible in Bermuda. Those fourteen acres of forest today are utterly unlike any other in Bermuda. While most of Bermuda is developed, even the few nature reserves are often completely choked with *Ipomoea* spp., *Cardiospermum grandiflorum* and ever-new waves of introduced invasives, changing like the fickle fashions of the decades. To maintain the nature reserves would require training and hard work on the part of a small and dedicated group of people, pulling invasive species while planting natives and endemics.

However, Wingate’s project has shown that by starting small, but with a big vision based in ecological resilience, much can be accomplished. One simple suggestion is for the general population to become savvier about invasive plant species, begin to cull what they can, and increasingly plant palmettos, cedars, and other natives and endemics in their gardens, a movement that has already gained some ground. While the thought of engaging the generally disinterested public in this endeavor may seem defeatist, there are myriad examples of what humans can do if they are united in a common cause and perceive its direct benefit for themselves and their communities. One has only to think of Mao Zedong’s program of the four

⁵⁴ Unfortunately, at least one of the invasive frogs are on Nonsuch today. It is thought they were introduced in plant pots hidden in the island’s far forest by people looking for a secret place to cultivate cannabis (D.Wingate, August 10, 2016, personal communication).

pests and the near eradication of the Eurasian tree sparrow through the incessant banging of pots and pans by thousands of people to realise the effect a dedicated population of humans can have on a single species. While in many ways Bermuda's small size has been a disadvantage to the maintenance of a sustainable ecosystem, in other regards this clearly delineated and bounded system, with a population who proudly identify as Bermudian, has a clear advantage.

The question of just how to educate people about the palmetto and the other endangered species on Bermuda is a pivotal one. One approach taken by conservation organizations such as Rare ("Our work", 2017) is to engage people on an emotional level. The national pride that Bermudians already feel, for example, could be leveraged to extend to endemic species. Many Bermudians already have a strong connection with the cedar tree and the Bermudiana flower (*Sisyrinchium bermudiana* L.), in part for this reason (Appendix A). Their endemism, and the associated 'shared identity' that people have with these species has been recognized and touted for generations.

H.H. Whetzel, a visiting botanist and mycologist who collected with L.H. Bailey in Bermuda in the 1920s wrote of the island's endemic species:

The endemic plants of any country are priceless treasures to be preserved and protected by the passing generations of man. Only a knowledge and appreciation of these plants, as relics of her uninhabited past, will preserve most of them for Bermuda's future children. For this reason, everyone should know them all, should appreciate their value, and so do his full share in preserving them for posterity. (Smith, 1950, p. 102)

For some reason, however, this sense of national pride does not generally extend to the palmetto. One wonders if this because it was not declared endemic until 1934. The Bermudiana and the cedar, conversely, were thought to be endemic at least from the early 18th century, and the pride Bermudians feel about those species and their complex symbolic value has grown accordingly. By the time L. H. Bailey published the name *Sabal bermudana* and declared it a species all its own, the utility of the palmetto and its role in shaping Bermudian culture had waned. This meant that people no longer had a hands-on relationship with the plant, and so when the Chinese fan palm was introduced, it was not recognized as markedly different. If people could be encouraged to carry on a hands-on relationship with either of the two species (for example through harvesting and weaving the leaves), doubtless they would easily tell one tree from the other; use would necessitate recognition of leaf and petiole shape, while regular interactions would ensure an overall sense of the plants' differing gestalts.

While the scientific method continues to be a valuable way to separate evidence-based fact from hearsay and objective from subjective observations, when it comes to plant knowledge, plant-human relationships, and conservation, we see its limitations. An outside observer will never ‘understand’ a local resident’s relationship with a place. The relationship is not something that can be analyzed but must be felt to be known. The more one can engage with the affection and identification people naturally feel with the landscape around them (especially that of their childhoods), the better chance they have, I believe, of enlisting people in conservation measures. The science is essential, of course. But it is only one aspect of a complex and personal relationship.

Chapter 7: The Role of Traditional Skills in Conservation: How Do We Come to Care?

While early Bermudian culture was the result of cultural hybridization and adaptation, it soon grew into a unique set of traditions noticeable in the Bermudian vernacular, gombey culture, culinary, maritime, and craft traditions. Despite a constant influx of people and, more recently, media from around the world, Bermudians have maintained a strong sense of their unique identity and pride in their hard-earned identity. As the culture has continued to adapt and change, however, some Bermudians have lamented the endangerment of place-based traditions, particularly their traditional ethnobotanical knowledge.

The shift away from local plant use and toward dependence on imports increased with the first and second industrial revolutions, particularly with the increase of steam travel, as well as changes in foreign trade and availability of cheaper imports from overseas. Many Bermudians noted this and strove to keep traditions and cottage industries alive. Some traditions, such as making cassava pie at Christmas and codfish cakes on Good Friday have not altered to this day (see Appendix A). But these particular traditions have withstood the rise of imported goods as most of the cassava today is imported, and the codfish was always brought from the Canadian Maritimes; the only difference is that now rather than being brought in by Bermuda sloop, it arrives in frozen packages on a plane.

Ethnobotanical knowledge, however, has decreased dramatically and continues to do so. The decrease in palmetto use, as we have seen, is attributable to numerous forces, including the sheer reduction of numbers of the trees due to deforestation and ever-encroaching development, and the importation of goods replacing the palmetto's many functions, including alcohol, mattresses, household goods, rope, fans, and so on. Furthermore, the perception of the tree as sacred, or at least as having its own intrinsic value is thoroughly unsupported by any cultural narrative. While the cedar and the *Bermudiana* have managed to retain symbolic value, the palmetto's relationship with Bermuda has been forgotten. Without the relict symbolic value, plants generally are perceived either according to economic use or perhaps through what they offer via ecosystem services. The blending of the two historical perspectives of both science and folk knowledge, while being open to whatever new revelations may unfold, might be the strongest way forward.

7.1 Palmetto uses today

A few Bermudians, whether through pride or pragmatism (an appreciation of tradition or economic need), have, over the decades, nurtured the smallest threads of traditional knowledge, and today the culture is enjoying, however slight, the beginning of a revitalization movement. This movement started as the industrial revolution was making its mark on the island.

In her *Sketches of Bermuda* (1835), Susette Harriet Lloyd describes attending a fundraising sale for The Society for the Promotion of Native Industry. Run by women, the objective of the society was to provide work for fellow Bermudians and generate enough profit that they would be able to purchase fresh materials. Lloyd writes, “There was a large display of palmetto, in plat, which finds a ready sale in the navy; also a variety of palmetto baskets, of singularly elegant forms, hats, trays, mats [...]”. (1835, p. 143) The apparently wealthy Society women had also erected two schools for impoverished white children and were teaching them themselves.

A visitor to Bermuda in the early 1900s, Winslow Manley Bell interviewed elderly Bermudian tradition-bearers in an effort to preserve their knowledge and wrote an unpublished manuscript, *The Forgotten Art of Plaiting* (1906). Nearby in South Carolina, Cooke and Sampley’s *Palmetto Weaving* (1943/2013) provides detailed instructions on how to create various traditional weaves. They frequently reference Bermudian traditions, and history teaches us that many of the patterns in the book would have been practiced in, if not have originated from, Bermuda. Cooke and Sampley explicitly state that they are trying to preserve rapidly vanishing knowledge; writing in their first paragraph:

Palmetto, palm, and straw braiding is an art as old as history, the skill being perpetuated, as is most frequently the case in native crafts, by home or word-of-mouth teaching from mother to daughter. It was in this manner the patterns recorded here were obtained and carefully written down so this old art might never be lost. (2013, p. 42)

Today very few Bermudians remember how to weave with palmetto, and fewer still are actively practicing the art. Heart of palmetto has likely not been tasted on these shores for generations. The fruits are eaten only occasionally by children and the elderly who grew up eating them, and the idea of grinding the seeds into meal, once fundamental to the island’s survival, is now a novelty to all. The word ‘bibby’ or ‘beeby’ is recognized by some, but how to tap the sap or ferment it is largely forgotten. And the role of palm wine in ceremonial practices is also a thing of the past. There are, however, a few present-day uses of palmetto and a few people,

in particular the highly-respected Ronnie Chameau, reinventing and keeping at least a few palmetto traditions alive.

7.1.1 Palmetto dolls

One extant tradition that could have hailed from almost any of Bermuda's constituent cultures is that of the palmetto doll (Figure 47). Making dolls of palmetto and other plant materials likely goes back to the earliest days of settlement, although the making of them and their purpose have never been recorded. Insights can be gained by scanning briefly the purpose of similar dolls in some of Bermuda's earliest constituent cultures.

In pre-Christian England – and in some corners of the country still today – it was common to make 'corn dollies'⁵⁵ or 'corn mothers', figures made of the last harvest of the year as a place for the spirit of the grain to live. It was doused in water to ensure rain for the coming year, and viewed as fertility insurance for both the coming harvest and the women in the community. Often simple geometric shapes made of straw, they were also at times in the form of a woman, well-dressed with hat, dress, and handbag. Corn dollies were generally made by mothers for their daughters (Lambeth, 1966). Did early Englishwomen transfer their relationship to the fertility of grains to that of the palmetto tree? Perhaps plaiting wasn't the only art that shifted from wheat to palmetto.

Similar dolls are also made in many West African cultures. They resemble human figures much more obviously than the corn dollies. They are generally dressed in women's clothing, and their heads, in many cases, are made from a large palm seed. Similarly, the Bermuda palmetto dolls today have seeds for heads – occasionally a palm (not the palmetto seed, it would be too small), but also pecan and walnut (both imported). The West African dolls also represent both a plant's and a women's fertility and are made by mothers for their daughters (Markel, 2000).

Many Native American cultural groups have long traditions of making cornhusk dolls, a tradition adopted by early European-American settlers. They also closely resemble the palmetto dolls traditionally made in Bermuda. One stark comparison is that corn husk dolls are

⁵⁵ The word 'corn' in this case means grain (likely wheat) and not maize, while 'dolly' in this context comes not from 'doll' but possibly from 'idol'.

traditionally made without a face. It is said that this is a lesson in the dangers of vanity.⁵⁶ Other groups say that facial features will bar or trap ancestor spirits inhabiting a doll.

There is one woman in Bermuda today well-known for making dolls and angels of palmetto, banana, pandanus, and other plant materials (Figure 47). Ronnie Chameau is from the island of St. David's, Bermuda, accessible only by boat until the mid-20th century, and known both for having a unique culture and for maintaining some of the older Bermuda traditions long after they had died in the rest of the country. When Chameau was young, she taught herself to make dolls from palmetto and banana leaves following the pattern of Mrs. Marie Gleason. Gleason made her living making collectable dolls sold as souvenirs and was protective of her knowledge. Chameau reports that Gleason would hide her work under the counter when anyone came into the shop, afraid others would steal her technique, and essentially her business, for which she was renowned. (This provides a further example of the effects of commodification on traditional arts).

Ronnie Chameau's mother, however, had given her a Gleason doll. She proceeded to reverse engineer it, and took it apart to learn what Gleason had done. Chameau reports that after her first doll sold in a store in Hamilton, she was approached to also make angels. Her angels are now regularly seen in craft markets and Christmas fairs on the island, and Chameau's video on how to make banana dolls is reportedly watched and appreciated in islands throughout the Caribbean, a present-day echo of the earlier spread of knowledge from Bermuda to its southern neighbours. In 2012, Chameau was asked to make a palmetto doll for Queen Elizabeth's jubilee. She spent one month making a doll, with a dress, hat, and purse trimmed with palmetto woven into various patterns, including the fishpot braid; the head of the doll was of Bermuda cedar wrapped with palmetto fibres. When asked why she didn't put a face on the doll, she is quoted as saying, "I do not paint faces on my dolls. I feel it is sacred. When one looks at the face, you see your own face or the face of your ancestor". (R. Chameau, personal communication, August 15, 2017) For many, I'm sure, this is true.

⁵⁶ Long ago, a corn husk doll, much praised, became so consumed with her own beauty that she neglected her duties of playing with the children. She spent all her time gazing at herself in the water. Eventually, after several warnings, the Creator took away her face, so she would not be so trapped by superficialities.

7.1.2 Palm Sunday and palmetto fans in church

During Palm Sunday, as in many parts of the Christian world where palm trees grow, Bermudians make crosses out of palmetto leaves. The crosses are generally made by children for parishioners who wear them on Palm Sunday. They are then kept by the church for a year, and the following year they are burned and the ash used ritually on Ash Wednesday (Pearman, 2016). Palmetto and other palm leaves are commonly among the greenery and flowers used to decorate churches, a long-standing Bermuda tradition; on Palm Sunday even more so.

A few Bermudians still use palmetto fans in church, although it is unclear how many fans are newly made and how many are heirlooms (palmetto products can last for at least a century or more (Figure 49).

7.1.3 Palmetto hats today

Palmetto hats were made and worn in Bermuda into the 20th century. While they are still occasionally made, they are now only novelty and decorative pieces. Hat-making, such as in the tradition of the home made ‘Easter bonnet’ is an opportunity to show off one’s creativity and aesthetic or outrageous sensibility. Children make hats out of plant and other materials and enter them into a competition at the Agricultural Show each year. Members of garden clubs also make decorative hats of leaves and flowers as part of their yearly garden shows. I had the opportunity to sit in with Ronnie Chameau and Donna Pink on the judging of the Hibiscus Garden Club competition in 2017 and was happy to see that some of the hats included some simple palmetto weaving for their bases (Figure 48). Chameau and Pink themselves make high-end hats of palmetto, banana leaf, and other natural fibres for art shows celebrating Bermuda’s history in the fashion world (Figure 48).

7.1.4 Palmetto leaves in water tanks

Another use of palmetto still practiced by a few staunch traditionalists is that of adding a palmetto leaf to a water tank. By law, all Bermudians are required to catch rain water on their roofs and keep it in a tank, usually under or near their houses. This is their only source of fresh water. The rain water sits in an underground tank where, inevitably, other forms of life grow. While tanks are cleaned and, these days, ‘shocked’ with bleach from time to time, in the interim

their walls turn green with algae, roots and vines snake their way in, leaves make their way from the roof into unblocked gutter drains, and a green scum (and the occasional dead toad) appears in the water. In order to “sweeten the water”, Bermudians have a longstanding tradition of putting a palmetto leaf in the tank (McCallan, 1948). The function of the leaf is not clearly defined, but perhaps the leaf becomes an attractive substrate on which the algae and other scum can grow, effectively keeping it out of the drinking water. Every now and then the slimy leaf is replaced by a fresh one.

7.1.5 Palmetto leaves in graves

In Bermuda there is not enough topsoil to bury the deceased deep in the ground. Rather, holes are excavated in the soft limestone, about 6 feet deep, with a rocky bottom. The tops of the graves appear as rectangular white stone boxes rising about two feet off the ground, covered with a beveled stone cap (Figure 50). When a person is buried, the coffin is lowered on straps down to the stone bottom, with the lid simply placed back on the grave. Graves are owned by families and used by many family members over the years. Tradition says that one must wait “one year and a day” before putting another coffin in that same grave. For this reason, many families own two graves side by side, in case members die within a year of each other. When it’s time for a grave to be used again, what remains of the previous ‘burial’ is covered over by palmetto leaves. Many early Bermudians (particularly early Christians and some West Africans) would have had a direct symbolic association with the palm as a powerful tree connecting one to heaven. So, in addition to providing the pragmatic purpose of simply covering up remains, it is possible the presence of these leaves in the graves also held symbolic significance.

Of all these present-day uses, the only one really actively practiced today is Ronnie Chameau’s doll-making. And while Chameau’s work keeps a tradition alive, she is only one person in 65,000. The need to engage the broader population is still at hand.

7.2 Conservation meets cultural revitalization

The recent efforts of conservationists and traditional skills practitioners in Bermuda are giving rise to increased ecological awareness on the one hand, and cultural revitalization on the other. Telling the history of the Bermuda palmetto through a social-ecological lens gives an opportunity for these too-often segregated fields to see their intimate connection. Ecological history is a

reflection and result of human activity. And human culture has always been, at least in part, a rich reflection of our species' relationship with our natural habitat. The ability to balance a cultural relationship with our understanding of a species' current ecological needs is perhaps the only chance that species (and we) may have of survival.

The Global Strategy for Plant Conservation (GSPC), a program of the UN's Convention on Biological Diversity (1999) recognizes the need to document and incorporate traditional ethnobotanical knowledge into conservation programs. One might wonder at the efficacy of this in a place such as Bermuda where the 'traditional' – that is, the adapted traditional knowledge that was applied to the palmetto – was practiced, for centuries, unsustainably. But from today's perspective, it can be argued that an appreciation of the role the palmetto has played in the nation's history could help to engender a sense of national pride and interest in the plant. Such knowledge can further engender a deeper and more 'personal' relationship with the plant than a government-issued conservation booklet, for example. As we have seen in Bermuda's history, the cultural relationship to plants is constantly evolving in response to economic and ecological need Figure 1. There is no reason why Bermuda's relationship with the palmetto could not shift from primary economic resource, to all but forgotten swamp inhabitant, to source of national pride.

The story of the palmetto gives Bermudian educators an opportunity to blend conservation awareness with ecological, economic, social, and cultural history, as well as with hands-on craftsmanship and creativity, rekindling an interest in the tree and in Bermuda's ethnobotanical roots. Following are a few ideas.

7.2.1 Palmettos as heritage trees

While Bermuda is all but deforested, and the remaining palmetto stands are diminishing, there are still a few tall giants tucked into groves around the island. It seems that most Bermudians are so accustomed to driving past them that they have not stopped to question their age.

Palms, we know, are some of the longest-lived organisms on earth. It is possible that some of the oldest palmettos have borne witness to much of Bermuda's history. If the oldest trees are hundreds of years old, for example, it is possible they once provided leaves for thatching, leaves for ladies' hats, and rigging for ships. There are even large round scars on the trunks of the oldest ones, indicating that they might have been tapped for bibby, or marked as property boundaries back in the 17th century. If one could determine the age of the existing palmettos, even in

estimation, it might confer on them a special status in people's minds, and even grant them the legal status of 'heritage trees', a status granted to grand old trees of obvious nobility in Bermuda, providing protection from the chainsaw.

In this section I offer some initial thinking around the question of the palmetto's lifespan, that it might be used for further studies.

Tall palms are known to be some of the longest-lived plants on earth today. *Livistona eastonii* in Western Australia has an estimated lifespan upwards of 720 years (Hnatiuk, 1977, in Tomlinson & Huggett, 2012). *Lodoicea seychellarum* in the Seychelles is estimated to live up to 350 years, an age the researchers remarked upon as "less than expected" (Savage and Ashton, 1983, in Tomlinson & Huggett, 2012).

While recent studies show palms to be among the oldest trees on earth, or at least those with the oldest cells, the only way to reliably measure the age of a palm is by knowing the day it was planted. Height can be an indicator, but it is misleading; some palms take up to 60 years before the stem becomes visible above ground. During this 'establishment phase' the stem thickens and allows the crown to reach its full size. This phase in the *Sabal palmetto*, a close relative of the Bermuda palmetto, has been estimated to take between 30 and 60 years to complete (Tomlinson & Huggett, 2012). Palm growth rates also vary during the lifespan of the plant. A 42-year-old *Sabal palmetto* measured at the Fairchild Botanical Garden in Florida grows 6 cm per year (S. Zona, personal communication, July 8, 2017). Habitat also makes a difference. cursory measurements of stem length of the many *Sabal bermudana* planted by David Wingate on Nonsuch Island in 1963 show a range of heights depending on soil quality and exposure. Measuring them in the summer of 2017, we found the 54-year-old stems to range between 8 and 18 feet; the tallest found in the sheltered areas that also had deep soil.

Wingate, now in his eighties, has reported the presence of ancient, giant palmettos in Bermuda within his lifetime, but, he says, they have all since come down. Hodge, writing in 1960, describes a palmetto in Pembroke Marsh upwards of 50 ft tall. As far as we know, there are none on Bermuda today that have reached that height, but, being such slow growers, it doesn't mean that they won't. Governor Robinson writing in 1687 reports palmettos in early Bermuda reaching 80 or 90 feet.

Here also a tree called ye Palmeto which in age farr exceeds the three hundred years liv'd oake the first growth & age of this Surpassing all men's memory or Discovery nor is their hight less Strange for though Sixty yeares growth Produceth not above six foot yet have

they been knowne to grow Eighty or Ninety but in these latter ages not above thirty or fourty. (Robinson, 1687/1945)

Note he, too, comments on how slow-growing they are. With the amount of deforestation in early Bermuda, it makes sense that there are none today of that size. As described elsewhere in this paper, Robinson was not alone in commenting on the slow growth and old age of Bermuda's palmetto. This trait was apparently remarked upon far and wide; Lawson, the intrepid traveller in the Carolinas (1709), writes:

It's worth mentioning, that the Growth of the Tree is not perceivable in the Age of any Man, the Experiment having been often try'd in Bermudas, and elsewhere, which shews the slow Growth of this Vegetable [...]. (p. 7)

And upon his visit to Bermuda in 1714, natural historian Mark Catesby adds:

This is the slowest grower of all other trees, if credit may be given to the generality of the inhabitants of Bermudas; many of the principal of whom affirm'd to me, that with their nicest observations, they could not perceive them to grow an inch in height, nor even to make the least progress, in fifty years: yet in the year 1714, I observed all these Islands abounding with infinite numbers of them of all sizes. (Nelson & Elliott, 2015, p. 8)

But as Bermuda's attention has strayed away from this tree, its lifespan appears to be of little interest and has largely gone unnoticed, unmeasured, and undocumented.

One way of gauging the growth rate of the tree could be to compare palmettos in archival photographs with those today. I have identified two interesting locations at which this could be done: the palmettos planted outside Verdmont, a National Trust property house built in 1700, of which there are photographs showing the same palmettos standing in 1950, not terribly shorter than they are today. With a little digging, one might be able to find older photos or paintings of this well-known Bermuda house. (If the palmettos were, in fact, planted when the house was built, it is possible they were planted by John Dickinson, Bermuda's earliest plant collector.) Another area of interest is the line of palmettos growing along Gibbon's Nature Reserve on South Road in Devonshire. A photograph of these palmettos exists from 1905, and while a few of the palmettos came down in a hurricane in the last decade and new ones were planted, it would be feasible to take a photo from almost precisely the same location and get a sense of their growth over the last 100 years. I include both the 1905 photo and one I took in 2017, but admit my location was not precise enough to determine which tree was which, or precisely how much they had grown. Again, this could be part of a future study (Figure 53).

Further clues could be gained from the *Sabal bermudana* housed at the Edinburgh Botanical Gardens. There are several guesses as to its age, although no one knows for sure. A photo (Figure 23) taken in 1874 and the accompanying notes indicate the top of the plant was 36 ft from the floor (including planter), with a stem of 14 ft. Estimated age at that time was 60 years. It was planted in the ground shortly after this, and, according to the curators at the Botanical Garden, has not been measured since (F. Inches, personal communication [email], July 28, 2017).

No palmettos in Bermuda are at the height reported by the early settlers, up to 98 feet tall. It is impossible to know how old those virgin stands of palmetto were; perhaps, like the *Rhopalostylis sapida*, upwards of 750 years. There are small groves of giants and occasional individuals still standing in Bermuda. These centenarians and others could be mapped and labeled as heritage trees, witnesses to Bermuda's past. Perhaps, as the early Namibians thought, they could also be recognized for their maternal qualities, the mothers of Bermuda, providing the people with food, shelter, drink, emergency sails, and umbrellas. With further research and a more conclusive study, I feel that conferring heritage status to these trees would greatly aid in their protection and the protection of the species overall.

7.2.2 Palmetto weaving as social bonding

Plant knowledge not only reflects the inventiveness and creativity of past generations, it also serves to strengthen the bonds among those alive today. There are numerous accounts from historic Bermuda of people gathering together to process plants for medicine, food, shelter, and export. For those of us participating in an urban wage-economy, it is easy to forget how common work parties are in rural life. Many hands make light work, and, furthermore, can lead to joyful and easy conversation, light-hearted gossip, an opportunity for group reflection, the reinforcement of shared values, social bonding, and, more often than not, song. There are a few examples of this phenomenon in Bermuda noted in Appendix A. Ronnie Chameau tells stories of how groups of women in her youth gathered to peel and grate cassava (*Manihot esculenta* Crantz) for the traditional Christmas dish of cassava pie.⁵⁷ E. A. McCallan describes peeling arrowroot

⁵⁷ While cassava is still occasionally grown and processed from scratch in Bermuda, it can be prohibitively expensive to use local cassava for this dish. Farmers have to charge a high price for the roots because it takes two years before it can be harvested, thereby occupying precious space in Bermuda's dwindling agricultural land that could otherwise be used for an annual crop. Even so, squeezing the water out of the store-bought, frozen, pre-grated cassava can be

(*Maranta arundinacea* L., one of Bermuda's major cash crops) in 'the old days' on St. David's Island, an activity the whole family joined in. Likewise, Helen Fessenden, reminiscing about life in Bermuda in the 1870s, writes of the same type of party gathered to cut potatoes for planting.

These work parties functioned not only as a way to prepare food for the community, but an opportunity to gather together, tell stories, catch up on news, and ultimately to reinforce social values. Plants also facilitate this in churches among church guilds, groups of people responsible for decorating the church on Sundays and for special occasions. Fessenden beautifully describes the ritual of the community gathering together to decorate the church for Easter:

With gardens a glory of bloom and [...] greenery everywhere for the taking, the incentive to lavish all this beauty on the church was natural. Good Friday afternoon and all day Saturday we were ready, under skilled direction, to do our share; in groups we children would scour the parish for bundles of date palm and sago palm and palmetto leaves, for boughs of glossy green Moira, for prickly cedar brush, for baskets of oleander leaves if chains were to be made of them; sometimes with great secrecy a ladder would be taken across fields to a cave, quite deep but open to the sky, at the bottom of which grew a special fern with very long and delicate fronds; it was an achievement to get a bunch of them for decoration for, added to perilous descent by ladder, was the risk of stirring up wild bees who made the place their particular sanctuary [...] Foundation greens work was done first, leaving the flowers to be put in on Saturday, [...] Easter lilies and callas predominating. In the end, our church was made very lovely by the work of willing hands directed by a man who cherished this House of God and whose lifelong joy was to beautify it. This service through the years welded the community together and created a personal identity with the church which became an intrinsic part of our lives.

I would add that such activity reinforced a personal relationship not only with the church but with Bermuda's flora.

All of these acts of everyday care for oneself and one's family become a way of reinforcing social harmony, group-bonding, and cultural values on larger and less tangible levels, rooting human culture in a botanical world. Knowledge of plants is not only good for nature, it also brings people together.

In conducting this research, I had the opportunity to experience this social bonding for myself with the palmetto weaving group that Ronnie Chameau and I offered to fellow Bermudians from April-September, 2017 (Figure 45; Figure 46). We encouraged people to bring their whole families, bring snacks and drinks and blankets to sit on, and we provided instruction

an arduous and enjoyable two-woman job, and I have fond memories of this task at Christmastime with my mother in Bermuda.

and materials. The fee was a donation to the Carter House Museum (run by the St. David's Historical Society), which might see one or two visitors on any given Sunday.

The first Sunday we were worried. We had hardly told anyone, and, after weeks of nonstop sunshine it had started to rain. Chameau cleared the table in the back room of the museum, laid it with a cloth and put a few chairs around. We sat together practicing a few plaiting patterns and listening to classical music on the radio. Her husband sat by, content to just be present. We realized that if no one showed up we would be okay, we would enjoy each other's company, have our little picnic lunch, and go home with some new plaiting skills. But soon people started trickling in, and then more and more. Save one man who was just there to mind the smallest children, it was all women and many children. They sat around the table in the back, surrounded by plaited hats and purses made by Bermudian women a hundred and more years ago. Then more arrived and they sat on the floor around the fishing boat in the main room of the tiny museum. When the sky finally cleared a bit, a few sat outside, weaving baskets, peeling oranges and telling stories while the youngest children shrieked and chased each other across the grass, intermittently jumping on the dad in gales of laughter (Figure 56; Figure 57). All the women talked. Most knew each other already, through this or that channel. Some had never met before. Some, like Chameau and me, had ancestors dating back hundreds of years in Bermuda. Most of us, regardless of skin colour, were likely cousins, and most of our shared and various ancestors would have been experts in plaiting, seated comfortably together just as we were, hands busy, minds thoughtful, sharing stories or just enjoying the peace of each other's meditative company. A few remarked on how therapeutic it was. "This is just what my brain has needed," said one. And I felt just the same.

Christina Charuhas (2015) writes that palmetto plaiting served to strengthen the bonds between "Anglo" and "Creole" Bermudian women. I cannot disagree with Charuhas on this, but this sort of bonding is something one must actually experience. Impersonal historical writing does not convey the heart-strengthening and, in a way, spiritual experience of working together in a group (rather, it reduces it to an impersonal functionality).

I noticed a few things on that and subsequent afternoons. The first is something that I've noticed before, but that I always marvel at and appreciate each time it occurs in my life: when companions have their hands busy with a shared repetitive task such as knitting or weaving, the mind becomes more open, pliable, relaxed. Shyness and other barriers fall, and there is a joining

with other minds into a sort of ‘group mind’ with many voices. It seems unavoidable. On that and all the following monthly Sunday afternoons, we began to reweave a Bermudian society. We shared stories and points of view. We reinforced shared values, all guided with care and good will. Soon we began to pick at and untangle community issues. We reflected on current affairs in the country. The America’s Cup sailing tournament, for example, was taking place at the time, and one woman remarked that she had passed by the French team as they were stripping off their wet suits. “I haven’t seen that in a loooong time,” she said (in typical female ribald humour), and all of us roared in hearty appreciation, but that was followed by a more heartfelt discussion on other elements of the race and how small Bermuda was faring with the great influx of people.

That first Sunday Chameau and I gathered several hundred dollars for the museum’s coffers. We shared old skills with a new generation of Bermudians. And we introduced many, for the first time, to the differences between the Chinese fan palm and the palmetto, planting the seeds for the type of work I have been discussing: conservation through cultural revitalization and ecological education. I also brought a basket of about 300 palmetto seeds that I had gathered in Palmetto Park on Bermuda’s North Shore, and gave instructions on how to plant them. Many of the women took a handful home, hopefully to help reverse the downward trend of the tree’s rapidly diminishing population.

7.2.3 Paradigm shift: Telling new stories

While many Bermudians do not appear to share values and norms, their national identity and shared, interdigitated histories is one thing they all have in common. The palmetto has been an historically valuable tree to the success of the nation, and could be recognized as a ‘cultural keystone species’ (Garibaldi & Turner, 2004); without it, Bermuda and Bermudians would not be who they are today. The way the social-political history is generally reported, however, relegates the majority of people to ‘black’ or ‘white’, stripped of their cultural heritage and their ancestor’s ingenious contributions to Bermuda’s survival as a colony, not to mention the omission of plants as fellow protagonists. This leaves a major gap in the public’s understanding of the role the palmetto has played, and of the historically sacred and special relationship that so many of Bermudians’ ancestors would have had with this plant, having carried their knowledge from afar.

Of course, scientific education is useful, but as we see in the history provided, it is but one of many ways of perceiving and relating to plants. One of the great limitations of scientific

knowledge is that it is inherently place-less and disembodied. In striving to be objective, it strips plants and plant knowledge from their central place in human culture: the direct emotional, physical, chemical, seasonal, aesthetic, and highly personal species-specific relationships that people can – and, traditionally, must – have with plants to survive. This gives rise to such statements as, “Humans benefit from spending time in Nature”, without delineating *which* nature exactly (Ryan et al, 2010). It’s like saying, “Humans are a social species, we *must* spend time with other human beings” ... and yet we all know from personal experience that the details of our relationships with those other human beings (Which humans? Why? Spend time in what way?) make all the difference in the world. Species matter. Cultures are born from landscapes, and ethnobotanical traditions – such as food, medicine, ceremony – are all species-specific and reflect the local climate as well as the history, knowledge, ingenuity, and family practices of the people who live there.

Bermudians today have close connections to the plants in their landscape – to the flowering times of the freesia as a harbinger of spring, for example, or the scent of the night-blooming cereus. The scent and sight of cedar wood is valued and associated with personal and national identity, and for a few old-timers, the sight of the shaggy head of the palmetto, the glint of the leaves in the moonlight, the shadows it casts on Bermuda’s limestone walls, or the sound of the wind through its leaves, are just as evocative. Species matter. Experience matters. And narratives matter.

To that end, educational efforts can access the leverage point of a ‘paradigm shift’ by retelling Bermuda’s social-ecological history. In the brilliant *Leverage Points: Places to intervene in a system*, Donella Meadows cites a ‘paradigm shift’ as the second to most powerful change one can make:

Paradigms are the source of systems. From them, from shared social agreements about the nature of reality, come system goals and information flows, feedbacks, stocks, flows and everything else about systems. [...] You could say paradigms are harder to change than anything else about a system, and therefore this item should be slowest on the list, not second-to-highest. But there’s nothing necessarily physical or expensive or even slow in the process of paradigm change [...] How do you change a paradigm? Point at the anomalies and failures in the old paradigm, speak loud and with assurance from the new one, insert people with the new paradigm in places of public visibility and power. (2009, p. 18)

Species matter and narratives matter. And many Bermudians are aware of this. In my brief time on the island, I met many excellent historians, ecologists, conservationists, high school teachers, art teachers, artists, medicine-makers, cooks, politicians, poets, farmers, and others who are cultivating history and rewriting the landscape, contributing to this fundamental shift.

7.3 Bermuda's place-based cultural identity: What is at stake?

I began this thesis with a fairly idealistic concept of the relationship between plants and people. I was interested in the profound spiritual relationships that many people have with plants and the cultural and philosophical frameworks that support them. For me, the relationship with plants was deeply personal, and I imagined it being as such for others as well. I was interested, in a sense, in the relationship with plants that lies beyond the human (social, political) world because I believe it stands on its own and deserves attention. I hold that such a relationship is always available to us. I believe in Biophilia⁵⁸ and Affective Ecology⁵⁹, in the natural love humans feel for other species. And I think that beauty and revelation is available to all, even in the direst situations. But in the meantime, in the everyday, humans have an innate need connect to plants and landscape, directly or indirectly, in order to stay alive.

This relationship can take many forms. It can be cursory and unconscious, as we breathe without considering the origins of our air, or buy food in a grocery store, unconscious of the life-forms and habitats it comes from. Or the relationship with plants can be acknowledged as an integral part of our physical and social lives. In traditional indigenous cultures, for example, the relationship with plants takes the form of a rich fabric of story and meaning, a recognition of our dependence on other species for staying alive and an acknowledgement of the reciprocal power we hold over their lives.

The continuation of traditional cultures, with the memories, histories, associations, mythologies, and overall sense of identity that links people to landscape, is dependent on access to traditional lands and the freedom to practice one's culture. Early in my research into Bermuda's ethnobotany, I realized I would have to deviate from my interest in the love a person can feel for plants to question the effects on that relationship, and on a cultural group generally, when the group is forcibly divided and moved to a foreign land. Migration would automatically affect relationships to plants and places, I realised, as would other factors of colonialization,

⁵⁸ The hypothesis put forth by E. O. Wilson that humans have an innate tendency to connect with other creatures.

⁵⁹ A branch of ecology concerned with the emotional relationship between human beings and other species.

including language loss, religious persecution and conversion, the commodification of ‘natural resources’ in a dis-placed economy, and the redirecting of labour efforts away from a localized community to the benefit of a larger, stratified system.

“The Botanical is Political”, I wrote at the top of a notebook page, sitting in my Anthropology of Science class. After class, I shared my anguish with my teacher. “I can’t research Bermuda ethnobotany,” I said. “It is too rife with conflict. There is no ethnobotany there, but the loss of ethnobotany. Ethnobotany, much to my dismay, has been revealed as political!” The teacher laughed. “Welcome to anthropology,” she said. There is no escaping it.

The botanical is political. While an interest in plants may seem quaint or fringe for those of us living in urban societies, our relationship with plants is at the root of who we are as a species and has informed many of the decisions and actions that have brought us to our present state of affairs. Our relationship with the landscape, and more particularly our dependence on plants for food, medicine, shelter, etc., is powerful and therefore vulnerable, attractive to those seeking social domination and political gain. Of course, animals, mountains, rivers, and other people are also foundational to our survival, but plants are among the most powerful. From them we get the majority of our food and tools, much of our shelter and fuel, almost all of our traditional medicines, including ceremonial, mind-altering, and addictive substances. A people’s access to plants, therefore, can determine the nature of their culture, and if that access is absolute, or at least within workable territories, a group is free to practice their culture and can be self-sufficient, creative, and connected to those fellow creatures and places that are of primary importance to their lives.

While the UN has rightly not created a definition for what it means to be indigenous, they broadly describe indigenous people as having “a special relation to and use of their traditional land. Their ancestral land has a fundamental importance for their collective physical and cultural survival as peoples.” (UN Forum Factsheet, n.d.)

To disconnect people from access to land and the plants that grow there is to disconnect them from all that relationship brings – from continuity of indigenous culture, from self-determination, from knowledge of how to survive, from social cohesion, from ready access to health and personal identity.

This process of disconnection – what I have called deracination – is at the heart of Bermuda’s society. And yet, despite the radical disconnection that all early Bermudians

experienced when they arrived to the island from their homelands, and the continued disconnection experienced by the majority of Bermudians who could not own land and whose work was not their own; despite this, it appears that Bermudians, by and large, re-rooted onto this rock in the middle of the sea. The severed ties reconnected to the cedar, the palmetto, and the little bermudiana (*Sisyrinchium bermudiana*) that many call the national flower. Not only native plants, but introduced ones became foundational to Bermuda's culture. Foods such as cassava and sweet potato became traditional meals, and fruit introduced in the late 1800s, such as loquats and Suriname cherries, are today the stuff of childhood memories and play, and tie people to a sense of home. The people who arrived in Bermuda, within a few years, or perhaps a generation, reconnected to the ocean, to the winds, and to patterns in tides and rains they grew so adept at reading. And despite the superimposition of an often cruel and highly confining political system, Bermudians developed genuinely loving, healing, and creative relationships with the landscape, and with certain plants in particular.

While the first uprooting took place when people left their homelands and came, perhaps via another country, to Bermuda, the next major shift away from ethnobotanical knowledge occurred with the industrial revolution and the introduction of economic globalization. With these two human innovations, it became less and less necessary for large segments of the human population worldwide to have any knowledge of plants and how to use them. It can be argued that for roughly three hundred years before this time, Bermudians established a sense of indigeneity, a set of cultural practices and values that were intimately connected to the landscape.

As with all cultures, there were cultural keystone species, the plants which play a major role in both physical survival and a group's sense of identity. There is no doubt that palmetto has been one of Bermuda's major keystone species, but due to multiple ecological and economic factors, its legacy is being fast forgotten. This begs the question – how much do we accept this trajectory of disconnection, and how much do we work to educate, to discover new values and stories that reweave, highlight, and celebrate the continued evolution of a unique identity rooted to place?

Myriad recent studies show the benefits of time spent in nature (Ryan et al, 2010; Kardan et al, 2010; Berman et al, 2008). They use generic terms like 'green space', 'nature', and 'trees' – they are not species or place specific. But I would argue that humans, with our great ability to connect to the uniqueness of certain areas and appreciate the unique qualities of species, require

a more exact and in-depth relationship. In my surveys of local Bermudians, they relate not to plants generally, but to the smell of allspice, the scent of a night-blooming cereus, the scent and sight of cedar wood. The palmetto, for some, is an iconic part of Bermuda's visual landscape, the shadows it casts on Bermuda's limestone walls, the particular sound it makes when the wind rustles through it, the gleam of the leaves in the moonlight ... For those such as Ronnie Chameau, the relationship is even more personal. "Palmetto is my adopted child," she says, and the love and respect that beams out of her when she speaks of the plant is palpable. These are the sorts of specific relationships that engender love and respect for a place, and that lend in turn a sense of belonging.

As we have seen in the story of the palmetto, people can readily adapt to new landscapes: their loyalty can shift from savannah to ocean, from the spruce of Nova Scotia to the mangroves of Hungry Bay. But it takes time for these relationships to develop. History, stories, and people are always rooted to place. A relationship with the plants in that place, as I have hopefully shown, can bring further depth: a sense of identity and wellbeing. It is not a privilege or an accessory to life, but rather at the very foundation of our physical and mental development as a species.

Specific to the palmetto, Bermuda is in a unique position. As a nation, it is wealthy enough to not be dependent on the palmetto for daily sustenance and educated enough to have access to ecological knowledge and scientific insights, and to apply those insights to daily activities. By integrating historical knowledge of the plant, Bermudians might carry on a relationship with it in much the way their ancestors did, adapting and integrating new knowledge, new needs and desires, with older traditions. This might include planting the palmetto in gardens and along fence lines. It might include using it for weaving, or even for bibby, if tapped sustainably. By reviewing the shifting perspectives and uses throughout history (Figure 1) Bermudians might consider the many ways to perceive a palmetto and how to relate to the tree and its materials, and, by extension, the greater natural landscape. Precedence for cultural reverence and species-specific respect has already been set with regards to the endemic cedar. It is possible with further education and engagement with the palmetto that the species could hold a similar place in Bermudians' hearts.

Chapter 8: Conclusion

Ethnobotany is typically divided into two subfields: *economic* botany, the study of the use of plants, and *cognitive* ethnobotany, the placement of this use in a cultural context, including how plants are categorized and perceived (Martin, 1995). The research for this paper began as a simple economic botany – a list of all the ways the palmetto has historically been used by Bermudians – but I quickly realized how much could be learned by placing the story of this plant in its wider social, political, and ecological context.

Bermuda's endemic palmetto played a key role in the first few hundred years of Bermuda's survival and development as a British colony. From the island's first recorded discovery 1503 to the early 20th century, the palmetto provided Bermudians with food, drink, shelter, and other forms of material culture integral to daily survival.

While its list of uses ends there, a closer reading of the palmetto's history allows us to consider some of the larger patterns at play, such as the effects of multi-scale internal and external social and ecological drivers on plant knowledge and culture on Bermuda's social-ecological system as a whole.

By analyzing how the palmetto was used, for example, we gain insight into the contributions of ethnobotanical knowledge from the Caribbean, indigenous North America, Europe, Great Britain, and West Central and Southeast Africa. We bear witness not only to the ingenious adaptations of traditional knowledge, but how some of that knowledge was compromised and lost through the force of migration and adaptation to a regimented and often cruel social-political system.

Through the story of palmetto wine (bibby) we can see the devastating effect of colonial forces on much of the Caribbean and West Central African people's traditional knowledge and spirituality. We see how traditional knowledge was encouraged when it benefited the colony's profit-driven motive, but penalized when it challenged the same. In this story, we also gain insight into the power of plant knowledge. That is, to control a people's relationship to a plant is to control their self-sufficiency and their religion, their access to food and to medicine, and to force participation in a greater economic system.

By the early 1700s, plaited palmetto leaves were the source of a thriving female-led export economy. This story gives us insight into the effects of deforestation on agricultural production,

the effects of a maritime economy on gender balance in a community, and the brilliant adaptations of traditional weaving techniques (the fishpot weave) to fit the fashion of the times.

Furthermore, the popularity of the plait industry led to Bermudian Sybilla Righton's application to patent Bermuda's adapted traditional knowledge, an application which gave her a 14-year monopoly on the export industry. Such commodification of craftsmanship contributed to the distortion of relational values with the palmetto, further stripping the plant of any spiritual or intrinsic value.

The late 1800s saw the introduction of the steamship to Bermuda, increasing the opportunity for agricultural exports and bringing tourism to the island. The palmetto was used in support of the onion export industry by being woven into loose baskets to transport the onions. It was also used to make dolls and other souvenirs for tourists. The weaving of onion baskets and tourist souvenirs, in some ways, marked the last of common-knowledge use of palmetto in Bermuda. Within a few decades, due to international trade regulations and increased access to imported goods, all that was once made of palmetto was replaced by inexpensive, foreign-made imports. This was made affordable by Bermudian workers' participation in the service industry and wage economy generally.

By the late 1800s, the palmetto was increasingly studied by visiting botanists and natural historians, most of whom were connected to the Royal Society, London. The Royal Society, and science generally, encouraged a dispassionate and objective view of nature, further stripping it of cultural meaning, yet allowing people to consider ecosystems generally and palmettos specifically in their own right, including determining the palmetto's status as an endemic species. The knowledge gained from visiting botanists gave rise to a culture of conservation, including perceiving plants in terms of their ecosystem services, which continues to this day.

The overall history of the Bermuda palmetto illustrates the effect of a landscape on the development of a culture, and how that culture, in turn, affects the land.

I have outlined the social-political dynamics above. On an ecological level, we see the effects of the sudden introduction of human beings to a previously uninhabited island. These effects include: the deforestation of trees for food and building materials; the deforestation of trees to make room for agriculture; the decimation of economically valuable native plants when used for local industry; the accidental introduction of rats and other destructive animals; the deliberate introduction of new species of plants for economic and horticultural use; the accidental

introduction of plants and the diseases that can accompany them; and the general loss of habitat due to the rise of a human population not kept in check ecologically, that is: perpetually receiving assistance from ‘the outside world’.

Ecologically, the palmetto is currently listed as an endangered species, threatened by habitat loss due to human development and crowded out by the invasive Chinese fan palm. Bermuda’s traditional ethnobotanical knowledge (not just pertaining to the palmetto, but with all species of plants) is similarly endangered. A handful of people know how to weave the plait that was once the island’s greatest source of income; most people cannot differentiate the palmetto from the Chinese fan palm. This lack of historical and ecological knowledge is contributing today to the plant’s threatened status and to the end of Bermudian culture as it has been defined to date. As forest engineer Baba Dioum famously reminded us, humans will only fight to protect what they love, and they will only love what they know.

Yet still there is hope. Bermudians have continued to adapt to pressures both economic and ecological, most recently visible in governmental and non-profit conservation programs and the burgeoning interest in cultural revitalization. Of particular interest is the interdisciplinary thinking that is currently bringing these two movements together.

While the scientific method is invaluable in devising conservation measures for Bermuda’s endangered biota, scientists now recognize that a blend of both ecological knowledge and folk, or local, experience and insight can lead to desirable outcomes for both the plants and the people around them. A local person’s relationship with a plant involves a sense of seasonal change, aesthetic appreciation, cultural history, personal and national identity, memory and association, practical physical use, and often family stories. These are all powerful factors that can move people to care deeply about the wellbeing of their landscape generally and of certain plants in particular.

In this thesis, I propose several actions to help invite further cultural adaptations that will move Bermuda in the direction of social and ecological sustainability. These include: engage Bermudians in culling invasives and planting palmettos and other native plants on their land; support people’s affectionate and hands-on relationships with the palmetto specifically and with plants generally (Appendix A); research the age of older palmettos and lobby for their status as heritage trees; promote the retelling of Bermuda’s history with cultural roots and the role plants have played, including the development of an overall awareness of the shifting perceptions of

nature over time, encouraging self-reflection and the possibility for new ways of seeing; and promote the use of such historical models to inform conservation and cultural education initiatives.

My research on the palmetto is has been interdisciplinary in nature. As an ethnobotanical study, it aims to situate ethnobotany in the broader fields of history and social-ecological systems and consider the many drivers that affect the adaptations of plant knowledge over time. As an historical work, it strives to shift the dominant narrative to include people and cultural knowledge often overlooked, as well as the influence of ecological systems on a nation's social and cultural history. Finally, as a study in social-ecological systems, it proposes to consider the paradigmatic shifts in how a society relates to nature, and the effects of those shifts on the wellbeing of both the people and the landscape. By adding a perceptual element to social-ecological models, we can gain insight into the deeper forces driving decisions on personal and governmental levels.

The picture I have painted of Bermuda's social-ecological system is far from complete. I have included only those elements that struck me as influential to palmetto use while conducting my research. Scholars with specialties in other areas of Bermuda's history, such as in slave resistance and the abolition of slavery, economics and international trade, or the fluxes in marine ecosystem health and fisheries could add many more layers and drivers, giving a far more complete picture of how Bermuda came to be what it is today.

On an ethnobotanical level, further research into the subtler relationships Bermudians have with plants could be very fruitful. This includes aesthetic and associative relationships, and plants that are used by children. Additionally, further study is needed on the ethnobotany of residents whose ancestors arrived from Portugal and the Azores (which I've only barely touched upon), the ethnobotanical history of the Bermuda cedar, and the complex symbolic history of the *Bermudiana* as the unofficial national flower.

In conclusion, Bermuda's dynamic social-ecological history, if considered as an overall pattern, may be seen as a microcosm by which we may better understand the effects of migration and British colonial rule on social-ecological systems in the Atlantic World. Through the rise and fall of practice and paradigms relating to the palmetto, we can trace the effects of migration, governance, religion, slavery, scarcity of natural resources, starvation, piracy, a maritime

economy, gender imbalances, the industrial revolution, and cultural and economic globalization on the well-being of people and their habitat.

Many of us who find ourselves living in landscapes far from where our ancestors once were, those of us in urban environments stripped of even a basic level of knowledge of how to relate to nature, might benefit from inquiring: What happened in the last few hundred years? How has my lineage gone from knowing so much to knowing so little in just a few generations? Of course, this question is too complex to answer completely in one thesis, and the answers would be considerably different for each person's cultural history, but the story of Bermuda's palmetto, if nothing else, reminds us that inquiring into the absence of knowledge can be as fruitful and enlightening as reaching for the knowledge itself.

Figures

Figure 1 Model of Bermuda's historical social-ecological system.

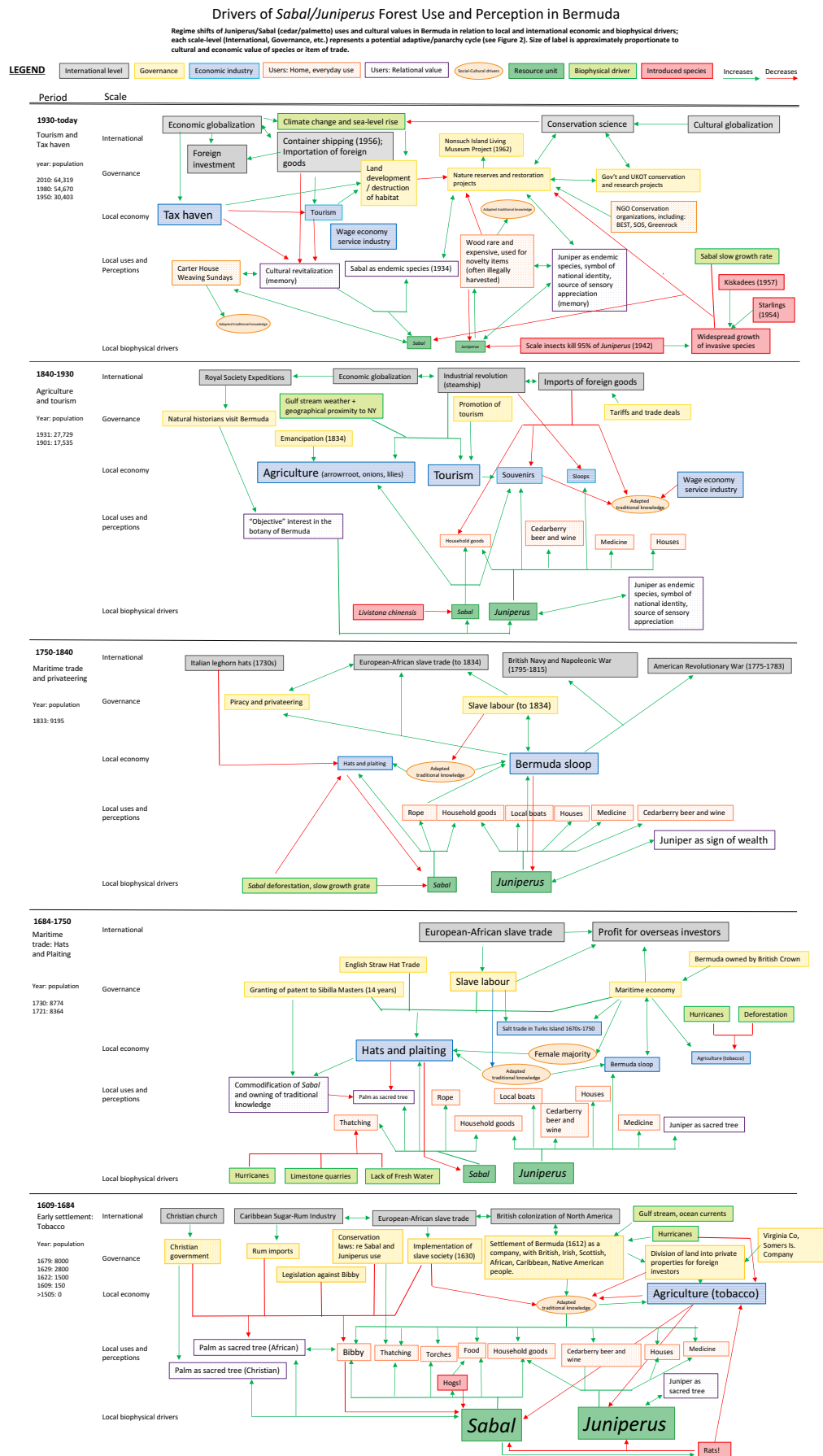




Figure 2 A particularly tall and stately palmetto on Smith's Island, Bermuda.
Photo by Saskia Wolsak.

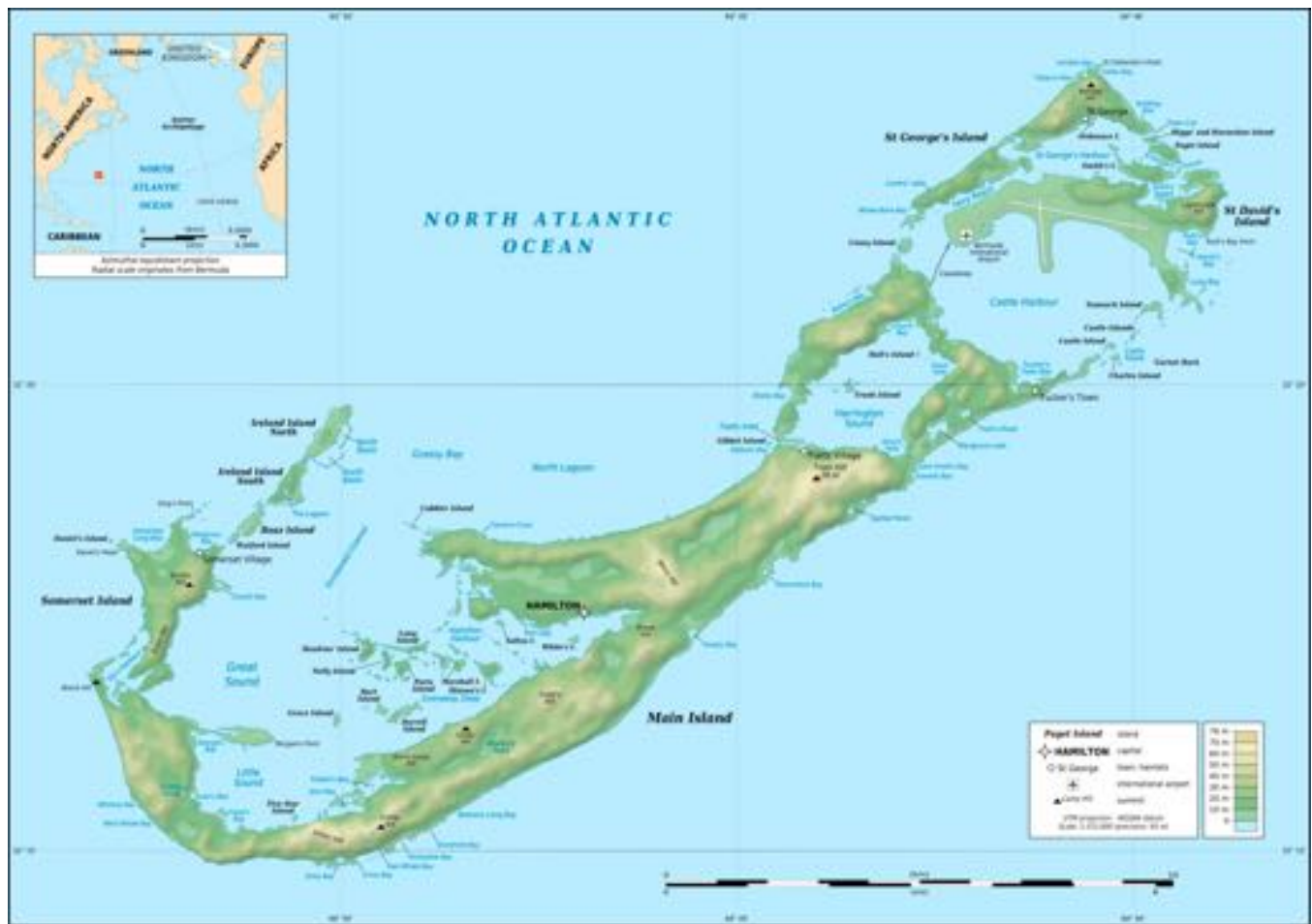


Figure 3 Topographic map of Bermuda.

© Eric Gaba, User:Sting. Public domain.



Figure 4 The rocky shoreline of Hog Bay Park.

An example of typical craggy ‘aeolionite’ rocks along the shores of most of the island.
Photo by Saskia Wolsak



Figure 5 Rabbit Island in Harrington Sound.

One of the few locales with an abundance of palmetto, perhaps resembling how Bermuda appeared to early settlers.
Photo by Saskia Wolsak.



Figure 6 Three ages of palmetto.

Top left: The 'hourglass' shape of trunks is apparent on these very old palmetto trees on Smith's Island, Bermuda.

Top right: A young palmetto tree. It has developed its trunk but the petiole bases (called 'boots') are still present. Mature trees generally don't have boots, and their trunks get smoother and smoother and then start weathering, looking like weathered concrete when they're really old.

Bottom: A very young palmetto, with hardly any trunk, grows by the shoreline of Hog Bay Park.

Photos by Saskia Wolsak.



Figure 7 Palmetto leaves.

Showing long smooth costa with yellow colouring.
Photos by Saskia Wolsak.



Figure 8 Palmetto inflorescence and close-up of flower.

Photos by Saskia Wolsak.



Figure 9 Close-up of a cluster of young palmetto fruit, still green.

Children eat the immature seed which, when the outer green rind is peeled off, is jelly-like. When ripe they darken to black. Early settlers report eating the ripe (black) fruit like dates. Lefroy (1889) remarked that they were nothing to write home about.

Photos by Saskia Wolsak.

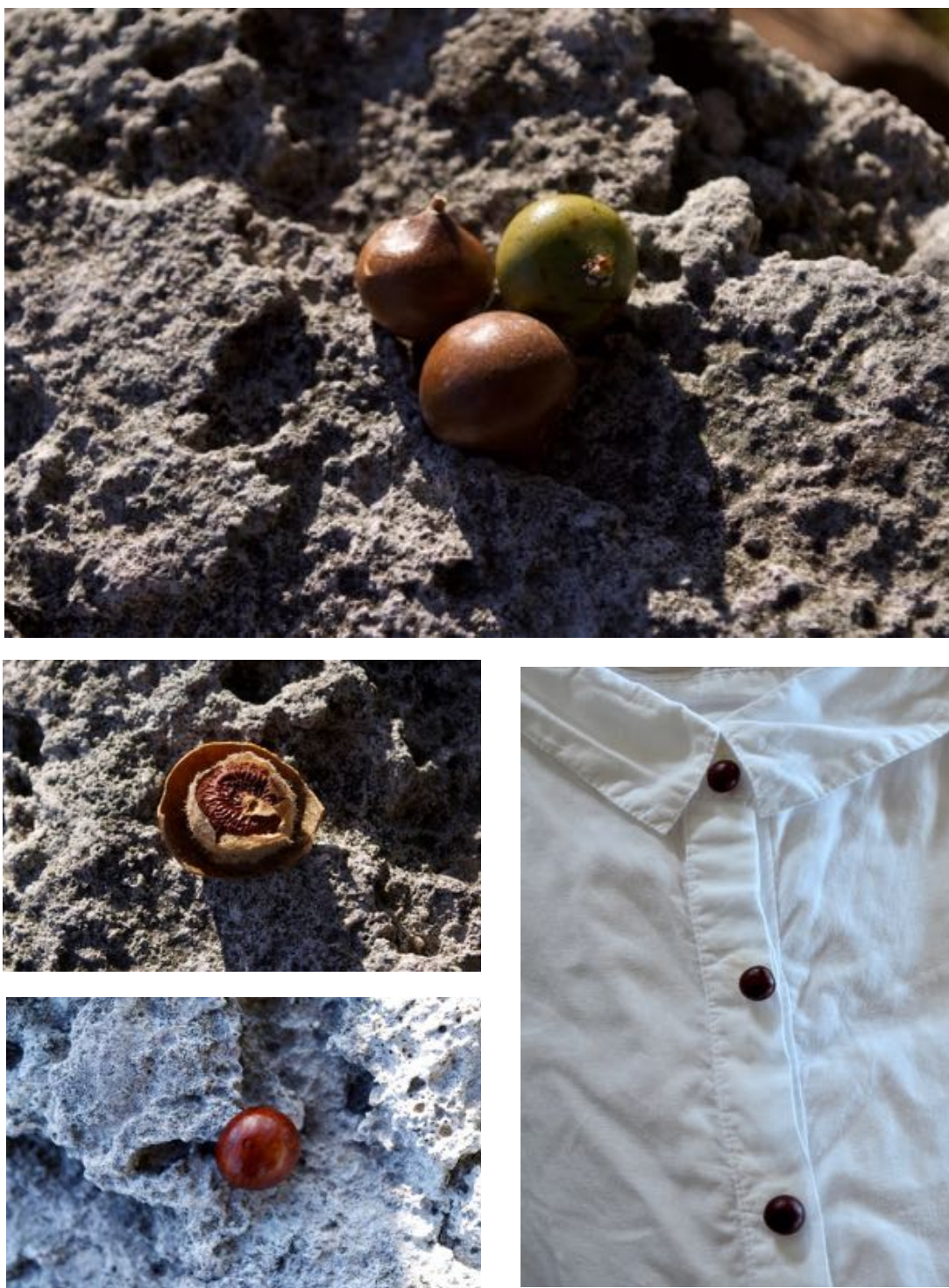


Figure 10 Palmetto fruit and seed.

Top: Palmetto fruits on Bermuda limestone.

Middle left: A palmetto seed with part of its shell and papery casing removed.

Bottom left: Palmetto seed on limestone rock. This is what early settlers ground into meal and mixed with flour.

Bottom right: What palmetto seeds might have looked like as buttons, although according to Hardy's poem (1671), they were "in silver set".

Photos by Saskia Wolsak.



Figure 11 Mother Carey and her Chickens (1877) by J. G. Keulemans.

The personification of the spirit of storm, Mother Carey drew sailors under the sea; her 'chickens' (storm petrels) warned of her approach. Distributed under a CC-BY 3.0 license.



Figure 12 View from Spittal Pond, Bermuda.

With so little land, Bermuda vistas are almost always dominated by ocean and sky. Many present-day Bermudians have a deep and complex relationship with the sea, often calling it their 'wilderness', where they feel the most at peace, the place they wish to be buried. We cannot know how early Bermudians viewed the sea, but it was likely with a similar sense of awe and respect. Photo by Saskia Wolsak.

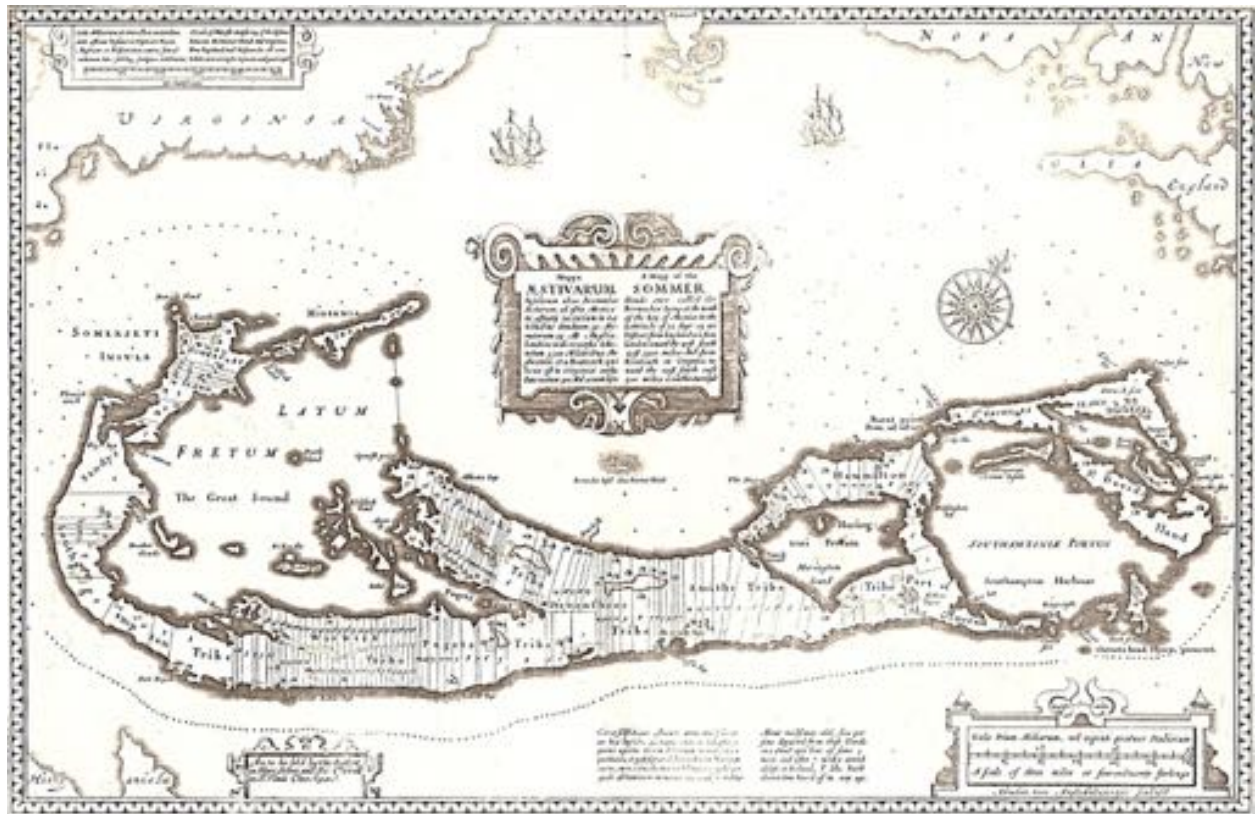


Figure 13 1676 map of the Somers Isles (Bermuda) by John Speed.
 Based on the survey map of Richard Norwood. Property lines and tribe roads visible.
 Public domain.



Figure 14 Example of how fibrous the petiole of a palmetto is.

In the Carolinas, and possibly in Bermuda, people used to beat the petioles to extract the fibres and use them for stuffing mattresses.

Photo by Saskia Wolsak.



Figure 15 Everyday household goods made of palmetto.

In the collections of the Natural History Museum, Bermuda.

Photo by Saskia Wolsak.



Figure 16 Fine string between the leaf segments on a palmetto blade.

While not particularly strong, the very fine string that grows naturally between the leaf segments on the palmetto's blade were used as thread for sewing and for stringing up fish.
Photo by Saskia Wolsak.



Figure 17 Rope made of palmetto leaf.

In the Bermuda Natural History Museum.
Photo by Saskia Wolsak.



Figure 18 Sloop, Nassau (1899) by Winslow Homer.

Sometimes titled Sloop, Bermuda. Small craft such as this in both the Caribbean and Bermuda were rigged with palmetto rope. Amelia B. Lazarus Fund, 1910. Public domain.



Figure 19 Dried palmetto leaf.

Dried palmetto leaves are highly flammable; this created problems with early thatched roofs, but proved useful in their use as torches and in November 5th firecrackers. Photo by Saskia Wolsak.



Figure 22 Painting of Flatt's Inlet (1825).

Likely many items in this image were made of palmetto, including the centre-right woman's hat and tray, the string on which the fish are strung, and the rigging on the light watercraft. Courtesy of Bermuda National Archives.



Figure 23 Royal Botanic Garden Edinburgh's *Sabal bermudana* (1874).

Photographer unknown.
Photo courtesy of the Library and Archive Collections, Royal Botanic Garden Edinburgh.



Figure 24 An illustration of the tapping process from the Drake Manuscript (1597).

The text on the painting reads: "Tree from which the Indians draw wine having the taste of perry; they cut the trees nearby giving shade, so that the sun can give its warmth more intensively, for the stronger the sun the more wine has the tree. They also pierce said tree to its heart in order to make the wine gush out and even make a big fire to keep away the poisonous beasts."

Image courtesy of The Morgan Library, New York.



Figure 25 New palmetto leaves.

Left: The sword-like inner leaf of the palmetto grows straight and narrow with sections tightly compressed.

Right: When pulled open, the accordion-like new leaf is tender and yellow. This is the part used for plaiting, especially for fine work such as ladies' hats. Old timers say the tree will put out one new leaf a month, best harvested on the new moon.

Below: Ronnie Chameau demonstrates how to fold a new leaf into a rose.

Photos by Saskia Wolsak.



Figure 26 Example of items made with the fishpot weave plait in Carter House Museum.

Above: Hats and a handbag.

Below: Lobster pot made of woven palmetto and likely allspice (*Pimenta dioica*) sticks.

Photos by Saskia Wolsak.



Figure 27 Building used as a barrack for Royal Artillery [St. George's] by Dr Johnson Savage, Royal Artillery (1833-1836).

Note arrowhead fishpot bottom left.

Courtesy of The National History Museum of Bermuda.



Figure 28 Bermuda fishpots being repaired (1892).

Courtesy of Bermuda National Archives.



Figure 29 Woman from the Seychelles, with arrowhead fishpot.

This fishpot and others from the region (including from Kenya and Tanzania) closely resembling those in Bermuda.

Photography by Dino Sassi - Maxime Fayon, Seychelles, Photo Eden, Victoria (Seychelles) (1977). Public domain.



Figure 30 Carter House.

Built c.1640 by descendents of Christopher Carter; inhabited by his great-granddaughter Martha Harward (née Carter) until her death in 1791 at the age of 114. Now a museum.
Photos by Saskia Wolsak.



Figure 31 Examples of the trend of aristocratic women dressing as gardeners and milkmaids.

Left: *Gardener in Straw Hat* (mid-1700s) by Jean-Frédéric Schall. Public domain.

Right: Portrait of Marguerite Baudard de Saint James, Marquise de Puysegur, dressed as a milkmaid (1786) by Élisabeth Louise Vigée Le Brun. Public domain.



Figure 32 Bermudas hats?

I have not been able to locate any images that are known to depict 'Bermudas hats'; however, the hats in these painting fit the descriptions of blue-silk lined 'straw' Bermudas hats.

Clockwise from top left:

- Portrait of Lady Louisa Caroline Isabella Hervey, Lady Smyth (c.1733) by Charles Jervas. © National Trust UK.
- Portrait of Antoinette Elisabeth Marie d'Aguesseau, comtesse de Ségur (c.1785) by Élisabeth Louise Vigée le Brun. Public domain.
- Portrait of Madame de Pompadour en belle jardinière (c.1754) by Charles-André van Loo. Public domain.
- Portrait of Henrietta Marchant Liston (1800) by Gilbert Stuart. Public domain.



Figure 34 Examples of palmetto plait.

From the collections of the Bermuda Natural History Museum. Featured here, from top to bottom: three-strand band, fishtail, herringbone, fishpo, and decorative edging weave (just visible at the bottom). Photo by Saskia Wolsak.



Figure 35 Examples of plait in Kew Garden's Economic Botany collection.

Collected in 1890 by Charles Keane. This shows the way plait was exported from Bermuda, in 20 yard coiled lengths called 'scores'.

Note both herringbone weave and fishpot weave are present.

Photo courtesy of Kew Garden's Economic Botany Collection, Library and Archives.



Figure 36 Onion harvest and packing in Bermuda (1894).
 They are using crates in lieu of palmetto baskets, but note: palmetto hats!
 Photo courtesy of the British Library. Public domain.



Figure 37 Onion basket.
 In the collection of Natural History Museum, Bermuda.
 Photo by Saskia Wolsak.



Figure 38 Letter from John Dickinson to James Petiver (January 23, 1700). Dickinson is asking for brown paper so that he can continue to collect plants. Courtesy of the National Archives, UK; used with permission.

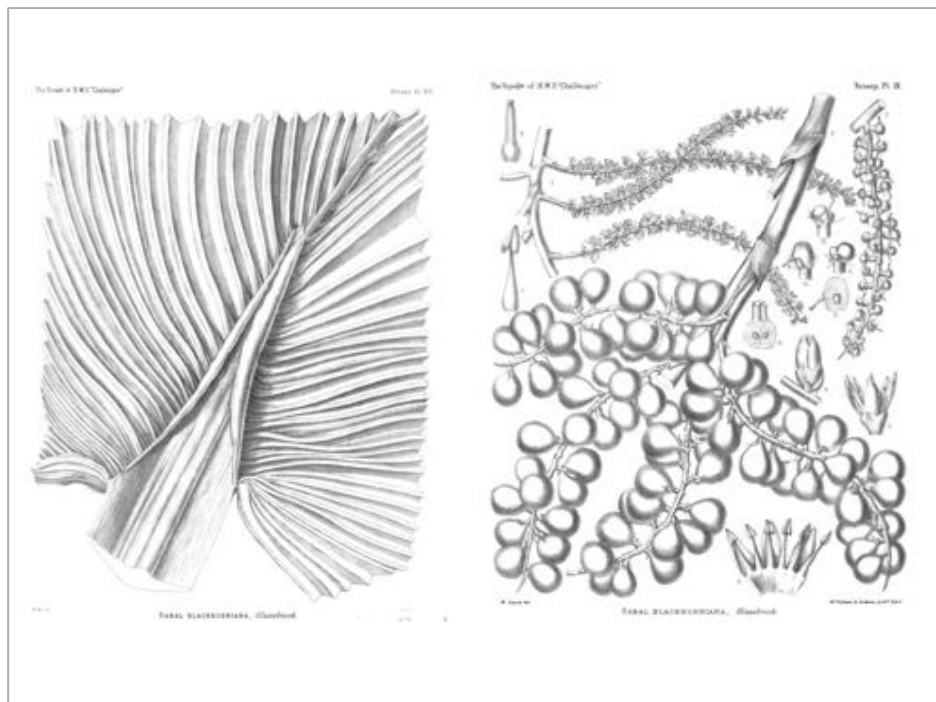
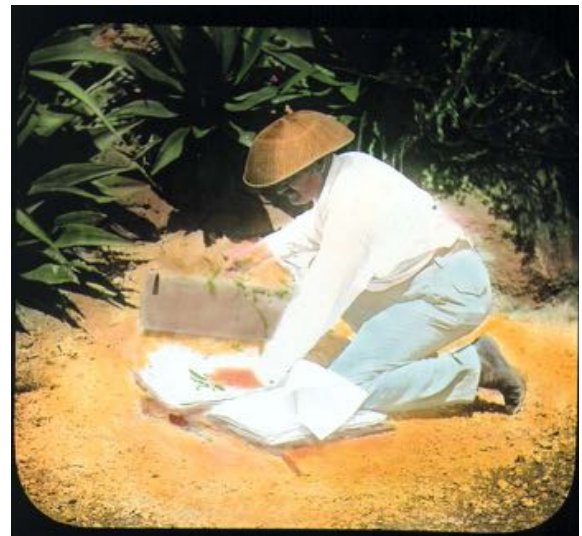


Figure 39 Drawings originally thought to be of *Sabal bermudana*. This is now thought to be a different species, then called *Sabal blackburniana*, growing at Kew. From the Challenger manuscript (1873). Public domain.



Left

Figure 40 Photograph of a Bermuda palmetto (n.d.)
From Nathaniel Lord Britton's files. Public domain.



Top right

Figure 41 C.F. Millspaugh, author of *Plantae Utovanae* (1900).
Pressing plants on a breezy day, somewhere in the Caribbean.



Bottom right

Figure 42 Early photograph of a Bermuda palmetto.
“moonlight effect”, from A. E. Verrill (1901). Public domain.



Figure 43 Stem shapes of mature palmettos.

Top: Bermuda palmettos by W. H. Hodge (1959). CC BY-NC-SA.

Bottom left: An extreme example of an 'hourglass' stem shape on a very old palmetto, Smith's Island. It was noted that some of the, likely very ancient, palmettos on Smith's Island had died of old age.

Bottom right: Some of the stems in this stand were so weathered that they were worn to a breaking point.

Photos by Saskia Wolsak.



Figure 44 Holes in Bermuda's limestone shorelines.

For many years, scientists speculated that these holes in Bermuda's limestone shorelines were fossilized palmetto roots. In 1993, Herwitz proposed that they are actually solution pipes, made by any number of native trees.

Photos by Saskia Wolsak.



Figure 45 Palmetto weaving lessons with Ronnie Chameau at Carter House Museum.
Photos by Saskia Wolsak.



Figure 46 Samples of palmetto work done over the course of a few Sundays.
Fishpot weave, fishtail weave, coil basket, herringbone, and other weaves.
Photos by Saskia Wolsak.



Figure 47 Ronnie Chameau's doll-making workshop.
Photos by Saskia Wolsak.



Figure 48 The continued tradition of hat-making in Bermuda.

From top, counterclockwise:

- Ronnie Chameau with a hat she made (2017). Photo by Noel Stevens.
- *Bermuda Dandy* (1895) by J. Cederquist. Courtesy of the British Library. Public domain.
- Woven hats made by the Hibiscus Garden Club (2017). Photo by Saskia Wolsak.



Left

Figure 49 Fan made by Pansy Fox of palmetto and pandanus.

From the collections at Carter House Museum.

Photo by Saskia Wolsak.

Right

Figure 50 A typical Bermuda graveyard.

Note the stone covers on the graves in the foreground. Inside is a drop of about six feet or so dug or cut into the limestone rock. The walls indicate the perimeter of the grave, while the 'box' is capped with slightly convex pieces of limestone, as seen here. Should another family member die after one year and one day, these top stones will be removed, palmetto leaves (traditionally) laid down to cover any remaining remains therein, and the next casket placed atop them.

Photo by Saskia Wolsak.



Figure 51 Palmettos and parasitic plants.

Left: Palmetto (in Paget Marsh) being strangled by *Schefflera actinophylla*, a recent invasive.
Right: Palmetto being strangled by *Ficus retusa* an increasingly invasive plant in Bermuda.
Photos by Saskia Wolsak.



Figure 52 Three slides comparing *Sabal bermudana* (each left) and *Livistona chinensis* (each right).

Note difference in the general habit of the leaves (top), petiole/costa shape (left), and fruit (right).

Photos by Saskia Wolsak.



Figure 53 Palmettos, 1905 and 2017.

Outside Gibbons Nature Reserve, South Road, Devonshire. The shorter palmettos in the lower photo were planted after a few of the older ones came down in a recent hurricane. But the tall ones are the same as featured in the earlier photograph. Further studies could be done to compare such photographs and determine the growth-rate of the palmetto.

Above: (1905). Public domain.
Below: (2017). Photo by Saskia Wolsak.



Figure 54 Heritage trees?

Top: Palmettos outside Cluster Cottage, built in the early 1700s. Cluster Cottage is one of several Bermuda National Trust properties on which palmettos still thrive.

Bottom: A stand of palmettos on Smith's Island.

Palmettos are still the dominant palm species on Smith's Island. In the summer of 2017, I noted only a handful of Chinese fan palm seedlings, none of them yet mature.

Photos by Saskia Wolsak.



Figure 55 Palmetto as part of the unique aesthetic landscape of Bermuda.

Left: Portrait of a palmetto.

Right: The shadows of a palmetto on the side of Carter House, possibly the first stone house built in Bermuda in the early 18th century, still standing.

Photos by Saskia Wolsak.



Figure 56 Aunt Nell weaving palmetto under a palmetto tree, outside Carter House.
Photo by Saskia Wolsak.



Figure 57 The continuity of inter-generational adapted knowledge.

Aunty Nell plaiting palmetto, and Oona with a Chinese fan palm basket on her head; both attending the Carter House Sunday weaving group.

Photos by Saskia Wolsak.

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Appendices

Appendix A: A Catalogue of Bermuda's Historically and Presently Important Plants

In conducting my research on the palmetto, I realised that many Bermudians are in mourning for the plant knowledge that has been lost in only one or two generations. For example, on my initial research trip to Bermuda I was contacted by a young woman named Laurel whom I had known, on and off, since the early 1990s. I had announced on social media that I would be conducting this research and invited anyone with any plant knowledge, or anyone who knew knowledgeable people, to please contact me. Laurel wrote that she didn't necessarily know a lot, but that she would love to talk to me about my studies and to hear more about what I was doing. This is what I wrote in my field journal on the following day:

July 16, 2016

I rattle into Laurel's driveway, park on the grass and get out. Behind her house is a perfect and timeless scene – her young daughter, golden ringlets aglow, is sitting cross-legged in an old-fashioned washtub. The water only comes up to her waist, there are no toys to speak of, but she seems perfectly content, surrounded by the greenery and bathed in the evening sun.

Laurel offers me homemade cashew-banana ice cream and while she goes in I make conversation with Oona, the little girl. "What kind of plant is this?" I say, gesturing at a strange dragon-like fruit with frills of green on a yellow-and-red flowered bush. "Cotton," she replies, but I can't quite make out the word (she is only 4, after all). "Is it edible?" I ask. "No," she says, shaking her golden head. "But you can make clothes from it." Of course, cotton. I have never seen it in bloom, only recognizing it when the seeds have turned to ... well, cotton bolls, and those dragon beaks grown brown and sprung open.

Laurel returns with the ice cream and we sit down. She is bursting with joy about my studies. "What is ethnobotany exactly?" she asks. I describe it briefly, and she begins to unravel a solid body of thinking that she has obviously developed over several years. "Bermuda is tricky," she says, "There were no indigenous people here – do you think that makes a difference? And there are plants from the Caribbean and plants from the temperate world. And *so* few people know about them, and the ones who know want to keep the knowledge to themselves. I mean, I respect it, I completely get it, but there is one woman, she is ancient, and she won't share anything, and she'll take it with her when she goes!" Laurel takes a breath, still in thought. "Bermuda is unique," she continues, "And ... where can I start? What is there beyond 'match-me-if-you-can for a cold?'" We talk about eating fennel and making string with mother-in-law's tongue, also known, I inform

her, as African bowstring plant [*Sansevieria* sp.]. It is not traditional Bermudian knowledge, but the plant is everywhere, invasive in gardens, and it's one thing I have learned so far that seems worth sharing. I tell her I'd like to make beer or wine with cedar berries (which, I've noted, are out now), and bread with palmetto berries, with the hardened seeds inside. She is bursting with excitement. "Please, please, I want to *know* ..." she says. She tells me her grandmothers – both Bermudian – knew so much about plants, but didn't bother teaching their children, as traditional knowledge and practices were seen as passé: "They preferred, for example, the hospital over a home birth," she says. "I was so close! That knowledge was in my family and just in one generation it was broken!" I assure her there are ways of getting it back, not the exact knowledge necessarily, but something close – learning to identify the plants around us, learning what the people knew when they arrived in Bermuda just over 400 years ago, learning about what they brought, what they found, what they needed. I know it isn't exactly the same. Each grandmother's recipe will have been slightly different from the next. But we can start to rebuild a relationship, nonetheless, with these plants, this landscape, this sense of home.

Based on this and many other conversations, in addition to writing the history of palmetto, I chose to record plant uses and stories in a separate spreadsheet whenever I encountered them in historical documents. For a list of historical documents consulted, see the Literature Review in Chapter 1. To these I added the gleanings of my interviews with fifteen or so knowledge-holders in Bermuda today.

The interviews, which took place in Bermuda between February and August, 2017, were both formal and informal. They involved Bermudians from different parts of the island and from a range of social and economic backgrounds. Whenever possible, the interviews were conducted outside, walking around together and looking at plants so I was able to identify them at least to present-day knowledge standards, and, in ideal cases, to collect herbarium specimens. Specimen numbers for collections made are located in the fourth column. All specimens will be housed at the University of British Columbia Herbarium (UBC), with duplicates to be sent elsewhere.

Column 3 of the table is a compilation of notes from both interviews and historical documents, generally quoted verbatim. Historical authors are cited by surname and date, and interviewees are noted by initials. In most cases, I have minimally simplified the text or quotes provided so as to preserve knowledge contained in specific wording and subtle differences between how parties have used and thought of the plants. The objective in citing both historical and present-day sources (and in keeping them separate from each other) is to lend insight into the evolution of plant knowledge in Bermuda – how plant uses of today may or may not have diverged from those of 300 years ago, for example, as well as uses that appear to have only

sprung up recently or with the relatively recent introduction of a plant. Further research is needed to ascertain dates of introduction for each plant (when possible), and its native locality. These latter data are contingent on accurate taxonomic identifications, another outstanding body of research.

Most of the documents consulted in my historical research cited here did not have correlating herbarium specimens, so the identification of the plants remains inexact. Many of the documents (McCallan, 1948; Verrill, 1902; Lefroy, 1884; Small, 1913) gave the then-current Latin names for the plants. I have updated the nomenclature to currently accepted names when possible (in the first column), but without vouchers to verify the initial identifications, these updated names are a best guess. Most early accounts, however, use only common names which, as we know, can be misleading (calling *Juniperus bermudiana* a ‘cedar’, for example). Common names, including those referenced in the literature and used in Bermuda, are written in the second column. I have tried to match these identifications with Latin names in contemporary use when possible, based on current folk nomenclature and use. Again, however, without herbarium specimens it is impossible to attain a definitive identification.

The ‘uses’ or values of each plant are listed by the following descriptions (in bold). This system of categorization is based on a category list made by ethnobotanist Kathleen Harrison (2011).

- **Foods** (can also be medicinal), including:
 - both cultivated and wild foods used by people
 - wild foods enjoyed primarily by children
 - animal fodder
- **Beverages** (can also be medicinal)
- **Material culture**, including:
 - Children’s toys and games
 - Shelter
 - Fibre
 - Dyes
 - Containers
 - Cooking utensils
 - Tools
 - Hunting/fishing supplies
 - Fuel
 - Cleaners
 - Lubricants

- **Toxins**, including:
 - poisons as a weapon against other humans
 - poisons used in fishing
 - plants that are toxic to humans, such as poison ivy
- **Medicines**
- **Magical/Symbolic/Religious**, including:
 - Spiritual: invoking, protecting, offering, plant deities, incense
 - Ceremonial: celebratory, funerary
 - Aesthetic: visual beauty, colour, aroma, sound
 - Cultural: analogies, metaphors, stories
 - Personal: evoking memories, relationships with childhood, family, ancestors
- **Cash crops**
 - primarily for export
- **Conservation/Ecology**

The exact methods for processing and using the listed plants are generally not included. Using plants for food, medicine, and craftsmanship takes skill and training. Anyone who cooks knows that simply knowing an onion or a potato is edible is not the same as knowing how to use it well: how to cut and cook it, at what stage of the dish one adds it, at what temperature, for how long, and how it will taste (or react chemically) with other foods and spices. Skill and experience is equally important for processing fibrous and woody plants, and perhaps even more so when working with edible and medicinal plants and toxins. This description of a herbal medicine bath from Nellie Musson's *Mind the Onion Seed* (1979) lends a window into the level of knowledge practiced by Bermudians, as well as the social application of that knowledge. She describes being sick as a child:

For centuries Bermuda's nurses had used herbal baths, also herbal leaves applied to the body as fever remedies. Although the house had been placed under quarantine by the Island's health department, at night neighbours crowded in to help. Some came from miles around, arms filled with green herbs, roots, castor oil, tree leaves and wild grasses. Supervised by an old relative, whom we called 'Aunt Russell', these leaves, grasses, herbs, and roots were boiled in large kerosene tins. The dark mixture was then strained, poured into a wide wooden tub, and allowed to cool somewhat. Then into the mixture my feverish aching body was immersed amidst screams of intense pain. This would be followed by cold fomentations. I suffered not so much from the hot liquid or ice cold sheets, but from the agony of stiffened joints and ligaments. Two old women kept the bath water moving by a quick, swirling motion of their hands, which gave the feeling of a

mini-hot-water whirlpool. A block of ice sitting in another tub kept the sheets cold. Tins filled with the herbal mixture were kept boiling in the kitchen chimney; periodically pans of the hot liquid were added to the bath. Then, the aqueous treatment over, I was returned to the bed and wrapped in soothing warm “Match-me-if-you-can” [*Acalypha wilkesiana* Müll. Arg.] and paw-paw [*Carica papaya* L.] leaves. Every day this ritual was repeated with neighbours bringing fresh leaves, grasses, herbs, and roots. They also brought food and firewood. Faithfully and freely they gave their help. Some kept fires burning; others sat with Mother during the long nights praying and reading comforting Scripture and drinking hot lemon-grass [*Cymbopogon schoenanthus* (L). Spreng.] tea. (Musson, 1979)

One story with details of preparation in the list is Helen Fessenden’s (1940) description of how coffee beans were roasted and ground in her childhood in the 1870s.

She describes a man who worked for the family, by the name of Jim Kiel, likely a relation of Nat Kiel described earlier as catching birds with horsehair nooses in 1850. Both men are described as appearing to be of Native America descent:

Jim Kiel, [...] a strain of Pequot or Indian of the Spanish Main ran through his veins, setting him apart with invisible barriers from his companions of African descent. Feared because of supposed occult powers [...] “Dat old Jim Kiel kin sho cunjur ennybody hes a min to”. Weekly, Jim pounded coffee with pestle and mortar. It was a leisurely process surmitting conversation. Children gathered there [...] The mortar, approximately man-waist high, was a straight log of *lignum vitae*, perhaps twelve inches in diameter and with a cavity at the upper end. This was deep and dark and steeped in the fragrance that for generations had been released in that mysterious hold from freshly roasted coffee beans. These were crushed beneath the impact of an iron pestle, a heavy rod with cone-shaped base, too cumbersome for us to lift but which Jim grasped mid-way of its length and with measured beat, up and down, slowly reducing the brown berries to the required fineness for the morning coffee [...] In the kitchen we had already shared and hindered the critical period of parching, from the time the green beans were measured into the round, black pot with three legs. This was placed upon the iron pot stand that stretched across the wide fireplace; embers were carefully raked beneath it, not too many nor too close because heat must penetrate gradually, and as fresh cedar chips or small split wood maintained an even fire a busy spoon must keep the berries slithering around so that each individual hemisphere crisped and browned to the same perfections.” (Fessenden).

Had the story not been included, and I had simply written, ‘coffee grown for beverage,’ so much additional historical insight would have been lost.

Finally, when asking Ronnie Chameau about her associations with the smell of cedar, she said, without hesitation, “coffins”. Ronnie grew up before the great cedar die-off; in her childhood cedar was the most common tree on the island and, unlike today, Coffins were

commonly made of cedar. Just mentioning the sweet and distinctive scent of the cedar coffins lead Chameau into telling me about funeral practices in St. David's in her childhood, and how people went door to door announcing that someone had died, and how, because there were no official funeral directors, Ronnie's mother and auntie prepared the bodies for burial (you have to cork 'em, she says, or they start to ooze out), and how everyone in the community joined together for a procession from the house of the deceased to the graveyard (R. Chameau, personal communication, July 28, 2017).

Each of the plants listed here has or once had a story, each a window into human knowledge, adaptability, creativity, cultural history, and care. The breadth of knowledge they are connected to is far greater than can be summarized in a list. While I have certainly not been able to include every story I heard, nor record the many stories and memories connected to Bermuda's plants today, I have at least striven to include the species that seem of the greatest import to Bermudians past and present. Such a list is generally relegated to pragmatic uses, but I have tried, whenever possible, to include mentions people made to the beauty of a plant, to its scent, to the way it connected to a memory, or how its seasonal cycle served as a memory anchor for people's important life events. One woman, for example, wrote:

I'm overwhelmed by having to choose as every scent from every plant each season stirs a memory. Like an inimitable blend of the most exotic perfume with complex notes of emotion - the bermuda air at each moment is part of my history and my present. I'll try to pin some down! Fennel for sure. I have only to break a piece in my hand to be transported instantly to age 7 playing on cedar hill with Susannah, cousins, goat; the freedom I didn't know was finite. Or nasturtiums - the beautiful strangeness of their scent which appropriately conjures up the bitter sweetness of first crush and rejection as I daydreamed along the railway trail on my way to school. Or oleander mixed with low tide; the scent of possibilities for me. The list goes on! (HF)

A future study on the profoundly aesthetic relationship Bermudians have with plants would, I imagine, be very worthwhile.

While this list is far from exhaustive, it aims to create a foundation for further ethnobotanical studies in Bermuda and for the many Bermudians who have been seeking ways to reconnect and revitalise their traditional cultures, but haven't known where to look.

ACCEPTED NAME	COMMON AND LOCAL NAMES	PRESENT AND HISTORICAL USES IN BERMUDA	SPECIMEN NUMBER
<i>Acalypha wilkesiana</i> Müll. Arg.	match-me-if-you-can, match-me-can	<p>Medicine: “For headache: crush leaves and apply to back of neck; for fever: soak leaves in vinegar, put on chest and cover with warm flannel or towel. The leaf goes crisp. It pulls the fever right out.” [Rouja remembers an aunt with serious rheumatism. Her legs were always wrapped up with match-me-if-you-can and cloths.] (SR); soak in bay rum, put on with brown paper bags (KM); press to chest with vinegar (PF); take leaf and put under hat, on head in summer; leaf is cool to the touch, rest it on your skin (Adams, 2011); “Just wrap around painful joints. You take the leaf [...] put them all over the body. Twenty minutes they dry right up, and the fever breaks. It’s also good for other areas [with] inflammation; you can take and put it on that area. There was an old folk saying that for colds, you put it on the soles of the feet.” (Adams, 2011); helps counteract fever from infectious diseases by encouraging a sweat and relieving inflammation; soak leaves in whiskey, alcohol, or warm vinegar then apply over whole body; wrap in linen sheet and leave until leaves are crisp (Duncan, n.d.); “Use linen or paper bags – old timers used paper bags, likely didn’t have or couldn’t afford linen. Use for breaking a fever, or on a centipede bite. It opens the pores. Use brown [species] with medium leaves. Wipe down the person with rubbing alcohol. Bruise or soak the leaves with white vinegar or bay rum.” (RC).</p>	SW253
<i>Agave americana</i> L. and/or <i>Agave sisalana</i> Perrine.	bamboo, century plant (grey), sisal	<p>Material culture: The fibrous leaves when cut open and dried are used as scrubbers for floors, etc. (Jones, 1873); a piece of ‘bamboo’ cactus leaf, about eight inches long, crushed, was used for scrubbing floors, this made them beautifully white; long bamboo canes were used for cleaning the ceiling (Stallard, 1899/1999); leaf with white sand the ‘universal appliance’ for scrubbing floors; tough fibres used for fishing line and cordage, softer fibres for a strong thread for sewing palmetto plat (Zuill & Zuill, 1955); very good rope has been made from the fibre (Jones, 1873); “The beauty of highly polished cedar floors was a ‘housewife’s pride’: “They were scrubbed with pieces of century Aloe, cut at the thick part of the leaf. The prickles were removed, and the leaf was slightly mashed, to let the sap flow out. The Aloe was then dipped in a box of sand, and with much lather, and more noise, the scrubbing commenced. Then melted wax and tallow was rubbed on with cloths, after which the floors were polished with brushes or brooms, weighted down with flat irons, until one could see his face in</p>	

ACCEPTED NAME	COMMON AND LOCAL NAMES	PRESENT AND HISTORICAL USES IN BERMUDA	SPECIMEN NUMBER
		<p>them.” (Heyl (1794); make scrubbing brushes from it, it would SHINE floors; make rope from the leaves – pound and dry them, use a winding machine – palmetto was also used (RC). Cash crop: In early 1900s sisal was attempted for profit, chief propagandist was Captain William Hubbard Penison; "all he got out of it was a nickname" (McCallan, 1948).</p>	
<i>Allium cepa</i> L.	onion	<p>Medicine: "Eat an onion a day to keep your blood pure.”; “A boiled onion in milk is very good for a head cold.” (Musson, 1979); for earache roast a piece of onion and put in ear (Stallard, 1899/1999); chopped up, minced with sugar, turns into syrup, take teaspoons for colds and coughs (Adams, 2011); slice onions, cover in brown sugar, leave on plate, makes cough syrup (NJ); “Onion with thyme good for asthma and pneumonia, for gastric upsets and hookworm. Roasted onion, cut into small pieces, put down ear for earache or use as poultice; slice an onion on a plate, sprinkle with brown sugar, put in sun to melt, spoonful of juice every hour for whooping cough.” (Collett, 1987); “Cook sliced onion with sugar slowly in a double-boiler, for coughs and colds – Bermuda onion, it's sweet and very very nice, not oniony at all; or layer onion and sugar, many layers in jar to make syrup; for bee sting cut onion and rub it on sting, will dislodge it.” (SR); Magical/Symbolic/Religious: Bermudians are commonly referred to as ‘onions’; drinking, bottles, planting lots of onions (see McCallan, 1948). Cash crop: “The exports for 1883 amounted to 300,000 boxes, each containing 50lbs weight and representing a total value of 50,000 pounds sterling (Reade (1885). The cultivation of the onion occupies a large share of attention at the hands of the Bermuda planter, as the soil of the islands appears to be well suited to this vegetable, and the high price obtainable during the spring months in the New York market, renders it probably the most profitable of crops. To the Bermudas New York must therefore always look for the earliest supply of vegetables, and it will be well for the islands to bear in mind the great necessity of maintaining a proper system of steam communication with the metropolis of the western world.” (Jones, 1873).</p>	
<i>Aloe vera</i> L. (Burm.f.) and <i>A. succotrina</i> Lam.	bitter aloe, aloes, bamboo, aloe vera	<p>Food: “In a wild state it is not very common, its pretty spike of yellow flowers which afford a honied treat to the children being only seen occasionally on the sunny slopes of the southern shore.” (Jones, 1873). Beverage: According to George Tucker, 1796, used as a substitute for hops in</p>	

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		<p>breweries (Collett, 1987). Material culture: Used for dreadlocks (MH). Toxin: Added to a paste as a deterrent to roaches (McCallan, 1948). Medicine: The pith is used as a poultice for obstinate sores; the juice as a diuretic (Small, 1913); “In spring a lump of aloes was put in the chicken's drinking water as a tonic; cut a piece of aloes about two inches long, heat and lay on gum next to tooth (for toothache); shark oil, a few drops of aloes, a little honey, boil for a few minutes, take often for cough; cut aloes from skin, let drip into a glass; take 60 drops early in the morning (cough); cut and skin aloes in small pieces; boil with molasses; for cough, take often.” (Stallard, 1899/1999); this plant is considered very useful in yellow fever cases, the native nurses placing great faith in its virtues (Jones, 1873); put in blender with honey, as medicine for quadriplegic friend (RC); Grandmother (from Portugal) always had a glass jug in the fridge with homemade barley water, with a piece of peeled aloe and half a lemon in it. Drank in summer to cool blood (SR); A cure for diseases of chickens (McCallan, 1948); women put it on their breasts to wean their children (DWJ); “It’s good for sunburn; you simply take an aloe – a piece of the aloe and you can skin it and put it in water [...] the longer you leave it sitting, the thicker it will get, so it can become like a gel. You can add a squeeze of lemon and some sugar, if you want, to get a better taste. It’s bitter, so the more you use – the longer you leave it, the more of the bitterness goes into it. Good for colds and coughs. Helps strengthen the hair. People wash their hair in aloe. Great for sunburn. If you’re sunburned and you see a piece of aloe and you’ve had sunburn – road rash, windburn. If you get a burn in the house and you have aloe, you could run out and get a piece and just quickly cut it in half and put it right on the burn to help soothe the burn. This is one plant that is still very much used by many Bermudians, is the aloe. Many people still have it in their yards and use it for sunburn and for burns.” (Adams, 2011); “Aloe used more since Rastafarianism came to Bermuda. It was always used, but just a little – now people put it all over face, in hair, ingest it, etc.” (NJ); mixed with honey, pulp relieves constipation and indigestion (Garden Club, 2002); L.H. Smith quotes from an old undated newspaper cutting: “First or purest kind called Succotine. Thrown on the fire it melts like wax and is so light as to swim on water. Cut leaves, collect juice, place in the sun till it become the proper consistency, also extremely bitter and purgative and applied externally prevents putrefaction and gangrene.” (Smith, 1934); “It was an unfailing remedy for dysentery.</p>	

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		<p>Considered a strengthener for nerves, poultice for sores and sixty drops of juice would cure a cold; for toothache: cut a piece of aloe about two inches long, heat and lay on gum next to tooth. Apply castor oil tree leaves, they reduce inflammation.” (Collett, 1987); “A wonder plant; internal, external, for burns, quenching thirst. Chew a bit of the flesh; medicine is always bitter, poison is sweet and addictive.” (KM). Cash crop: The canal at Wistowe, Flatts, was cut so that a mill could be worked for the extraction of aloe juice, exported to America during the war of 1812 for medicinal purposes; five acres of land at Devil's Hole planted for this (Collett, 1987); “Formerly cultivated to a considerable extent for the commercial drug aloes. The collection of the drug is said to have proved unhealthful, and sometimes fatal, so that it was abandoned.” (Verrill, 1902).</p>	
<i>Araucaria heterophylla</i> (Salisb). Frano	Norfolk Island pine	Magical/Symbolic/Religious: Christmas tree ornaments (NJ) (RC).	
<i>Argemone mexicana</i> L.	prickly poppy, Mexican poppy, lady thistle, blessed thistle	Material culture: Very common – a yellow dye is sometimes made from the flowers (Lefroy, 1884); from its flowers a yellow dye with which islanders colour ribbons and other small articles (Jones, 1873). Medicine: From the wide diffusion of this plant it may be native; name from argema, a disease of the eye for which the juice is supposed to be medicinal (Lefroy, 1884); juice for inflamed or diseased eyes (Small, 1913); steep petals in water, it turns light yellow; drink as a tonic (MH).	SW266
<i>Aristolochia trilobata</i> L.	Dutchman's pipe, birthwort	Material culture: Dried fruit capsules used as parasols for palmetto and banana dolls (RC). Medicine: Is supposed to possess a good deal of virtue in cases of parturition (Small, 1913); Additional Notes: found in all the old gardens (RC).	
<i>Arundo donax</i> L.	cane	Food: “When young cut as fodder for cattle.” (Small, 1913). Material culture: “‘Cane’ used as stem of ‘pipe’ with pomegranate for childhood game. Used for flutes by children.” (RC); ‘cane’ flutes with cut pieces of various sizes stuck on cardboard (NJ); flagpoles, spars for small punts, whistles, pea-shooters (McCallan, 1948).	
<i>Asclepias curassavica</i> L.	milkweed, butterfly weed, wild ipecac, blood-flower,	Medicine: Emetic (Small, 1913). Conservation/Ecology: Currently planted to attract butterflies (RS, WF).	

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	ipecacuanha		
<i>Asclepias</i> sp.	milkweed	Medicine: In urinary disease leaves and juice are used as a poultice on the loins (Small, 1913).	
<i>Asparagus setaceus</i> (Kunth) Jessop	bridal fern, lace fern, wedding fern	Magical/Symbolic/Religious: Commonly used in flower arrangements, especially in churches (RC).	
<i>Baccharis glomeruliflora</i> Pers.	docbush, dogbush	Magical/Symbolic/Religious: "It is used as one of the decorations for houses and churches at Christmas, as it has the property of keeping green and ornamental for weeks. Very common in and around marshes." (Small, 1913).	SW119; SW171
<i>Begonia</i> spp.	begonia	Food: Young leaves eaten by children, lemony (NJ); flowers eaten by children (RC).	
<i>Bidens pilosa</i> L.	beggar's ticks, shepherd's needle	Food: Leaves eaten as spinach (Duncan, n.d.). Beverage: tea (RC, MH). Medicine: "Good for upset stomach; boil the leaf and the flower; my father used that a lot for upset stomach." (Adams, 2011); gargled as infusion to counteract sore gums and mouth sores; flowers soaked in white rum for toothache; juice from whole plant heals wounds (Duncan, n.d.).	SW237
<i>Borrichia</i> sp.	marsh oxeye, pond-bush	Material culture: Straight stems for arrows for oleander bows; "Cricket stumps with bails, swagger-sticks peeled in intricate designs, figure-four traps in which, set with corn, we caught redbirds to be soon released." (McCallan, 1948).	
<i>Brassica</i> spp.	mustard, black mustard, wild mustard	Food: Cook seeds, also nasturtium seeds, in vinegar and bottle (SR, NJ, RC).	
<i>Caesalpinia echinata</i> Lam.	brazilwood	Material culture: Dye plant. Cash crop: In 1658 amongst a list of things being sent to England appears the item, '3840 sticks of Brazelletta wood'. In 1723 Governor John Hope mentions that 'Brasiletto' was a product of Bermuda. (Collett, 1987); Additional Notes: [Braziletto wood played a role in the survival economy of William Sayle and other Eleutheran Adventurers in the Bahamas; it's possible they brought some back to Bermuda to plant; it is not known to be growing there now.]	
<i>Cakile lanceolata</i> (Willd.) O.E.Schulz	scurvy grass, scurvy	Food: cooked as part of a meal (Musson, 1979); "Sometimes cooked and eaten, as greens, by the natives." (Verrill, 1902);	SW73

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		<p>Very commonly eaten in households until recent times. Both RC and NJ said they ate it all the time, their mothers “never bought spinach”, but would cook 'scurvy' with rice, steamed with butter, with sautéed onions added, etc.” (RC, NJ).</p> <p>Medicine: Used as a cure for diarrhoea, and also for cleansing the blood (Jones, 1873); English sailors used against scurvy (RC, DWJ, MH).</p>	
<i>Canna indica</i> L.	tous-les-mois	<p>Food: Cultivated to a small extent for the market on St. George's and David's islands; formerly more extensively grown (Lefroy, 1884). Medicine: “Frederick James O'Connor, a self-taught nurse and healer, prescribed simple remedies including the starch of this plant. Tous-Les-Mois became his nickname.” (McCallan, 1948).</p>	
<i>Cannabis sativa</i> L.	grass, marijuana, hemp	<p>Beverage: Tea mixed with lemongrass and mint for morning drink (anon); Material culture: “Hemp, sown in gardens, comes to perfection, and seeds well, much to the satisfaction of the red birds.” (Jones, 1873).</p>	
<i>Capsicum baccatum</i> L.	bird pepper, guinea pepper	<p>Food: Used to make sherry peppers, added to fish chowder (cookbook); “<i>Capsicum frutescens</i> = <i>C. annuum</i>: Common in gardens and borders. [...] Governor Moore, 1612, speaks of peppers growing wild. Governor Butler, 1621, sent ‘Red-peppers’ to Virginia; and Capt. Smith, 1624, speaks of a fruit like a barberry that “sets all the mouth on an extreme heat, very terrible for the time,” and hence called “red pepper”. Hurdis mentioned also the Bird Pepper (<i>C. baccatum</i>) as cultivated, but we did not see it. It has a small globose or ovoid berry. The Guinea Pepper or Chillies (<i>C. annuum</i> L.) is also cultivated.” (Verrill, 1902).</p>	
<i>Carica papaya</i> L.	pawpaw, papaya	<p>Food: Crush pawpaw leaves put inside bird for roasting (SR); “The ripe fruit is eaten; ... when green; unripe fruit valued in cooking for its property of softening animal fibres, thus rendering the toughest meat tender.” (Small, 1913); the leaves are said to possess the peculiar property of rendering tender in a few hours the toughest meat wrapped up in them (Jones, 1873). Material culture: Clothes were bleached with paw-paw leaves (Rawlins, 1985). Medicine: “For worms: the milk from green pawpaw on a lump of sugar. Take before breakfast for three days.” (Stallard, 1899/1999); the leaves are popularly considered an excellent remedy for rheumatism, applied externally (Verrill, 1902); milk from green papaya on warts; taking a spoonful of seeds, swallow whole “best cleanser there ever was”; “... Sap and fruit</p>	

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		produce pepsin, a digestive, and the leaves are popularly believed to have curative powers for rheumatism when externally applied.” (Small, 1913); “Pawpaws, if you take and boil pawpaws – skin them and boil them – you can use the water for high blood pressure. The seeds of the ripe pawpaw are good for purging. Obviously, we use them for cooking. Good in stews, tenderized meat. I can remember using the milk of the pawpaw to put on ringworms and around warts, to heal and make them good.” (Adams, 2011); dripped round the circle of ringworm; seeds for constipation; boiled green pawpaw good for hypertension and liver trouble and the water it was boiled in good for keeping blood sugar down; for worms: put milk of green pawpaw on lump of sugar, take before breakfast for three days (Collett, 1987).	
<i>Carissa macrocarpa</i> (Eckl.) A.DC	natal plum	Food: Used for making jam, jelly (RC, NJ); Medicine: Eaten, possibly for diabetes (LG). Magical/Symbolic/Religious: Use leaves for Christmas decorations (RC).	
<i>Cascabela thevetia</i> (L.) Lippold	yellow oleander, lucky nut, luck-seed, cathartic-bark, French trumpet-flower	Material culture: Rub seeds 'hot nuts, lucky nuts, hot rocks' on concrete/brick and burn/brand a friend (WF, SW).	
<i>Cassia fistula</i> L.	golden shower, pudding pipe tree, Indian laburnum, golden-rain, purging fistula	Medicine: “The bark of this plant is a strong astringent, while the leaves are purgative and are often used instead of Jalap.” (Small, 1913).	
<i>Cassine laneana</i> (A.H.Moore) J.W.Ingram	Bermuda olivewood bark	Material culture: In the early days of Bermuda this native tree was cut down for tanning purposes, on account of its astringent bark called ‘Barke’.” (Verrill, 1902); "A very interesting native tree, repeatedly alluded to in old laws, where, however, it is confused with <i>Conocarpus erectus</i> . The astringent properties of the bark marked it out for the purposes of the tanner, and it was necessary as early as 1650 to restrain persons from unlawfully cutting it. It is now found only in the Walsingham tract, and but little of it is left there.” (Lefroy, 1884); Conservation/Ecology: Currently used in plantings for hedges, yards (RM).	

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<i>Casuarina equisetifolia</i> L.	casuarina	Magical/Symbolic/Religious: Used to made bracelets, etc. by children, knotted over and over (WF). Casuarinas, though much maligned, hold a special place in terms of sound - on the one hand when the wind is strong the haunting sound and on the other, when it is calm and you are in a forest of casuarina with a thick blanket of needles, it's eerily quiet kind of like after heavy snow fall (SM). Conservation/Ecology: Windbreak (DW).	
<i>Catharanthus roseus</i> (L.) G.Don	Madagascar periwinkle, red periwinkle, old maid, poor man's rose	Medicine: Pink for women, white for men – all diabetes, made a tea with the leaves (MH); for diabetes (NJ); “The white one with the sort of yellow centre is actually the one that you would use to boil the leaves or the flowers and make tea. This can be used for diabetes and also [...] to bring your sugar levels down.” (Adams, 2011); good for diabetes, also good for circulation, internal bleeding and 'nervousness' (Collett, 1987).	
<i>Centaurium pulchellum</i> (Sw.) Druce	pink centurium, centaury, wild rice	Additional notes: called "Wild Rice" (Britton, 1918).	SW227
<i>Centaurea sativa</i> Maris [accepted name unknown]	none	Medicine: A carminative and largely resorted to by the natives as a tonic (Small, 1913).	
<i>Chiococca alba</i> L. (Hitchc.)	snowberry, blolly, David's root (Verrill, 1902)	Food: Berries 'blollo' eaten with sugar (McCallan, 1948); “Snowberry was dessert! Steamed, sprinkled with sugar and a dollop of fresh cream from the cow.” (RC); “Blolly feasts were an early social custom.” (McCallan, 1948). Additional notes: “Blolly” is also the name for <i>Guapira obtusata</i> and <i>G. discolor</i> in Florida; <i>Chiococca alba</i> also called blolly in Florida and West Indies; called 'Blolly' (Hemsley); also blolly is <i>Chiococca</i> in West Indies, and another berry too ‘thick gruel’, also a word for a nautical medicinal remedy 1590s, probably from lob, plus lolly, obsolete Devonshire dialect word for broth, soup, food boiled in a bot; “loblolly bay” <i>L. lasinthus</i> (wooly-flowered Gordonia); Blolblolly-tree: <i>Varronia alba</i> (<i>Cordia dentata</i> – with white berries), a West Indian tree whose fruit is sometimes eaten (Thomas Wright Dictionary, 1897).	SW67
<i>Chloris petraea</i> Sw.	bed grass	Material culture: “Mattress stuffing, they always considered that the best grass grew at Sam's Point and Mrs. Lowe's Hill.” (Stallard, 1899/1999); “When we was young, coming along, parents had a lot of children. I remember going out when our bed got soft. We had to go out and pick bed grass and put it in the bed to lay on. The grass was long	

with points out like that but you had to strip it and then you picked it. Mama used to have hers made out of flour bags. You put it in the flour bag and it made a good mattress. We did it when it got – well after a while you know how it would mash down so fine it would be just like a bit of straw, something like that. You'd have to empty that out and you had to go and get some more. I guess about once a year we used to do that.” (Jones, 1993); “Your bed – you'd go out in someone's back yard, this tall grass. You'd cut this grass, you'd pack it up in the sun. Every time your mum would turn it over, your papa would turn it over and you'd turn it over. And that grass would dry right out. You'd packed it, you stuffed it in these bags and you'd pound it down to bring it into shape. Now your sheets and pillow cases and that stuff was flour bags. You'd go to a grocery shop and you'd tell him you want half a dozen flour bags. You'd take the flour bags home to your mama and she'd put them in a kerosene tin, put them out in the back yard, and boil them and boil and then boil them – bleach them. I had a grass bed, I'm not too proud to say it. I had a grass bed up until I was about 15, 16 year old before my mama trusted me to buy my own mattress. Then I was paying for it for about a year – sixpence, two shillings, two and six. I think I had my first mattress from Cooper, the furniture place right there on Reid Street.” (Jones, 1993); “And then they used to mix the grass with feathers. You killed chickens, we had a lot of chickens. We had the grass beds. They were comfortable and soft because the grass had been out in the sun.” (Mrs. Manders); “A lot of us slept on grass beds. I don't want to sound as if I'm pulling people down but the richest man in Bermuda today, I'm sure that his father slept on a grass bed.” (Jones, 1993); mattresses of bed grass, but also made of corn husk and palmetto fibres, along with chicken feathers (NJ); “Bed-grass was so called because used by poor people as mattress filling. Corn shucks and crabgrass were put to the same use to a lesser extent, and I think it probable that these materials were in general use in early days by those who could not afford the elegance of hot and unsanitary feather or sheep's wool beds... It is probable that some Island women in earlier times than I remember collected and dried crab-grass for sale at the Barracks in St. George's as filling for soldiers' paillasses or mattresses, called by the latter biscuits because of their thinness. Coloured families living near us collected bed-grass from the southern slopes of the hills overlooking Castle Harbour, laundered their mattress covers and refilled them with the newly-gathered and sweet-smelling grass. Gathering the grass on the warm hills,

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		<p>fragrant with the scent of cedar and sage and stopper, appeared to me to be a delightful occupation.” (McCallan, 1948); “At the beginning of each summer, at the end of the school year, a man would scythe a field of bed grass. The children would go out and gather it for their mattresses. Had to dry it in the sun, turning it over each day. Mattresses were made new each year.” (LW). Additional notes: other grasses seem to be used for this purpose and are also called ‘bed grass’, but I was unable to obtain exact identification of these other grasses. Certainly <i>Stenotaphrum secundatum</i> was also used.</p>	
<i>Citharexylum spinosum</i> L.	fiddlewood	Material culture: Shoe polish (LG).	SW252
<i>Citrus x sinensis</i> (L.) Osbeck	orange	Food: Bermuda sweet oranges used to be eagerly sought after. Cash crop: Early records show that in 1621 the Governor of Bermuda of that day was able to refresh a shipwrecked party with citrus fruits, and from 1634, subsequently, certain rents were paid in oranges and lemons (Small, 1913); [see Jones (1873) for details on sweet oranges].	
<i>Citrus x aurantium</i> L. (<i>Citrus vulgaris</i>)	Seville orange, sour orange	Food: “Formerly large quantities of marmalade were made on the island for family and domestic use, but with the failure of the trees the manufacture has now ceased.” (Small, 1913); “Marmalade is made from wild Sour Oranges ...” (Jones, 1873).	
<i>Citrus x meyeri</i>	lemon	Medicine: Used against headache when boiled with rosemary leaves; juice for hair rinse and made hair shiny (DWJ). Food: “Eaten fresh, thick rinds, ate the rinds, brought them to school with a little dish of baking soda and salt, dipped lemon in and it would fizz in your mouth – a sort of candy/treat for children.” (RC). Additional notes: Grew wild all over Bermuda, particularly Tucker's Town and Town Hill (RC, NJ).	
<i>Coccoloba uvifera</i> (L.) L.	bay grape	Food: Berries for jelly, jam (RC; NJ); “The fruit is sometimes made into a preserve.” (Lefroy, 1884); eat berry when ripe; tastes like cranberries; berries eaten raw by school children; used for preserves (Verrill, 1902); baygrapes grow on our homestead ... my sister and I had competitions to see how many baygrapes we could fit in our mouths at one time. And of course, anything with seeds became projectile fun! (AKL). Material culture: Leaves for crafts, wood for furniture (RC); “Make roses with leaves. Pick up	SW254

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		dry leaves, wet, adds colour to flower arrangements.” (NJ); children used them as plates for fish sandwiches after catching fish (PF). Medicine: Grind up leaves, mix with loquat, good cleanser (anon); yields the astringent drug ‘kino’ [a west Indian version of an African drug] (Verrill, 1902).	
<i>Cocos nucifera</i> L.	coconut palm	Conservation/Ecology: “An old recipe for planting these palms required that the hole be furnished with a round of ship biscuit for nourishment, a horseshoe for luck, and a lump of charcoal for warmth. Specimens planted in recent years with these requirements have developed splendidly!” (Zuill & Zuill, 1955).	
<i>Coffea arabica</i> L.	coffee	Beverage: “From a tree in the Trimingham grounds at Montrose alongside of the public gardens, coffee was made on the occasion of a lawn party from berries grown and roasted there, and was pronounced excellent, equal if not superior to the ordinary coffee of commerce; it has been planted out around Walsingham where it has largely spread, exp. near the cave; but little use is made of the berries.” (Small, 1913); “I can just remember when coffee beans were beaten by hand, with pestle and mortar.” (Stallard, 1899/1999); “Jim Kiel – “a strain of Pequot or Indian of the Spanish Main ran through his veins, setting him apart with invisible barriers from his companions of African descent. Feared because of supposed occult powers “Dat old Jim Kiel kin sho cunjur ennybody hes a min to”. Weekly, Jim pounded coffee with pestle and mortar. It was a leisurely process surmitting conversation. Children gathered there ... The mortar, approximately man-waist high, was a straight log of lignum vitae, perhaps twelve inches in diameter and with a cavity at the upper end. This was deep and dark and steeped in the fragrance that for generations had been released in that mysterious hold from freshly roasted coffee beans. These were crushed beneath the impact of an iron pestle, a heavy rod with cone-shaped base, too cumbersome for us to lift but which Jim grasped mid-way of its length and with measured beat, up and down, slowly reducing the brown berries to the required fineness for the morning coffee.... In the kitchen we had already shared and hindered the critical period of parching, from the time the green beans were measured into the round, black pot with three legs. This was placed upon the iron pot stand that stretched across the wide fireplace; embers were carefully raked beneath it, not too many nor too close because heat must penetrate gradually, and as fresh cedar chips or small split	

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		wood maintained an even fire a busy spoon must keep the berries slithering around so that each individual hemisphere crisped and browned to the same perfections.” (Fessenden). Material culture: White lace was dyed ecru shade by being dipped in strong coffee (Stallard, 1899/1999).	
<i>Colocasia esculenta</i> (L.) Schott	dasheen, taro, eddoe	Food: "Cultivated and eaten by the colored natives to a small extent." (Lefroy, 1884).	
<i>Conocarpus erectus</i> L.	Buttonwood, barke, bark, or alder	Material culture: Used for tanning leather; roots dug up for this purpose; law passed 1670 prohibiting use of tree for fuel (Verrill, 1902); “The bark and leaves are used for tanning. Among the old acts of the Bermudian parliament is one passed in the year 1704 for the protection of the buttonwood which must then have been highly prized. The penalty for destroying buttonwood was fixed at twenty shillings for each offence, “of the value thereof in good tobacco of the islands.” (Jones, 1873). [note – could have been talking about <i>Cassine laneana</i>]	SW214; SW256
<i>Crescentia cujete</i> L.	calabash tree	Material culture: “For making bailing dishes for boats. For this purpose it is only necessary to saw them into two equal parts.” (Verrill, 1902); “Dried rinds called 'coakers' used chiefly to bail boats, also as scoops to dip feed from barrels, as water dippers in the making of arrowroot starch. Also, when in the boat, used as a cash-drawer when selling fish at market, and as a cup to fetch a “nip of rum from the bar” (McCallan, 1948), chiefly from the large tree at Orange Grove, Flatts, then the home of Mrs. Annie (William Sears) Zuill, and from Somerville, Smiths. The St. David's Islanders of my day renewed their stocks of coakers.” (McCallan, 1948); "Of early introduction; few young trees are to be found, but the old ones are pretty numerous. The shells of fruit are used for vessels. Carved ornamentally as well as used by country residents.” (Small, 1913); shells made into cups and dippers (Jones, 1873); cups, boat bailers, dippers, carved into interesting souvenirs for tourists (Zuill & Zuill, 1955); 1790 Governor Hamilton referred to them (Collett, 1987); many of the gourds came from the tree at Orange Grove, Smiths (Collett, 1987); utensils, bowls, bailers, cocas for the boat (called 'cocas'), vases (RC); dry brush, wire brush, scrape – use for heads of big dolls (RC); birdhouses; (WF). Magical/Symbolic/Religious: “At Walsingham is the celebrated "calabash tree" referred to in one of Thomas Moore's poems." (Lefroy, 1884); “Tom Moore's tree at Walsingham was big, and that there was a	

ACCEPTED NAME	COMMON AND LOCAL NAMES	PRESENT AND HISTORICAL USES IN BERMUDA	SPECIMEN NUMBER
		tree in Somerset that had 500 gourds.” (Lloyd, 1835).	
<i>Cucurbita pepo</i> L.	pumpkin	Food: Pumpkin stew or pumpkin pie; “Line the black gypsy-pot with pastry, put in cut-up pumpkin, potatoes, salt pork or beef, with plenty of seasoning, then pastry on top. That was a delicious dinner for a cold day!” (Stallard, 1899/1999). Medicine: “Its seeds, scalded or boiled, are a powerful diuretic; to remove tapeworm: refrain from supper and breakfast and at eight o'clock in the morning take a third part of 200 minced pumpkin seeds, the shells having been previously removed with hot water. At nine o'clock take another third. The remainder at 10 o'clock. At 11 o'clock take a strong dose of castor oil.” (Stallard, 1899/1999).	
<i>Cycas circinalis</i> L.	sago palm	Cash crop: Grown commercially (1950s) because of the market for its leaves in New York where they are used both for festive occasions and for funerals (Zuill & Zuill, 1955).	
<i>Cymbopogon schoenanthus</i> (L). Spreng	lemongrass	Beverage: Tea, a cool drink, so good (RC); popular tea, in summer, cooling, mixed with mint and Father John (Adams, 2011). Medicine: Steep in boiling water, add sugar, use hot: an old slave remedy for cough (Stallard, 1899/1999); drink as blood cooler in summer (KM); used by natives for fever (Reade, 1885); “Drink for colds, coughs; just boiling it in the house makes you start to perspire, and it's good to perspire.” (Adams, 2011); tea boiled at beginning of summer and given to children to cool bodies but also to clean you out in preparation for summer; to sweat out fevers and produce feeling of wellbeing (Garden Club, 2002).	
<i>Cyperus alternifolius</i> L.	umbrella sedge	Material culture: Used for making dolls in bottles (Pearman, 2016).	SWQC6
<i>Datura stramonium</i> L.	jimson weed, thorn apple, called "stinking weed" in Bermuda	Toxin: It is alluded to in a proclamation of 1679 as "a badd and stinking weede that beares a prickle-burr, the which when it is drie it is very full of flatt black seeds, which if suffered to grow, may be very destructive to the inhabitants of these islands, by reason of the venemous and poysonfull nature thereof." (Lefroy, 1884) “It is of a poisonous nature and its extinction was urged in a proclamation of 1679.” (Small, 1913). Medicine: Leaves smoked for lung infections (Small, 1913); in yellow fever cases the leaves, first sprinkled with vinegar, are used to apply to the wrists to cool the patient (Jones, 1873).	

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<i>Delonix regia</i> (Bojer ex Hook.) Raf.	royal poinciana, flamboyant	Material culture: Best climbing trees for children (Hayward). Magical/Symbolic/Religious: Seeds used for necklaces. Conservation/Ecology: Amount of blooms in a year (many) correlates to storms (several) (NJ).	
<i>Dianthus caryophyllus</i> L.	pink-root	Medicine: Decoction from root used as vermifuge (Small, 1913).	
<i>Dodonaea viscosa</i> Jacq.	Jamaica dogwood, broom, dogwood	Material culture: Used for reinforcing fishpots (in addition to or instead of allspice) (McCallan, 1948). Toxin: To stun fish, put in jar in water (KM). Additional notes: Interestingly, there is another tree in the Caribbean called <i>Piscidia piscipula</i> , more commonly used for fish poison, and the common name of which is also 'Jamaican dogwood' as well as 'fish poison tree' and 'fish fuddle'. While it is in a different family from <i>D. viscosa</i> (Fabaceae vs. Sapindaceae), with, accordingly different chemical makeup, it has a superficial resemblance in <i>D. viscosa</i> 's winged fruit resembling <i>P. piscipula</i> 's winged pods, obovate-lanceolate leaves, etc. In <i>D. viscosa</i> the seeds contain saponins, toxic to fish.	SW152
<i>Eriobotrya japonica</i> (Thunb.) Lindl.	loquat	Food: Make pie, crumble (woman on road); preserves and pickles produced in considerable quantities (Zuill & Zuill, 1955) Taste wise: cedar berries, loquats, and cherries are a favorite... (AKL); [My nieces are 3, almost 4, but when they're with Auntie and they see a loquat they know it must be yellow and Auntie must pick the bottom out to check for worms. They know that the warm seed must be spit out back into the thick of the trees to grow again. They know that they share that nature with birds and the absolute highest ones are for the birds to eat because we all share (JB). Beverage: Soak in gin with a bit of the seed for that almond taste (NJ); "Soaked in vodka, with seeds for almond taste. Layer loquats with rock candy in a big mayo bottle – add vodka." (RC). Medicine: Leaves boiled in water, strained, taken before meals to relieve <i>Candida albicans</i> infections (Garden Club, 2002). Additional notes: "They tasted better when you stole them." (RC); "Introduced about 1850, from Malta, by Governor Reid. It is now common and bears abundant fruit of good quality." (Verrill, 1902).	
<i>Eugenia axillaris</i> (Sw.) Willd.	white stopper, stopper, rod wood	Food: Some ate these berries, but others found them 'too pucker' (McCallan, 1948). Medicine: Tea made for diarrhoea (NJ). Additional notes: Could be the 'costive tree' described by John Smith (1632) in early plant list.	

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<i>Eugenia uniflora</i> L.	Surinam cherry	<p>Food: Commonly eaten, roadside (SW). I would wrap (my young nieces) to my front and back [...] pointing out the cherry leaves. Crushing the leaves and letting them smell what that scent would be before there were any cherry blossoms on the tree; The smell of the summer showers as we welcome cherry juice making rivers down our arms (JB).</p> <p>Beverage: “Leaves used as tea, iced tea for summer; use tea to take cold out of chest and break up the webs of cold in your chest. One of my friends, whose grandfather was from Saint Kitts, had taught her about it, and so she had said, “Oh, you guys, you need to make cherry tea.” And so from then, I started making cherry tea. I tend to just like it to drink. I don’t necessarily use it for the cold, but it is good for colds. It’s a very – cherry’s a very – the leaves are very aromatic. It’s a really pleasant tree to drink. I would take and break off a few leaves and drop them in a cup and make a cup of tea in the morning, and it’s really good. Add a little bit of brown sugar or honey. The other thing, some friends of mine from Jamaica had said, “Why do you let all the cherries drop off the tree?” And she takes them and (inaudible) the cherries, puts water in there, and then strains it off and makes a drink with it. We know the amount of cherries we see along the road when it’s cherry season, so that’s something else we can use it for.” (Adams, 2011.</p>	SW273
<i>Euphorbia</i> spp.		<p>Additional notes: "All the spurges proper are called by the coloured population indiscriminately, "tettimelly"." (Small, 1913); [poss. from <i>Tithymalus</i> Gaertn, early name for genus <i>Euphorbia</i> L].</p>	
<i>Ficus carica</i> L.	edible fig	<p>Food: “In 1623 they were abundant enough to be dried for food. This abundance continued down to the present century. Figs were one of the principal sources of food to fatten the hogs.” (Verrill, 1902). Beverage: “An intoxicating fermented liquor was soon made from the figs and called ‘Figg-Drink’. The sale of it to apprentices was prohibited in 1627. Prosecutions for the unlawful use of it are recorded in 1630. In March, 1631, John Bunnion was indicted for stealing "a caske of figge drink," and there are several indictments for drunkenness and riotous conduct (stabbing in one case), as a result of using this drink.” (Verrill, 1902). “Fig-trees too, Whereof a Pleasant kind of Drink they brew” (Hardy, 1670). Material culture: Along with pomegranate trees, used as fences along original property lines by 1621 (Lefroy, 1884). Medicine: “Fig juice good for constipation. Roasted fig, as hot as bearable, put in</p>	

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		<p>aching ear which had been rubbed for 15 minutes first, followed by blowing tobacco smoke strongly into the ear.” (Collett, 1987). Additional notes: These figs must have belonged to a variety that is capable of self-fertilization, like those now grown in the West Indies, and not to the choice Smyrna variety, which requires caprification (Verrill, 1902); it is not improbable that the wild figs first noticed may have been introduced, like the olive, previous to 1609, by the Spanish shipwrecks or by the pirate crews (Verrill, 1902); are not among the fruits mentioned by Jourdan or Strachey in 1610; Lewis Hughes, 1621, speaks of "fences of figge and pomegranate trees" and they are mentioned in a proclamation of very early date, probably 1616; it seems probable that they were among the fruit trees introduced by the first settlers in 1612 or 1616, but they may have found the tree already naturalized from seed left by earlier visitors; there are several varieties of fig cultivated at St. George's, the only place where the fruit is tolerably abundant (Lefroy, 1884); “Most people, when you talk about fig, and especially from the Caribbean, they tend to think of the fig banana, because we have those as well, the little figs, and people refer to that as a fig.” (Adams, 2011); indeed, 18th century paintings of bananas often refer to them as ‘figs’; this is an example of ‘older’ nomenclature and expressions persisting in Bermuda when they have died elsewhere; it also makes one ask if the early historical documents were referring to bananas when they mentioned figs.</p>	
<i>Foeniculum vulgare</i> Mill.	fennel	<p>Food: “Chief food of Bermuda rabbits; used to flavour cookies (which they called ‘cakes’); every season grandfather gathered two quarts or more and grandmother's fennel seed cookies were popular.” (McCallan, 1948); Whenever my son, Henry, is walking on the railway trail he likes to chew wild fennel. It feels fizzy and fresh and tastes of licorice, a favorite among us with Scandinavian genes (SL); Fennel for sure. I have only to break a piece in my hand to be transported instantly to age 7 playing on Cedar Hill with Susannah, cousins, goat; the freedom I didn't know was finite(HF). Beverage: fennel tea (McCallan, 1948); Taste wise: cedar berries, loquats, and cherries are a favorite...and less commonly known to most kids, but I'd eat fresh fennel sprouts as a child (AKL). Material culture: Used as 'arrow' with oleander bow for childhood play (pierced with builder's nail on the end for weight) (DW); stuck in young pomegranate as stem of 'pipe' to smoke cedar bark tobacco (child's game) (RC); use fennel sticks for kite-making (SR). Medicine: seeds chewed, especially in church, to quell</p>	SW206

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		<p>appetite (DWJ); dried seeds to counteract arthritis, sluggishness, obesity; infusion of bruised leaves taken to purify liver and as tonic; used as herb with fish (Garden Club, 2002); eye wash, good for kidneys, weight loss (Collett, 1987); dried seeds used in tea in winter – good for throats, respiratory ailments; fresh fennel flowers make a lovely tea; cut and peel green fennel stalk; cut a strip of dry fennel stalk and rub over teeth – give teeth freshness, cleanse (SR).</p>	
<i>Freesia laxa</i> (Thunb.) Goldblatt & J.C. Manning	pink bermudiana (star of the veldt)	<p>Magical/Symbolic/Religious: Story from St. David's cookbook:</p>	
<i>Freesia refracta</i> (Jacq.) Klatt	freesia	<p>Magical/Symbolic/Religious: Smell, beautiful, appreciated (WF) (McCallan, 1948).</p>	
<i>Furcraea gigantea</i> Vent.	giant false agave, wild sisal, bamboo	<p>Material culture: [See Agave uses.] "Clothes were soaked with bamboo to remove dirt and stains." [unclear which 'agave' is referenced] (Rawlins); "<i>Furcraea macrophylla</i> 'wild sisal' called 'bamboo' dry scapes or stalks used as razor strops. Thick bases of green leaves called 'scrubs' pounded well with the family axe, they were used to scrub floors and kitchen tables. If the surface was very dirty – it seldom was in Island homes – sand was added. The ultimate in brick kitchen floor and dooryard tidiness was to sweep with palmetto broom or sage-bush twigs, and sprinkle with sand, the latter a practice brought from the Old Country. In the generations before mine the sand was put on after more or less fixed patterns of great antiquity and pagan origin, being the magic use of rune-staves or runes to ward off disaster. My mother remembered when Christian cross and pagan rune were combined for good luck." (McCallan, 1948).</p>	
<i>Galium bermudense</i> L.	Bermuda bedstraw	<p>Material culture: "It was used as stuffing for mattresses here according to Mrs. Vaughn Pugh." (Collett, 1987).</p>	SW170; SW229
<i>Gossypium herbaceum</i> L.	cotton	<p>Material culture: Originally from the East Indies; cotton of this species was both grown and spun in Bermuda, in the last century, as it still is in India and Southern Europe; old plants are to be met with, nearly small trees; the down is not now put to any economic use, and is superseded, for economic purposes, to the United States, by <i>G. album</i> Wight and <i>G. nigrum</i> Hamilt. (Lefroy, 1884); grown in Bermuda; mixed with sheep's wool, a coarse cloth woven for slaves' wear; plants were often seen in dooryards; bolls were used for stuffing pillows and cushions (McCallan, 1948).</p>	

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<i>Hibiscus rosa-sinensis</i> L.	hibiscus	Material culture: Petals peeled off and ovary with style stuck on nose/face as 'witch's wart' child's game; use the flower to shine your shoes, her mother told her, in a pinch, on the way to school – in those days at school teachers would check shoes, hold out hands for cleanliness, check hair; could do a last-minute buff of shoes on way to school with hibiscus petals, which are slightly waxy (SR).	
<i>Hippomane mancinella</i> L.	manchineel	Toxin: “[Sally Bassett used] two poisons of rats bane and cochineal root. It was alleged that the content of one bag was reddish in colour which was supposed to be able to be "poison the mistress if she simply smelt it" and that the other bag of white toads' poison was to have been put in the food. Also Sally was accused of giving Beck a third bag of poison made from cut tobacco for the slave girl Nancy.” (Musson, 1979 39). Musson, 1979's account differs from historical accounts which cite manchineel (a highly toxic tree, not generally found in Bermuda, although it has been reported once or twice, but only the Caribbean), rather than cochineal (<i>Opuntia</i> sp.) root, not a known poison, but a well-known plant in Bermuda.	
<i>Hura crepitans</i> L.	sandbox tree	Material culture: “The name derives from the Woody Seed pods which ground finely was found an excellent substitute for the sand reseat for blotting Seal.” (Stallard, 1899/1999).	
<i>Hylocereus undatus</i> (Haw.) Britton&Rose	night blooming cereus	Magical/Symbolic/Religious: Picked in bud, brought inside, watched bloom on mantelpiece (WF); blooms in the moonlight, amazing aroma (MH); “At night heading home, making only one detour to pass a certain wall over which a Night Blooming Cereus draped its snaky lengths. June was its month of glory, each night a few buds opened for their one night of perfect bloom – a heart of gold set in a gorgeous cup of white petals all fringed around with narrow ribbons shaded from orange to chocolate and fragrance all about – tomorrow we knew these same blossoms would hang limp and gray, their hour past.” (Fessenden, 1948)	<i>Hylocereus undatus</i> (Haw.) Britton&Rose
<i>Hymenaea courbaril</i> L.	locus tree	Magical/Symbolic/Religious: A fine example on the Cavenish estate on the property of Chief Justice Darrell; “Under the branches of this tree the celebrated Wesleyan minister Whitfield used to preach to the people who were refused the pulpits of the English churches by Gov. Popple in 1748. It was blown down during the heavy gale of Oct. 31, 1847, but a stone slab marks the spot where it grew.”	

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		(Jones, 1873).	
<i>Hymenocallis caribaea</i> (L.) Herb	spider lily	Medicine: For blood poisoning: cut a spider lily (<i>Hymenocallis declinata</i>) root in two, heat and apply to affected parts for several hours (Collett, 1987) to draw infection out (NJ).	
<i>Ilex cassine</i> L.	Bermuda holly	Material culture: A berry used for Christmas decorations, called 'Christmas Holly' (Small, 1913).	SWQC113
<i>Indigofera suffruticosa</i> Mill.	wild indigo	Material culture: Lefroy mentions <i>Indigofera tinctoria</i> , but not <i>suffruticosa</i> ; of <i>I. tinctoria</i> Lefroy says, "Introduced for commercial purposes early in the seventeenth century, and now naturalized. It is mentioned as indico in 1623. There is no evidence that it was ever cultivated to profit." (Lefroy, 1884).	
<i>Ipomoea batatas</i> (L.) Lam.	sweet potato	Food: Pudding on Guy Fawkes Day (JD); "Just as Americans eat their turkey on Thanksgiving Day, Bermudians prefer their sweet potato pudding on Guy Fawkes Day – recipe with sugar, salt, butter, egg, lime juice and ride, allspice...used to make conkies in Caribbean at end of October (MF); "For Guy Fawkes. Sweet potatoes, you don't see them anymore. Not the yellow sweet potatoes. They were green – red-skinned, green flesh. A little fork was used." (Jones, 1993); "No Fifth was complete without this pudding which was eaten in many homes which marked the day in no other way." (McCallan, 1948); the refreshments proper to these Fifth November parties were sweet potato pudding, a soggy but sweet and highly spiced cake, and 'berry beer', a drink made from ripe cedar berries. Beverage: "... This concoction [berry beer] was nothing much to brag about though our homemade ginger and pepper beer were delicious." (Fessenden). Medicine: For toothache: eat raw sweet potatoes as quickly as possible and drink plenty of milk (Stallard, 1899/1999).	SW219
<i>Ipomoea indica</i> (Burm.) Merr.	blue morning glory, blue dawn flower	Material culture: called 'bluebell vine', used for lashing and jump-ropes, weaving baskets (NJ)(RC); "Untangle the vine. Remove leaves and flowers, the older the vine the better." (SP).	SW208
<i>Ipomoea</i> spp.	morning glory (all)	Medicine: All the family of this genus possess more or less the properties of jalap as purgative in their roots (Small, 1913).	
<i>Jasminum simplicifolium</i> G.	jasmine	Cash crop: Perfume; "The kids collected Jasmine flowers from Walsingham and brought them to the perfume factory in Bailey's Bay for a little cash." (NJ).	

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Forst.			
<i>Jatropha curcas</i> L.	jalap	Medicine: A violent purgative (Small, 1913).	
<i>Juniperus bermudiana</i> L.	Bermuda cedar	<p>Food: Berries used in cooking pork and fish (McCallan, 1948). Beverage: "The early settlers also learned to make a liquor of them, by steeping them in water and allowing the decoction to ferment for a few days. The quality of it is not fully described, but many of the early colonists were desperately fond of anything that would intoxicate them." (Verrill, 1902); cedar berry wine – with yeast, crush berries, simmer with sugar and water and strain through cheesecloth (RC); "The Berries which are like Juniper Berries, are of the same nature as Juniper Berries are, they boyl them in water and make Drink for their constant use of it." (Robinson, 1687); "The refreshments proper to these Fifth November parties were sweet potato pudding, a soggy but sweet and highly spiced cake, and berry beer, a drink made from ripe cedar berries; ... this concoction was nothing much to brag about though our homemade ginger and pepper beer were delicious." (Fessenden). Material culture: Some boys made tough warrior tops out of mangrove or cedar; "Tops were played with a savagery absent from other games." (McCallan, 1948); big boys carved boats out of cedar or driftwood, and when bigger made cedar walking sticks; slingshots with forked branches (McCallan, 1948); "The attachment of the Bermudians to these their only forest tree is great, so much so that a large extent of the richest land upon the islands has from time immemorial been devoted to the growth of cedar alone. The more extended and profitable cultivation of vegetables for the New York market, a trade which is increasing rapidly every year, will, however, soon tend to lessen the number of Cedars, an event not altogether lamentable where their preponderance, in the absence of other forms, creates a sameness painful to the eye. In former years, when ship-building was carried on with some spirit, the vessels were built entirely of Cedar, which, from its extreme durability, was well suited for the purpose, the only drawback being its brittle character. The wood is much used also for housebuilding purposes – doors, windows, beams, rafters etc. being made of cedar, and it is no uncommon occurrence to see window sashes 50 or more years old looking quite new in appearance. The Cedar also makes excellent fencing; a post and rail fence when well-made at first, lasting some 40 years, and curious enough the poles, although worn by the elements to skeletons in that</p>	SW215

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		<p>long course of time, are yet sound at heart.” (Hemsley, 1883); first houses in Bermuda framed with cedar saplings with sides and roofs thatched with palmetto leaves (similar to beach houses of the Bahamas) (McCallan, 1948); small fishpots were made of cedar roots; roots were uncovered, and some from a quarter to three-eighths inch in diameter were removed, but not sufficient to seriously injure the trees; the bark was peeled off, the roots placed in water to soak and be made pliable, then split longitudinally and woven into pots of one inch mesh; not a bit of cedar wood was wasted; ship, boat, and house building were the chief local uses of cedar, but cradles, coffins, hope chests, buckets, tubs with brass or copper hoops, stirring sticks or paddles, rolling-pins, dippers of cocoanut shells with cedar handles; mortars were cedar trunks cut to convenient length and burned out to varying depths up to 18 inches or so; some were bound with heavy iron bands; door bolts were of cedar; in early days a larger number of household and other articles were of cedar, such as barrels, funnels, oars; fishpots were once woven of cedar roots; pots made of cedar strips were in use by Island fishermen until recently; cedar-charcoal-heated self-heaters [irons]; irons wiped on pads of green brush [cedar boughs]; green brushes with a bit of sandy stone to scour pots; iron was rubbed with green brush if no grease was available; when water carried long distances, green brush floated in buckets and tubs to reduce splashing; eggs taken across the harbour for sale packed with green brush; long green cedar bough to sweep the chimney; brush tied to tail of kite for steadying (McCallan, 1948); soot [likely from <i>Juniperus</i>]: when children got cut and bleeding continued, the parents took soot from the back of the fireplace and applied it to the wound, used throughout Bermuda (Stallard, 1899/1999); “One day [great great aunt Patty] was making some baking-iron bread for tea, and one of her admirers came to the kitchen door to see her. He found her rolling out the dough with a bottle, and he asked her why she didn't use a rolling pin. She said she did not have one, so he made her a cedar rolling pin. Until a few years ago that rolling pin was in the house where Patty lived after she was married. They tell me it is gone now. I suppose someone threw it out, not knowing the story connected with it.” (Stallard, 1899/1999); cedar brush to clean the mould from hams, also to wipe the self-heater (the iron) before ironing (Stallard, 1899/1999); “The timber for building small vessels in which Henry May and his shipwrecked companions escaped to Newfoundland in 1694, and also for building <i>Patience</i> and <i>Deliverance</i>. ... The timber is very durable. Boats built of it</p>	

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		<p>have been kept serviceable one hundred years, it is claimed. ... dwellings, fuel, shipping boxes of ‘chests’.” (Verrill, 1902); use green cedar bough to clean iron (SR); cedar chests for keeping blankets, clothing free of moths (Zuill & Zuill, 1955); required to be planted as fencing/property markers and for windbreak (Lefroy); see Lefroy for laws against the wanton destruction of cedar; windbreak fences to be planted by law, included: cedar, olive, lime, pomegranate, fig, orange (Lefroy); “The Tinder Box contained cedar bark, or bass as we called it, picked quite fine and light with a burnt rag as tinder ... with dried cedar bough ... and flint and steel to start (Bluck 1947). Medicine: “A decoction of [<i>Lantana camara</i>] leaves mixed with a bunch of Junipers asserted to be a sure cure for yellow fever, if the patient is covered up with blankets after drinking it, (drink as hot tea) when profuse perspiration is induced. It was used here largely by the natives during the yellow fever epidemics and was found effective when taken in time.” (Small, 1913); “Smoke from green cedar brush for Chilblains; Cedar dust used to dress navel of newly born child.” (Stallard, 1899/1999); smoke of green brush cure for chilblains (McCallan, 1948); the gum of the cedar was also used medicinally (Verrill, 1902); syrup cured whooping cough (SR); the dust put on a fire was considered to be purifying in the case of sickness; it was also put in potpourris and on the navel of newborn babies (Collett, 1987); a brush used to clean mould from hams; smoke from a green cedar brush an effective cure for chilblains (Collett, 1987); a conserve from its berries, locally known as ‘cedar berry syrup’ is a remedy for pulmonary complaints (Small, 1913); “Cedar Gumm as hath been often experience’d, is good for Gonorrhea’s, the Berries which are like Juniper Berries, are of the same nature as Juniper Berries are, they boyl them in water and make Drink for their constant use of it.” (Hardy, 1670); “Cedar-berry syrup and beer were made on the Island until fifty years ago, perhaps less. Mrs. Adam Brangman, Mrs. Kate Lamb, and Mrs. Janie Lamb were among its chief makers.” (McCallan, 1948); cedarberry syrup for cough and toothache (McCallan, 1948); “Cold remedy: 1 oz. berries with 1/2 oz. water and 4 tablespoons sugar; boil until syrup. For wine: boil 1 oz. berries in 1.5pints water. Strain and leave standing for four days. A cedar berry a day keeps the doctor away.” (Duncan, n.d.); tea to aid digestion; good fumigant in times of illness; cedarberry syrup for cough medicines; cedar just on navel of newborn babies as healing and drying agent (Collett, 1987). Magical/Symbolic/Religious: SR remembers picnics in the cool shadows of the cedar trees,</p>	

the sound of cicadas, the cool and fresh shade, smell of cedar, has a nostalgic memory very much ingrained; the sound of the cicadas was almost deafening (SR); a cedar tree was planted by the newlyweds (Rawlins); "Judy ran toward the secret hiding place. But first she had to make her way to Pete's branch, the limb of a huge cedar tree standing in a clearing just below Fort St. Catherine. A young Black youth named Peter had been found hanging there after he had been severely whipped for "his insolence". The coroner said it was suicide but the slaves thought otherwise. From then on the high, thick overhanging limb from which Peter's body had been found hanging was called Peter's Branch." (Musson, 1979); "Weddings: Some people planted the cedar tree which was a sign of fertility. The groom's cake was fruit and the bride's plain." (Jones, 1993); bits of brush hung on string for church decorations (McCallan 1948); Taste wise: cedar berries, loquats, and cherries are a favorite...and less commonly known to most kids, but I'd eat fresh fennel sprouts as a child (AKL) Cedar, for Ronnie, is associated with coffins. She grew up before the great cedar die-off (caused by an introduced scale insect in the 1950s); in her childhood cedar was the most common tree on the island and, unlike today, when the use of its wood for a door or window sill is a sign of wealth, everyone used it for everything. Coffins were commonly made of cedar. And just speaking of the sweet and distinctive scent of the cedar coffins lead Chameau into telling me about funeral practices in St. David's in those days, and how people went door to door announcing that someone had died, and how, because there were no official funeral directors, Ronnie's mother and auntie prepared the bodies for burial (you have to cork 'em, she says, or they start to ooze out), and how everyone in the community joined together for a procession from the house of the deceased to the graveyard (RC). **Cash crop:** Planted for ship-building; value of land (and of woman on land) equated to number of cedars on property; 17th century: boxes used for exporting tobacco were more valued than the tobacco itself, but there was a ban on exporting cedar (Jarvis) (Lefroy). **Conservation/Ecology:** First conservation laws in the 'new world' or in British colony was regarding the cutting down and export of Bermuda cedar (and palmetto) (Jarvis, 2010). **Additional notes:** "In the Camber at the Dockyard, when dredging or excavating for the floating-dock, cedar wood was found forty-seven feet below low-water mark, and well-preserved trunks have been found at three to five fathom depth in Ely's Harbour and Hamilton Harbour, indicating a great subsidence of the Original

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		Bermuda.” (Small, 1913); there are several very aged trees now standing in different parts of the island, that in the old churchyard in Devonshire Parish being perhaps older than any others (Jones, 1873); on the island almost venerated; no St. David's cow was tethered with a chain lest a cedar tree be barked, nor was it considered commendable to tie a cow rope to a cedar [...] (McCallan, 1948).	
<i>Justicia secunda</i> Vahl.	red justicia, Father John	Beverage: A soothing tea: "Come get some Father John!" (RC); Medicine: "Boil the leaves to help cool the blood in the summertime, and also to help cleanse you. It is a purple-reddish colour when you boil it. It has a distinctive taste, a pleasant, mild taste. It's very good for colds and coughs. I quite often would mix lemongrass with Father John together." (Adams, 2011); "Boiling water poured over 4 mature leaves and infused for 15 minutes. Mix with lemon and cherry for flavour or with elderberry leaves as purgative." (Duncan, n.d.); infused with elderberry leaves for use as a purgative; mixed with lemongrass and lemon juice to reduce fevers and the effects of colds (Garden Club, 2002); very popular local plant; tea made of flowers, turns red and is considered a good tonic (Collett, 1987).	SW95
<i>Kalanchoe pinnata</i> (Lam.) Oken	floppers, life plant, love plant, lemui, cathedral bell	Medicine: "the natives' floppers", introduced in 1813 (Small, 1913); put a leaf on the stove element "until it starts to quail" then apply to inflammation (IW); used for colds; the juice used for colds (Adams, 2011); juice used externally as poultice on boils, ulcers, insect bites; West Indians add salt to the juice for colds and to alleviate bronchial problems (Duncan, n.d.); leaf chewed for asthma and lung problems (OD); used for headache, put directly on head – is cooling; for sprains, wrap it (DWJ); "Gum boils – floppers on ... with salt over time, put it on a piece of [gorse?] and it will draw it right out." (RC); chew on leaf 3x day for asthma, bronchitis; Rasta friend, it took asthma from his daughter, put it in her bottle from a young age (DWJ); boiled and drunk for colds (GL); juice from crushed leaf to cure hypertension and used as poultice on boils, ulcers, insect bites (Garden Club, 2002); leaves boiled with honey and lemon for cold (Collett, 1987). Additional notes: called 'love plant', people write names on leaf and put it in a book (DWJ).	
<i>Kigelia africana</i> (Lam.) Benth.	sausage tree	Food: Used to use fruit (NJ). Material culture: Fibrous inside used as upholstery (NJ). Medicine: Used as medicine (NJ).	
<i>Kosteletzkya virginica</i>	virginia	Medicine: Syrup for colds, coughs and sore throats. (Small,	

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(L.) C. Presl ex A. Gray	kosteletzkya, seashore mallow	1913).	
<i>Lantana camara</i> L.	wild sage bush, shrub verben	<p>Food: Berries eaten by children (McCallan, 1948). Material Culture: I recall as a little one examining the multicolored lantana flowers... I was transfixed by the land of Faerie at the time, and the pink, yellow, white, lilac tiny flowers within each of the larger blossoms seemed proof of a land of the tiny. My Granny called Lantana "sage bush", of course, which I realise is stirred up with other types of sage plant depending on the locality (WY). Medicine: "A decoction of its leaves mixed with a bunch of Junipers asserted to be a sure cure for yellow fever, if the patient is covered up with blankets after drinking it, (drink as hot tea) when profuse perspiration is induced. It was used here largely by the natives during the yellow fever epidemics and was found effective when taken in time. (Small, 1913); "Yet grows a Poyson-Weed, Whose very sight infects some, and its Juice Will make men itch, as if a thousand Lice About their bodies creep, in painful Wheals And Pimples at the last it self reveals, But never kills; Its Counterpoyson is Sage of the Mountain, which you cannot miss At all times for to find, in places where This Weed is, for it grows to't very near." (John Hardy 1671).</p>	SW212
<i>Lantana involucrata</i> L.	sage, common sage bush	<p>Food: Berries eaten by children (McCallan, 1948). Material culture: Slingshots with forked branches (McCallan, 1948); "Firewood was largely sage-bush, waste cedar, pride-of-India blown down by high winds, and driftwood. The smoke of oleander was considered injurious to the eyes, and those who used it were a bit looked down on by those who didn't. Sage-bush put a tasty crust on bread. (McCallan, 1948); use sage to sweep the chimney, and it leaves a nice fragrance (RC); some say brought here as fuel, others say it's indigenous; used for brushing tomatoes, beans and similar vegetables (Zuill & Zuill, 1955); "Introduced from the Bahamas by Colonel Spoffoth toward the end of the last century, with the idea that it would be good for firing, which it is not. It is now the pest of Bermuda, overrunning woods and pastures, and permitted by the supineness of the inhabitants to render thousands of acres of land valueless." (Lefroy, 1884); the old residents assert that its leaves when used for cleaning cooking utensils by boiling</p>	SW203

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		<p>a few branches would remove any taint or smell (Small, 1913); “Bouquets for Barbies – tiny flowers and already in a bouquet!” (Sheryl); berries of all sages used as watercolour paints, mixed in water (MH); Medicine: “Sage tea is a gargle for sore throat. Half a cup after a heavy meal will settle the stomach.” (Stallard, 1899/1999); dry, put in cheesecloth, and place in winter clothes (rosemary and spice also used thusly) (SR); leaves used for brushing/polishing teeth (JD, MF, WF, SW); My grandfather taught me about using sage bush leaves for toothbrushes and that minty taste (along with eating those berries) is unforgettable (AKL). “Take the leaf of the sage and boil it and make tea. It helps to soothe menstrual cramps and other female issues.” (Adams, 2011); flowers and buds taken in a tea for flu and chills and used in baths; infusion of leaves and flowers thought to reduce high blood pressure; leaves mixed with cedar berries in an infusion used to treat yellow fever (Garden Club, 2002); "Leaves febrifuge in yellow fever cases; tea made from them, when taken hot, promoting perspiration in an high degree.” (Jones, 1873).</p> <p>Magical/Symbolic/Religious: Burn for omens: if something drops on the ground it means there's a spirit in the house, burning lantana will make it go away (KM).</p>	
<i>Lepidium campestre</i> (L.) W.T. Aiton	wild pepper grass, shepherd's purse	Medicine: Tea makes tonic (MH).	SW66
<i>Leucaena leucocephala</i> (Lam.) de Wit	wild mimosa, jumbie bean, jimbay, cowbush, jump-and-go, acacia	<p>Magical/Symbolic/Religious: “From the seeds of the common acacia which has become a perfect nuisance in many parts of the islands are made very pretty baskets, necklaces, bracelets, etc. The seeds are first soaked in water and then threaded with a needle. The seeds are ripe about September.” (Jones 1873). Additional notes: Called 'cashew' in St. David's (RC, Milton); ‘Cashew City’ in St. David's named after this plant (from 'Cassia') (RC); made into necklaces, bracelets, small bags, purses, etc. for personal use, not sale, "island women were not then commercially-minded" (McCallan, 1948).</p>	
<i>Lilium longiflorum</i> var. <i>eximium</i> (Courtois ex Spae) Baker	Bermuda Easter lily	<p>Magical/Symbolic/Religious: In terms of flowers Lilies and Bermudiana and oleander all grew around my home, morning glory I'd admire and chop down to stop it choking other plants (AKL). Cash crop: Howard E.D. Smith created <i>Lilium howardii</i>, “... virus, he selectively weeded and created variety immune to viruses and bloomed in early spring.” (Hannau) [for more on the legend of how James</p>	

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		brought lilies to Bermuda in the 1780s, see Hannau, page 9]; also used for perfume by the Bermuda perfume factory.	
<i>Linum usitatissimum</i> L.	wild flag	Material culture: Plants are to be found naturalized in Pembroke marsh; it is mentioned as early as 1632, but does not appear to have ever been much cultivated (Lefroy, 1884); additional note: I found it growing wild in Warwick, near Warwick Pond; only 2 plants so I didn't collect. (SW)	
<i>Lippia nodiflora</i> (L.) Greene	cape weed, cake weed	Beverage: I am told that the leaves of this plant were used by the early settlers as a substitute for tea (Small, 1913). Medicine: Eat flower bud/head or make oil from it, good for respiratory ailments, and energy (MH).	SW92
<i>Mammea Americana</i> L.	mammea	Additional notes: "Brought here by Bermuda mariners in the earlier days of the colony, they are now treated with the reverence usually reserved for heirlooms." (Zuill & Zuill, 1955).	
<i>Manihot esculenta</i> Crantz	cassava, manihot	Food, Beverage: "How to make Bread of Casava rootes. First wash, and scrape cleane, or pare away the out-side. Then grate the root upon a Grater, as you do bread: get Graters made of purpose, with holes somewhat bigger then ordi-nary. If you want a Grater, you may make shift with a rough pumish stone, wherof you may finde some upon the Bayes by the Sea side, or with nayles broad pointed, driven thick through a bord. Presse out the iuce through a Bagge of haire, as you doe Veriuiice; then spread the grated roote upon a cleane cloath in the Sunne to dry. That which will not goe through the Sive, beat in a Morter till it be small like meale, and sift it againe. Take the sifted roote, and strew it in a deane dripping panne, and put it into the Oven, and it will bake in a quarter of an houre. The Oven must not be too hot. You must not knead the roote, as you doe Dowe, not put water to it, but strew it dry, like Saw-dust, almost an inch thicke. If you have no Oven, you may bake it on a Trivet or three stones, with a little fire, if you make a great fire, it will not bake, but crumble like Saw-dust: remember to turne it three or foure times, unless you bake it in a Oven, then it needes no turning (Lewis Hughes, 1612, in Craven, 1937); "Cassado a roote of a wonderfull encrease and maketh very good white breade but the iuce rank poison, yet boiled is better than wine." (Smith, 1623); "And here Cassawder, to which, though it's Juice/ Be Poyson, yet they now have a device/ To press and grate it,	

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		<p>so in time of need/ And sometimes else, they safely on it feed/ Being bak'd in form of Bread (Hardy, 1670); It takes two years, dig out in Oct/Nov, soak it whole, sit around the tub, peel skin, grate the cassava. Put in pillow case, glass (not tin) bowl underneath, use as clothing starch. Use stick to tighten pillowcase, milk is poisonous, save smaller roots and plant in ground for next year. (RC); as early as 1616 first cassava cuttings arrived from west indies; "Today it would be difficult to find a kitchen garden that did not boast a few plants. cuttings are planted in March. The plant grows slowly ... is dug in December of the year following when it is nearly two years old. Roots are then soaked, scraped, ground and squeezed and, with the starchy flour thus obtained, preparations advance for the great Christmas institution of Bermuda – Cassava pie. This time-honoured dish which is regarded enthusiastically by nearly all Bermudians and acclaimed but mildly by visitors appears to be related to the well-known Cornish Pastie." (Zuill & Zuill, 1955); "It is prepared much like arrowroot, and is perhaps superior to that article as food for invalids, when the preparatory process has been conducted with care; the manufacture is tedious, and probably for this reason but a small quantity is made, barely sufficient for the requirements of the inhabitants." (Jones, 1873); to grate cassava, a piece of heavy tin was bent in the shape of a grater and holes punched in it. Large kerosene tins were then used in which to bake the cassava (Stallard, 1899/1999); pepperpot stew is an old Bermudian recipe which used the juice from the cassava root boiled with beef and vegetables; cassava pie. (Garden Club, 2002); Captain John Smith mentioned 1623 cassado roots sent to Virginia; [in] 1639, a shipwrecked Spaniard wrote that [in] each portion of land attached to each house were "yucca for making cassava flour" (Collett, 1987); starch from excess juice used in West Indian pepper pot and in sauces (Fessenden). Medicine: Water from cassava was used for stomach aches (Rawlins); "Starch – put juice from grated and squeezed root in bowl in sun to dry. May take several days for all liquid to evaporate. Tightly bottle, keep ... Use to make thin pudding similar to one made with arrowroot, give to children for diarrhea." (Burland); farina is the dried cassava, different for pie (Adams, 2011); farina flour diluted with water used to reduce effects of dysentery and diarrhea; as a poultice, farina helped in healing sores, boils, abscess; handfull of leaves in a hot bath thought to break fever and flu.</p>	

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<i>Maranta arundinacea</i> L.	arrowroot	<p>Medicine: For diarrhoea: make thin pudding, take often (Stallard, 1899/1999).</p> <p>Cash crop: “Introduced toward the end of the [19th] century the exports, which reached 90 tons in 1844, now rarely amount to one-fourth of that quantity simply because other crops are found less exhausting to the soil and more remunerative. Bermuda arrowroot, however, is still unrivalled in quality. 15 to 20 lbs. of the starch are made from 100 lbs of the root.” (Lefroy, 1884); “The starch ... is obtained from the tubers, which are first washed and peeled, then is rasped by a revolving grater, is passed through sieves to separate the fibre, and the pulp cleansed by repeated washings. The moisture is finally pressed out and the snow-white, flaky cake is broken up, dried and bleached in the sun. Bermuda arrowroot is unrivaled in quality, but of late years the trade had dwindled until recently taken up by the late W.T. James who manufactured it on a large scale, with the latest imported machinery.” (Small, 1913); “The culture of the arrow-root which has rendered the name of Bermuda so familiar in English homes is rapidly declining owing to the cultivable ground being required for the growth of onions, potatoes, tomatoes, and other vegetables for the American markets. The arrow-root, although a valuable crop, requires much labour, and above all, occupies the ground for nearly a year, during which time the planter could raise from the same ground two heavy crops of vegetables, so that it is easy to understand why the growth of arrow-root should receive so little attention at the present day. There are some planters, however, how having obtained celebrity in this manufacture of arrow-root, continue its cultivation, and to these estates the public must principally look for a supply. The name of Bermuda is doubtless often made use of by unprincipled dealer both in Europe and America to promote the sale of the far inferior article made in the West Indian islands, for it is quote impossible that the comparatively small exportation of arrow-root from the Bermudas at present can be equal to the demand of the Bermudian arrow-root, even in Great Britain alone. Much of the Bermudian arrow-root of the finest quality is rendered most unpalatable through the strange practice of packing it in boxes make of pine, which, even in a few days, imparts the disagreeable turpentine odour peculiar to that kind of wood. If the boxes were made of well-seasoned oak, which could be easily procured of any degree of thickness from the United States, this sad mistake, which singularly enough has been continued for years, would be rectified.” (Jones, 1873);</p>	

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		<p>"Peeling parties, analogous to the corn-shucking parties of Old New England, gave occasion for folks to get together in the long winter evenings; gingerbread or cornbread and tea were served. Occasionally children roasted the thick starchy roots on the hearth; spread with butter they tasted good." (McCallan, 1948); [more information about the fame and success of Bermuda's arrowroot export industry see Collett, 1987]</p>	
<i>Marrubium vulgare</i> L.	horehound	Medicine: infusion of leaves is good for coughs and colds (Small, 1913).	
<i>Melia azedarach</i> L.	Pride of India (chinaberry)	<p>Material culture: Green sticks used as pokers for home brick oven fires; "As they dried they burned the faster, and had to be replaced by fresh ones." (McCallan, 1948).</p> <p>Medicine: The bark is a powerful astringent and is useful in diarrhoea and dysentery (Small, 1913).</p> <p>Magical/Symbolic/Religious: Seeds dyed, used for necklaces (Zuill & Zuill, 1955) (RC); necklaces with Mimosa and Poinciana seeds (RC); beads dyed with beets or food-colouring and vinegar (RC).</p>	
<i>Melilotus indicus</i> (L.) All.	smaller yellow melilot	Magical/Symbolic/Religious: "To four-leaf marylock or clover, also, good luck was attributed." (McCallan, 1948).	SW231
<i>Mentha</i> spp.	mint	<p>Food: "You can make mint sauce." (Adams, 2011).</p> <p>Medicine: "Specifically used for gas and upset stomach, to try and settle your stomach. Mint is really good for that." (Adams, 2011); digestive, good for indigestion and constipation (Collett, 1987).</p>	
<i>Mercurialis annua</i> L.	stinkweed, herb mercury, mockery	Medicine: Decoction good for liver complaint and constipation (Small, 1913).	
<i>Momordica charantia</i> L.	bitter melon	Beverage: tea (NJ); Medicine: Used for diabetes (Alison Copeland); used for fungal skin infections (drink tea) (DJ).	
<i>Monstera deliciosa</i> Liebm.	locust and wild honey, swiss cheese plant	<p>Food: A childhood treat on the windowsill (SW); "Fruit, while delicious, required patience and self-restraint for its enjoyment. When ripe, the skin begins slowly to peel near the stem, and neat little hexagon-shaped pieces fall away. The exposed meat can now be removed with a fork and will be found delicious, but should one become impatient and force the peeling, the edible part will then be found to possess minute spines which adhere to the tongue in a most tormenting way. The fruit will take four or five days to peel</p>	

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		completely. Each day the anxious watcher may consume a little bit; hasty action is fraught with peril.” (Zuill & Zuill, 1955).	
<i>Morella cerifera</i> (L.) Small	wax myrtle	Magical/Symbolic/Religious: "Berries – coated with a white, fragrant wax from which candles can be made." (Small, 1913); [It's possible candles were made from the berries. Bayberry scent is associated with Christmas. Bayberry wax was advertised for sale in the Royal Gazette in the 18 th century, but unclear if it was made locally or imported. Either way, very likely that some people used them, as they were fairly abundant, particularly in marshes, and grow there still.].	SW34
<i>Moringa oleifera</i> Lam.	horseradish tree	Material culture: Originally of the Old World, but introduced from Turks Islands; may be seen at Somerville and elsewhere; this tree produces the famous Ben oil, extensively used by watchmakers (Small, 1913); [unclear if it was used for this in Bermuda].	
<i>Morus rubra</i> L.	red mulberry	Beverage: Fig-trees too, / Whereof a Pleasant kind of Drink they brew, / With Mulberries likewise (Hardy, 1670). Medicine: With nettles made into tea good for diabetes and hypertension (Collett, 1987). Cash crop: Silk culture was attempted up until the 1900s, never very successful (McCallan, 1948). Additional notes: Henry May writes of "infinite stores of mulberries" and Jourdain mentions "mulberries red and white" (Collett, 1987).	
<i>Muricea muricata</i> (technically an animal)	sea-rod	Material culture: Housewives took sea-rods for stirring butter and as egg-whips, and for 'another form of whipping' (McCallan, 1948).	
<i>Musa acuminata</i> Colla	banana (edible)	Food: Leaf wrapped around a joint of meat when roasted will add a delicious flavour to the cooked meat (Burland); “Bananas fried green – or boil with skin on, take skin off, mash between brown paper bag, put salt on either side, and they go right up like biscuits.” (RC); ‘my second child’; wrap meat in leaves (RC); Baking-Iron Bread vs. Dutch Oven bread: "I will show you the baking-iron some time, but the Dutch oven was a flat-bottomed pot with straight sides and an iron top. It stood on three little legs. They used to line them with banana or arrowroot leaves, and the loaves of bread were wrapped in leaves too, and placed in the bottom of the oven. Then they lighted one fire under the bottom and another on the top of the oven. We used to cook all	

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		<p>kinds of things in ours – bread and cakes and meat. The bread had a different crust from ordinary bread, it was more like a thin, brown skin." (Aunt Ann) (Stallard, 1999 p 35).</p> <p>Material culture: Green banana leaves stuffed under a hat were used by labourers in the olden days as an eye shade and to keep the head cool Also, a mattress stuffed with dry banana leaves was better than corn shucks (Burland); make dolls, plates (RC); banana leaves for stuffing mattresses (Stallard, 1899/1999). Medicine: cut head out of a young banana tree and apply juicy part direct to burn (Collett, 1987), (Stallard, 1899/1999).</p>	
<i>Nerium oleander</i> L.	oleander	<p>Medicine: "Pick a very slender bud leaf, ideally from toward the top of the tree. When broken off a droplet of liquid rises to the surface. Put this in a glass of water; it will turn greenish. Sip slowly. Good for the eyes." (MH) *This use was not mentioned elsewhere, and MH seemed to derive much medicine from personal experimentation ... as oleander is extremely poisonous I would advise against doing this. Material culture: Bows for toys; notched to keep score for cricket games (Bermuda recorder); yellow and green 'bananas' for store play as children; make leis and sell to tourists (RC); sticks with rocks and rope to make Killicks to scare turtles/for turtling (JD); introduced to Bermuda in 1790, with old ladies of boyhood days remembered exchanging cuttings when the plant was still uncommon; island farmers followed general practice of using oleander sticks or wattles as lining-hoops for their potato barrels, Bermuda's first agricultural trade-mark; oleander hedges for windbreaks and to mark boundaries of properties; sticks for part of boat killicks, green stick with leaves attached a fair substitute for a ceiling broom; oleander leaf chain was a church decoration (McCallan, 1948). Magical, Symbolic, Religious: [The scent of] oleander mixed with low tide; the scent of possibilities for me (HF).</p>	SW255
<i>Nicotiana tabacum</i> L.	tobacco	<p>Medicine: "Grandmother Ashie smoked a clay pipe." (Musson, 1979); roasted fig, as hot as bearable, put in aching ear which had been rubbed for 15 mins first, followed by blowing tobacco smoke strongly into the ear (Collett, 1987) (Stallard, 1899/1999); all women smoked tobacco in a clay pipe, children imitated with their pomegranate-fennel pipes, smoking cedar bark (RC); "Bermuda used to have chiggers (in Suzette Harriet Lloyd's time, she spells it 'chigres'). A local woman knowledgeable of medicine used a long needle to dislodge the chiggers from Lloyd's skin and then filled the</p>	

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		<p>puncture wounds with tobacco.” (Lloyd); “Men Women and Children are all Greate Smokers of tobacco and according to the best Estimacon we are Capable of Giving Expends twenty thousand pounds yearly.” (Robinson, 1687).</p> <p>Magical, Symbolic, Religious: “Funerals – two or three dishes of Broken bread, some rum punch and pipe of tobacco and p’haps a glass or two of wine. Sundry resorting to the churchyard for pott hearbs.” (Robinson, 1687). Cash crop: “The principal export of Bermuda in the 17th century. The legislature again in 1878 give encouragement to the cultivation of it. The plant springs up spontaneously among the ruins of old houses constantly from seed left perhaps the Sentry or two before. The current value was 2S. 6D. a pound in 1620, which had fallen from 3D. and 1690, When it ceased to pass as Currency. There is reason to believe that Bermuda tobacco was never a good quality, and that nothing but disappointment can attend its re-introduction.” (Lefroy, 1884). Additional notes: Toponym: Tobacco Bay; tobacco found on island when English arrived; John Rolfe likely had the seeds of the 'sweet' tobacco when wrecked in Sea Venture, carried them on to Virginia and saved colony (Jarvis); "It is stated, with what truth we know not, that tobacco plants are sure to spring up where old stone walls are taken down." (Jones, 1873); see more Lefroy for letter from Sayle, etc.; tobacco grown and cigars rolled today (RSp).</p>	
<i>Olea europea</i> L.	olive	<p>Food: Portuguese people gathering to harvest olive fruit from a hillside in Southampton, the children would shake the trees, fruit would fall onto cloths, people would gather them up and put them in the sea to brine them. This would be in SR's grandparents' time (she was born in 1939); she descends from people from the Azores 1880s; the story is recorded for transcription – great example of harvest/plant knowledge as part of community (SR); “The Bermudas, like many other uninhabited islands, were often visited by the Spanish buccaneers and pirates of the 16th century, for wood and water and for repairs. It is well known that they were in the habit of leaving hogs and goats on uninhabited islands, in order to be able to secure fresh provisions, in such remote and secret places, when needed, or when they visited such islands to cai’een and repair their vessels. The Bermudas, dreaded as they were at that time, both by the commercial and naval vessels of all nations, would have afforded pirates an admirable chance to land and repair their vessels, while they could have obtained an abundance</p>	

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		<p>of fresh provisions from the birds and their eggs, the sea-turtles, fishes, etc. It is not unlikely that at such times they may have introduced both olives and figs.” (Verrill, 1902). Additional notes: ““We haue oliues grow with us, but to no great store.” Such is the evidence of nearly the first writer on Bermuda, in 1612. It appears sufficient to prove that the tree was then naturalized, probably from seeds sown by the crews of Spanish vessels visiting the islands or wrecked on them in the sixteenth century. It is mentioned by Smith, 1624, and in 1661 the Bermuda Company ordered them to be planted on every share; some of those trees are still standing. The fruit is very scanty and not put to any use.” (Lefroy, 1884).</p>	
<i>Opuntia cochenillifera</i> (L.) Mill.	cochineal cactus	<p>Material culture: Wash hair with cactus (KM); Medicine: The leaves or stalks of this species peeled and soaked are diuretic and are much used by the old natives (Small, 1913); “Cochineal can be used similar to aloe. You take one of the pieces off and you peel it and put it in water and let it steep. It’s good for colds, blood purifier. Good to help clean you out and things like that, and a good drink. It’s also used in the hair, similar to aloe. You can wash your hair in it.” (Adams, 2011); for high temperature, chop cochineal leaves, steep in water and drink (Collett, 1987). Additional notes: Once thought to have the cochineal insect used for dyes – written of in old texts; see Norwood’s Journal (1631, in Craven, 1945) for use by indigenous Mexicans for dye.</p>	
<i>Opuntia stricta</i> (Haw.) Haw	prickly pear, pear-bush	<p>Food: Used as a fruit to a considerable extent by Somer’s party [on the Sea Venture] and by the earliest settlers, in 1609-1616 (Verrill, 1902); “Knock them off the bush when ripe, use cedar sprig to roll them in the grass, pick up with a piece of newspaper or something, slice the top off like a boiled egg, scoop it out with a spoon and eat it!” (SR); leaves used for ‘savory cactus dish’ (Musson, 1979); prickly pears were eaten raw and cooked; “A kind of pear of the bigness of a Katherine pear we found growing upon the rocks full of many sap subtle prickles (as a thistle) which we therefore called the prickly pear, the outside green, but being opened of a deep murrey (mulberry red), full of juice like a mulberry and of the same substance and taste.” (McCallan, 1948); until recently prickly pear juice was used to colour confectionery, particularly coconut cakes; “When prickly pears were ripe, we candy.” (Stallard, 1899/1999); peel needles off fruit, boil and mix with sugar to make wine, jam, or candy; fruit eaten raw or baked (Duncan, n.d.); To this</p>	

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		<p>day I always eat prickly pear cactus fruit and love the purple dye it leaves on the fingers, same strong colors as my grandmother used for dying clothes when she was a child (AKL). Material culture: Flesh put in lime-wash as sizing or sticker, and the subtle prickles of spines for ear piercing; "I remember a few old men, some of whom had followed the sea, who wore earrings, each a small plain gold ring in the left ear to benefit his sight, rather it was the boring which was supposed to be beneficial." (McCallan, 1948); colly of soot from tea kettle put on split "pear-bush" leaves and used as boot polish (McCallan, 1948). Medicine: alcohol, leaf for cleanse (McCallan, 1948); Old Bermudians took raw pulp in small quantities to help stop diarrhea; leaf peeled and soaked in water as diuretic (Duncan, n.d.).</p>	
<i>Oxalis intermedia</i> A. Rich	Cuban purple wood sorrel, sour-sop, sour-sups, sour-suckers	Food: Snacks for children; steep and make a drink (RC) (WF).	
<i>Oxalis martiana</i> Zucc.		Food: Snacks for children; steep and make a drink (RC) (WF).	
<i>Pandanus utilis</i> Bory	screw palm	Material culture: Hats, dolls; makes a candleholder, also fans, coasters, hats and bags (NJ); leaves became popular for making hats, bags, and other small articles; chief workers on St. David's are Mrs. Murray Fox and Miss Edith M. Hayward (McCallan, 1948).	
<i>Panicum dichotomiflorum</i> Michx.	cane grass	Material culture: Used for catching lizards (KM, RS); "How to tell if it's cane grass, say: is this lemongrass or cane grass? As they resemble each other" (RS).	SW22
<i>Papaver rhoeas</i> L.		Medicine: Used the same way as <i>Papaver somniferum</i> (RC).	
<i>Papaver somniferum</i> L.	Opium, garden poppy	Food: Seeds sprinkled over cookies and breads for flavour (Duncan, n.d.); Medicine: SR's mother was born in Bermuda in 1914, grandmother was from Portugal; grandmother made poppy syrup, but mother did not (SR); the seedheads are used as a fomentation for neuralgia, and when placed in open-work bags induce sleep (Small, 1913); poppy syrup (as cough medicine) and poppy rum were in most homes (McCallan, 1948); crushed petals with sugar or molasses in a jar, and it turns into a syrup, used for coughs and colds (RC); infusion of fresh leaves for chest pain,	

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		<p>anxiety, insomnia, nervous problems (Duncan, n.d.); "Two things you'd be hanging in the corner of the chimney or on the kitchen door would be shark's oil and poppy.' 'Yes, I've still got some, you know, It grows in gardens. All the farmers used to grow it in their gardens.' 'If you cut your finger you'd take this little bit of cotton or flannel, put some poppy on it and tie it up.' 'You'd put it in a bottle/With some sugar on it.' 'Yes and you'd put it in the sun. When the children were small, when they were teething, I'd use a little piece of cotton and rub all inside of their mouth and no more problem.' 'Oh, they used poppy for everything.' 'I'm waiting now for it to come up in my garden!' 'You know what happened, don't you? They found out it was really a dope. And they went around killing it.' 'As long as some still comes up in my garden!' 'And when they found out it was the same opium the Chinese were smoking, they sent people round with kerosene. This was back up in the thirties. They'd send the Health people.' 'Well, they certainly didn't kill it off because my granny used to use it on me.' 'They had purple flowers. They'd only come out for one night and you'd pick them very early in the morning and you'd put them in a bottle and you'd put some sugar to it. Brown sugar. And you sit it in the window and it melts. And the juice from that is what they used to rub the gums of the children and you'd have no more problems with children and teething.' 'The seed came in with the barrels of potatoes, when they used to bring the barrels of potatoes here. Well the seeds used to come with them and so the poppy was probably all through the garden.' 'Yes, they were purple poppies that used to come up in the garden, not the California ones.' 'Poppy and brown sugar, poppy rum!' (Jones, 1993; conversation among Miss Thomas, Mr. Manders, Mrs. Saltus).</p> <p>Additional notes: The Bermuda Opium Act 1914: "It shall not be lawful to grow or cultivate in these Islands the opium poppy (<i>Papaver somniferum</i>) for the purpose of manufacturing opium therefrom, nor to manufacture in these Islands any opium from opium poppies grown in these islands." (quoted in Britton, 1918).</p>	
<i>Parietaria floridana</i> Nutt.	red pellitory	Food: for chickens (RS, CF)	
<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia creeper	<p>Medicine: Called Sarsaparilla, used medicinally (NJ).</p> <p>Additional notes: Small (1913) mentions this being called sarsaparilla, as does Britton (1918), writing that "it is nowhere abundant in Bermuda because much collected".</p>	SW274

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<i>Passiflora ciliata</i> Aiton	passion flower, apricot	<p>Magical/Symbolic/Religious: “Passion Flowers show the story of the Crucifixion in symbolism. Early explorers started the legends which continue today. First, the shades of purples have signified Christ’s passion on the cross since earliest times. Purplish parts that flare into a many-pointed star always number 10 – apostles at the Crucifixion (Judas and Peter absent). Centered is a sunburst of blue, white, and purple filaments of the corona numbering 72 which ancient tradition says were the number of thorns in the Crown of Thorns. Five anthers symbolize the five wounds. Three nails are there in the form of their styles with rounded stigmas. Cords and whips are seen in the coiling tendrils of the climbing vine; clutching hands of the persecutor –mob in the five lobed leaves. Lance-shaped leaves in some varieties symbolize spears Roman soldiers pierced into His side. Some have angel-wing leaves Some have odd whitish spots on the undersides which are likened to the 30 betrayal coins. On the back of flowers there are sepals symbolizing the Trinity. All but a few of the 300 species are native to the New World and many have edible fruits. Most popular for the fruit and shower flower is <i>P. quadrangularis</i> or giant granadilla from which jellies, jams, sherbets, and delicate drinks are made.” (Hannau and Garrard). Medicine: Leaves used for tea (KM).</p>	
<i>Passiflora suberosa</i> L.	inkberry, small passion flower	<p>Material culture: Dip pens into berry for writing (NJ). [We tried this with chicken feather quill dipped in three ripe berries mashed in the top of a bottle cap, it worked beautifully.]</p>	
<i>Pereskia aculeata</i> Mill.	Barbados gooseberry	<p>Food: Make jam (NJ). Medicine: For male virility (KM).</p>	
<i>Persea Americana</i> Mill.	avocado pear	<p>Food: ‘Poor-Man's Butter’, ‘peer’ a favourite among the residents (Small, 1913); one of the most nourishing fruits grown in Bermuda, described as being 'both fruit and caviar' (Kinghorn); according to Governor Lefroy, it is more highly prized in Bermuda than any other fruit (Verrill, 1902). Medicine: Young leaves when steeped in water for some time, produce an excellent beverage with antirheumatic and laxative properties (Kinghorn). Conservation/Ecology: A local superstition holds that when there is a large crop of avocado pears and the silk spiders build low, a hurricane is sure to follow (Zuill & Zuill, 1955). Additional notes: Three types in Bermuda: Mexican, Guatemalan, West</p>	

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		Indian (Kinghorn).	
<i>Petroselinum crispum</i> (Mill.) Fuss	parsley	Medicine: It's good for just general health and keeping you in good health (Adams, 2011); drink tea for bladder trouble (Stallard, 1899/1999).	
<i>Phoenix</i> spp.	date palm	Material culture: Petioles as walking sticks (in BAMZ museum collection).	
<i>Pimenta dioica</i> (L.) Merr.	allspice	Food: Gather dried berries and put in peppermill; grind onto cookies; put leaves in soup; spice leaf was put into hot cocoa (Rawlins, 1985); dried green fruit crushed as spice/condiment (Duncan, n.d.); crush berries and make a powder for cakes; throw leaves into a stew (RC). Material culture: Dry small branches and put in cheesecloth then in winter clothes (also rosemary in winter clothes) (SR); wood (young saplings) used for fishpots as it is straight and it sinks (RC); leaves have refrigerant qualities; before refrigerators, meat was smoked and wrapped in thick layer of allspice leaves and then buried in a cool area (Garden Club, 2002). Medicine: Cooling teas; dried leaves infused to help body cool from fever (Duncan, n.d.); mix ginger, fennel and allspice leaves for medicinal tea – dry leaves first (NJ); dried leaves infused to help body cool down from fever and to counteract arthritis; oil from leaves local pain killer (Garden Club, 2002); for 'cooling the system' by making tea out of leaves that were turning brown rather than the green ones (RC); I have a love for spice leaf the aroma is strong with its spice flavors. Great breath freshener as well (DWJ). Magical/Symbolic/Religious: I still can't walk by a spice tree without crumpling a leaf for a sniff (SM).	SW218
<i>Plantago lanceolata</i> L.	English plantain ribwort, cat's cradle, rhubarb, rib rod	Material culture: Flower stem used for stringing leis of oleander and frangipani to give to tourists, child's game (RC); flower stem used as noose to catch lizards, child's game; used to 'shoot' plantain flowers at each other (child's game); flower stalk braids (NJ). Making fragrant necklaces - the string would be plantain shoots strung with oleander or frangipani flowers(SM). Medicine: For ingrown nail: pour boiling water to ribwort and bathe; crush and apply directly to bee-sting (Stallard, 1899/1999); ribgrass, leaves good for bruises, sores and ulcers (Small, 1913); mashed up and put on scrapes – helps to heal faster and won't leave a scar (Peter Flook); “Rhubarb, also known as plantain, depending on which part of the island you're living in, is used quite frequently to remove scabs off of sores. What you do is take	SW120; SW109; SW110; SW263, 213, 57, 91, 236, 137

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		the leaf and you crush it, and then you rub it over the area that is sore or scabbed. You keep putting it on there, and it helps the scab to drop off much faster.” (Adams, 2011); “Helps to quicken healing rate of ulcers and wounds if juice from leaves are applied as a poultice. An infusion of whole plant thought to detoxify the body and kill many sexual diseases.” (Duncan, n.d.); infusion of whole plant used to detoxify body and cure sexual diseases (Garden Club, 2002); used for cuts, sprains, bruises, poultices, and against hypertension (?); kids walking to school, knew they were late, would rub plantain leaves on their palms in anticipation of getting caned; they believed it would make it hurt less (LW).	
<i>Plantago major</i> L.	common (great) plantain	Medicine: Leaves make a cooling laxative; bruised, they are very healing on sores and bruises; they are also steeped in hot water as a drink; the plant is popularly called ‘ribwort’ and is a most valuable herb and is highly prized (Small, 1913).	SW88; SW113
<i>Plectranthus unguentarius</i> Codd	Cuban mint, Cuban oregano, oregano	Food: Used in stews (GF). Additional notes: Common in gardens (Lefroy, 1884). Highly aromatic; still commonly found in kitchen gardens.	
<i>Pluchea odorata</i> (L.) Cass.	shrubby fleabane, annual marsh fleabane, cow's tongue, wild tobacco	Medicine: Leaves are used as a tonic (Small, 1913), <i>Pluchea symphitifolia</i> (cow's tongue) with allspice counteracts arthritis, bruises, muscular spasms and pain; leaves and young shoots made into infusion to help reduce fever; poultice to alleviate swelling from dislocation (Duncan, n.d.).	SW35
<i>Plumeria</i> sp.	Frangipani	Material Culture: Making fragrant necklaces - the string would be plantain shoots strung with oleander or frangipani flowers (SM). Magical/Symbolic/Religious: I'd say above all I have a special love for frangipanis because they taught me about rebirth and resilience (and grafting!)...there are so few plants I know of which you can break a branch off and replant anywhere else with ease by sticking that branch into the ground. Plus the scent of them is lovely (AKL).	
<i>Portulaca oleracea</i> L.	purslane, pussley, pursley	Food: Omega 3s, minerals, keep in ziplocks in the freezer (DWJ); plants represent deficiency in the land, they are alchemists, good for learning disabilities in children; pickle the stems (OD & DWJ); eaten (SR); it is sometimes used as a vegetable, boiled, and seasoned with pepper and salt; pigs and poultry are fond of it (Jones, 1873).	

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<i>Prunus persica</i> (L.) Batsch	peach	Food: Used for making jam (WF). Medicine: “People use peach tree leaves to make tea. I’ve never done it.” (Adams, 2011).	
<i>Punica granatum</i> L.	pomegranate	Food: In 1620, had to plant pomegranate and fig trees or be fined 10 lbs tobacco (Verrill, 1902); Capt. John Smith in his history (about 1608) includes this fruit and speaks of its fertility (Small, 1913). Material culture: Dye and tanning (Collett, 1987); young pomegranates hollowed out, pierced with fennel or sage (McCallan, 1948); “Sticks are used as 'pipe' to smoke cedar bark 'tobacco' among children. All the women in the house smoked clay pipes.” (RC; RS); brought from Bahamas to Bermuda in 1616, legislation that required it be planted by inhabitants passed in the years 1620 and 1627 (Zuill & Zuill, 1955). Medicine: The bark is a powerful tonic and astringent (Small, 1913); pomegranate bark tea was given to lessen the pains of childbirth (McCallan, 1948); boiling bark to made tea eased labour pains in childbirth (Collett, 1987).	
<i>Quassia amara</i> L.	quassia	Medicine: Bark a strong tonic. Material culture: Cups made from its wood immediately impart a bitter flavour to the water (Small, 1913).	
<i>Rhizophora mucronata</i> Lam.	red mangrove	Material culture: Fishermen coloured their lines with dye from long mangrove shoots (unclear if black or red) (Stallard, 1899/1999); with the pipes or radicals of mangrove (pronounced ‘man-ga’), fishermen rubbed new lines to increase their durability and decrease their 'give' or elasticity; this tanned them a pleasing reddish-brown (McCallan, 1948); mangrove pipes or radicals looked much like cigars and were used as such, and dry cedar bass was smoked <i>sub rosa</i> (McCallan, 1948). Magical/Symbolic/Religious: For me a lot of memories, and my deepest familiarity with Bermuda are around the shore lines, bays and little islands. The smells of buttonwood, mangrove, and bay grape. High or low tide, all the various plants that live between fresh and salt water, and that seem to make the best of both. Something really special about that little world where crabs and herons hang out and lots of young sea life gets its start (MF).	
<i>Ricinus communis</i> L.	castor oil plant, castor-bean,	Material culture: Castor pomace, used as a fertilizer in Bermuda, is a byproduct of castor oil; attempts to cultivate the plant for this in late 1800s (McCallan, 1948). Toxin: Oil	

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	palma christi	given to children as punishment (RC). Medicine: Children were given castor oil before the school closed for the summer (Rawlins); oil given to children (Ed Harris); leaves used as poultice to reduce inflammation – the red leaves were credited with greater virtue than the green (McCallan, 1948); given to children for yearly or season cleanse to purge system (OD); spring tonic, could be used against rheumatism, leaves chewed against toothache (Collett, 1987); red castor oil leaves crushed and applied to affected parts for rheumatism (Collett, 1987). Cash crop: Governor Wood attempted to manufacture the oil for export; it was no more productive than tobacco. Additional notes: It appears to be the plant mentioned by Smith as the red weed, in 1623, and was extensively cultivated as the 'oyl seed' about 1632; no use is at present made of the fruit; Dr. Pusey's identification of this very quick growing plant with Jonah's gourd, if not quite satisfactory, is at least interesting (Lefroy, 1884).	
<i>Rivina humilis</i> L.	rouge plant, wild tomato	Medicine: Chew berries for diarrhea/cleanse (MH).	SW198
<i>Rosa</i> spp.	mutabilis	Material culture: Rose petals and rosemary, put in a pouch and place in your bosom and pants (RC). Cash crop: Rosewater – distilled and exported; stills passed down in wills; rose water – seep in hot water (RC). Additional notes: "Perhaps in no country in the world does the rose in its several varieties thrive and blossom in greater perfection than in the Bermudas. Both standard and climbing roses are extremely common, and of the most luxuriant growth." (Jones, 1873).	
<i>Rosmarinus officinalis</i> L.	rosemary	Magical/Symbolic/Religious: In rooms when someone is sick, keeps away evil spirits (NJ); for weddings and funerals 'decking' in 17th and 18th Centuries (Collett, 1987); "Weddings – three days – their favours they deck with rosemary their entertainment is a dram of rummy punch and a pipe of tobacco." (Robinson, 1687). Material culture: Common in old kitchen gardens and outside doorways; used in hair, as shampoo on St. David's; "Granny put sprig of rosemary in Bergamot grease, hair grease; said strengthens hair; keeps hair dark and gives it a glisten; rose petals and rosemary, put in a pouch and place in your bosom and pants." (RC). Medicine: Its leaves are used for seasoning and oil of rosemary is distilled from them (Britton, 1918); helps keep from going bald, helps hair grow back	

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		(Adams, 2011); for baths to encourage hair growth, as a hair rinse and for headaches (Collett, 1987); boiled with molasses for cold (Collett, 1987); facial steam and cleanse – good for respiratory ailments; put head over pot (not on stove), with towel over, and steam it; “My Aunt Carri used to get a thick piece of rosemary and brush it through her hair. Everyone in the family knew that rosemary is good for your scalp, good for your hair. Even though I don’t have long hair, I do it today, and the smell.... It connects me to my aunt.” (SR).	
<i>Rumex longifolius</i> DC.	long-leaved dock	Medicine: “The root of the dock is used medicinally, being found of service in cholera complaints.” (Jones, 1873).	
<i>Rumohra adiantiformis</i> (G. Forst) Ching	ten-day fern	Magical/Symbolic/Religious: Church arrangements, decoration; lasted for '10 days' in church, due to waxy or leathery leaves. Additional notes: This use could have drastically depleted numbers (DW).	
<i>Russelia equisetiformis</i> Schltdl. & Cham.	heath fire cracker	Food: Children suck the nectar; called 'honeysuckle' (WF); Honeysuckle never could get enough nectar out of them so we'd suck those by the dozens (AKL).	
<i>Ruta graveolens</i> L.	rue	Medicine: “If you get up in the morning and you're a little weary and tired – because I've got some in a bottle of brandy. Pick some leaves off and put it down in a bottle of brandy. It gets your energy up to go for work. I drank it some years ago because I used to get tired. You drink it with apple or orange juice.” (Mrs. Saltus in Jones, 1993); “A very simple remedy has been lately discovered for the throat-disease, which for more than two years past has prevailed in the Eastern States, and proved fatal to vast numbers of children, and in some instances to adult persons. The medicine is Rum in which Rue has been steeped. Adults may generally take it without being mixed, but for children it should be diluted with water, according to their age and strength. None have died when this simple remedy has been used; and should it on further trial prove a sovereign specific against that very dangerous malady, we have only to lament that an earlier discovery of it was not made.” (Royal Gazette 1786, 03-18); “Infused and used to reduce body temperature and in treatment of neuralgia, nervous spasm, gallbladder and menstrual pain. Externally used in treatment of cramps and to relax strained muscles.” (Garden Club, 2002).	
<i>Sabal bermudana</i>	Bermuda palmetto	Material culture: "Rope is still made on the Island, but to a small extent... I have counted a dozen rope-walks ... I	

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L.H. Bailey		<p>have mentioned that in the early days rope was made of palmetto leaf. No plants were grown for fibre, as far as I know. The making of rope, whatever the fibre, manila, sisal, coir or what not, was the relaying of rope of unserviceable sizes of lengths. Rope bought at ships' auctions, or from ships' agents, or otherwise obtained, and odds and ends no longer serviceable were laid up into useful sizes and lengths. Rope making was an expression of the Islander's thrift and habit of making things for themselves which is fast disappearing." (McCallan, 1948); "Dry palmetto leaves supplemented the devil-dancers (Fierce squibs) and were an important part of the bonfire; most of the tops were collected on the west end of Smith's Island. The making and burning of Guy Fawkes – with devil-dancers in his head – was the most exciting feature of the evening's fun." (McCallan, 1948); "In many homes were sulphur barrels in which old hats were whitened, and palmetto string blanched and dried and further blanched in the sun. Men's hats were made ... older women wore 'metta-string' hats around the yard. ... During the time of the convict establishment in Bermuda (1842-63), palmetto hats were made for the men at a shilling each. Fishermen's hats had pieces of green glazed cambric sewn under the front brim as an additional protection to the eyes when fishing. This was known as a Davis hat and a 'Castle Harbour lining' (McCallan, 1948); bait pots made with palmetto (McCallan, 1948); "An early practice was to mark trees – by holes cut or bored - as boundaries, generally cedars and palmettoes. In 1620, an act was passed against felling marked trees, two years later the settlers were required to plant cedar fences and in 1656 a native of St. David's was fined twenty pounds of tobacco 'according to the law provided' for cutting down a marked tree. I remember a boundary tree on my grandfather's farm, and on an old plan of Carter Farm boundary trees are shown, but have long since disappeared." (McCallan, 1948) palmetto leaves in tanks to purify the water; "Also mullets to eat the mosquitoes in the tanks – found in a little pool in the mangroves at the stocks in the extreme west end of the island." (Stallard, 1899/1999); "Full grown palmettoes, even now, may become fifty feet high, with a spreading crown of leaves twenty-five to thirty feet across. The larger leaves may have a fan or blade eight feet or more long and nearly as wide, supported on a petiole or stem six to ten feet long. But most of those now growing are comparatively young, and mostly less than twenty feet high. [...] When growing in good soil in open land the trunk is sometimes three to four feet in circumference, and usually not more than twenty to twenty-</p>	

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		<p>five feet high, to the leaves. In the marshes it grows taller and more slender, the circumference seldom being over twenty-four to thirty inches. In dry places the trunk is irregular, with larger and smaller portions, varying according to the degree of dryness of different summers (Verrill, 1902) "Fish ponds had slats over them, in summer to keep it cool, or a frame would be built over the pond. Palmetto leaves were put on the slats or frame for shade (SR); "Fishermen announced their catch by blowing through a conch shell; the catch was covered with palmetto leaves and each fish had a strip of palmetto through its mouth for ease in carrying" (Rawlins) "Slaves made rum out of palmetto berries" MH; NJ also says it was made out of berries; Davey Jones thought so too...; Servants used palmetto leaf as big fan, to keep flies away from jugs of sangaree" (Zuill & Zuill, 1955); Put leaves on floor for lying on (NJ) ; make fish bags to buy fish in the market; fishermen would cover fish in palmetto leaves, new leaves make a little line or string, can make rope with it. (NJ). use a new leaf, dip it in salt water, dry it and then weave it dry (NJ); Multiple uses Small (1913) claims that bibey was distilled from its berries. (!)?; The Palmetto was of the greatest use to the early colonists...The seeds, ground and mixed with meal, were baked into a coarse bread; later on, occupation was found for busy fingers in weaving the leaves into baskets in which onions were shipped to New York; -- but with the improvements of recent years this has all passed away, and with the exception of a few fans, made from the bleached leaves, no use is made of this once indispensable palm. (Reade (1885)) it is from the strong leaves of this tree that the well-known "Mudian Plait" is made. It is repaired in the following manner. The young leaves are tied about their centre to prevent them being torn into strips by the wind. When these leaves a fit for use i.e. before they have grown to harden course they are cut from the tree and placed in the sun to bleach. When sufficiently dry there smoked with burnt brimstone and tasks to render them white. When ready for use their cut into strips and different forms of pot made according to taste. Of the course reply is made labourers hat, the finer and more difficult of manufacture being used only for ladies bonnets and fancy basket work, specimens of which are sometimes produced of exquisite finish (Jones, 1873); large palmetto leaves were put in the tanks to purify the water. (along with little mullets to seat the mosquitoes (Stallard, 1899/1999); strips of leaves for tying up fish for sale (Stallard, 1899/1999) St. David's Islanders gathered these strips from the west end of Smith's Island</p>	

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		<p>(McCallan, 1948); crosses made from palmetto for Palm Sunday (within Anglican Church Community); burned following year in preparation for Ash Wednesday service. (Pearman); "The Oath of a Fisherman" I, A.B., do swear by my Old Fishpot that I will not give, barter or sell one grain of fish to any person who has had any hand in petitioning, making or contriving the fishpot and seine law, if they were starving, so long as the act is in force. So help me, Fishpot. (McCallan, 1948); Magical/Symbolic/Religious: Palmetto trees planted south and especially west of building so they can cast palmetto leaf shadows on the wall, roofs and other features of the buildings is a key cultural component of our bda aesthetic and a foundation of the natural beauty on which our economy is largely based. Like other foundations this one tends not to be noticed so much more often when it is gone and trees generally become fewer (HW)</p>	
<i>Saccharum officinarum</i> L.	sugar cane	Food: Children used to chew on the canes. Drink: Used for making rum. Medicine: St. David's: put centipede in rum and use on bite (NJ).	
<i>Sambucus nigra</i> L.	elderberry, West Indian elder	Food: Add flowers to pancake dough and fry (NJ); Beverage: If sufficient berries are spared from birds, an excellent wine can be made from them; such a wine is used by the poor in England (Small, 1913); elderberry makes really nice tea (Adams, 2011); grandmother would make elderberry wine (RC). Medicine: Make tea from leaves (NJ); a lotion and cooling ointment is made from its flowers (Small, 1913); mix leaves in tea with Father John as purgative (Duncan, n.d.); recommended for constipation and general tonic (Collett, 1987); "SR's grandfather (from the Azores) had cut down a pencil cactus and got milk in one of his eyes. Grandmother used to make tea with elderflower ... he always bathed his eyes with this tea, ever after; SR still uses elderflower tea in a compress for eyes – put in fridge, dip in cloth." (SR).	
<i>Sansevieria trifasciata</i> Prain.	mother-in-law's tongue	Material culture: pull strings out of it and use to clean tongue and teeth (MH).	
<i>Sapindus saponaria</i> L.	soap-berry tree bermuda berry	Material culture: Black seeds, very hard, sometimes used for beads and buttons, not affected by soaking in the sea (Verrill, 1902).	
<i>Sarcocornia perennis</i>	woody glasswort, marsh samphire,	Food: Very succulent and used in pickles (Salicornia	

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(Mill.) A.J. Scott	wild coral, guinea-bead	fruticosa) (Small, 1913).	
<i>Sargassum</i> spp.	Sargassum, gulf seaweed, seagrass	<p>Material culture: Gathered for garden – Whale Bay with horse and 2-wheeled cart; put around bananas (no need to rinse); used as part of compost, layered with manure (SR); "It was thrown up by means of long-handled manure forks (pitch forks to Bermudians). If the weed was thick on the water it was gathered with scoops made of barrel hoops laved with spun yard and lashed to long pine handles, at least my grandfather gathered it in that manner, but I do not think the practice was general." (McCallan, 1948).</p> <p>Magical/Symbolic/Religious: If seaweed is considered here - the smell of seaweed washed up on the beach reminds me of childhood days exploring the shoreline (now I just think of fertilizing the vegetable patch) (SM).</p>	
<i>Scaevola lobelia</i> L.	black berry, ink berry	<p>Material culture: "The juice makes a nearly indelible black stain, and is said to be sometimes used for marking linen." (Verrill, 1902).</p>	
<i>Schinus terebinthifolia</i> Raddi	Mexican pepper tree, Brazilian pepper tree	<p>Decoration: Wreaths for Christmas, sprayed with lacquer (RC).</p>	
<i>Sicyos angulata</i> L. (accepted name unknown)	wild bryony	<p>Medicine: Found about church cave, Paynter's Vale; "It is used by the natives as a medicine for fevers and colds." (Small, 1913).</p>	
<i>Sida carpinifolia</i> L. f.	wire weed	<p>Medicine: Poultice of crushed wireweed applied to boils (Collett, 1987); has been pointed out as 'strong back', and 'turnera'; used for roots drink (KM, MH); make a poultice of crushed wire weed and apply to boils (Stallard, 1899/1999); used for bee-sting (possibly chewed) (McCallan, 1948); flowers sometimes used to make a healing ointment, being boiled in lard, which is then strained and allowed to cool (Jones, 1873). Conservation/Ecology: Alluded to in laws of 1699 (Small, 1913, check Lefroy).</p>	
<i>Sisyrinchium bermudiana</i> L.	bermudiana	<p>Magical/Symbolic/Religious: "The flowers, which begin to appear in April, are as dear to the Bermudian as the primrose to the Englishman." (Lefroy, 1884); called 'Sally-Bassett flower', comes out in April (RC); [closely associated by some with the story of Sally Bassett; a symbol of resistance, regrowth, regeneration, survival; the unofficial flower of Bermuda; associated with endemism for many</p>	SW33; SW44; SW45; SW72; SW141

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		Bermudians. They know and respect that it is unique to Bermuda]; in terms of flowers Lilies and Bermudiana and oleander all grew around my home, morning glory I'd admire and chop down to stop it choking other plants (AKL). Additional notes: Gather seed heads and scatters them on edge of lawn (SR); gather seed heads and scatters on property (EH); RS once brought seeds to us in Vancouver as a gift (SW).	
<i>Smyrniium olusatrum</i> L.	alexanders, alegazander, horse parsley	Food: used to make 'glass candy'; root, eat, tastes like parsnip (MH); I used to eat what we called Alegazander roots... the plant in the ground look like a beet leaf without the red and would grow wild in gardens or near gardens. We would pull the plant (like pulling carrots) then strip the root ...peel off an outer layer of the root and eat the white interior...it has a bitter sort of tangy taste...ate plenty.... (KW) Medicine: The medicinal property of the root macerated in rum are considered remedial in rheumatism, used both externally and internally; also for sprains and swollen joints (Small, 1913); carminative (Small, 1913); "This plant is useful in liver complaints, the root being made either into poultices to alleviate inflammation, or infused and the liquid drank. The seeds are boiled and the decoction used as a drought to cleanse the liver." (Jones, 1873); seeds and grated root soaked in rum, left to stand in sun for 2 weeks in closed container; poultice good for joints; young leaf shoots edible (Duncan, n.d.) (DWJ); with ginger, made into cough drops (Collett, 1987).	
<i>Solanum tuberosum</i> L.	potato	Food: "I have seen 100 or more barrels of seed potatoes bought for the early planting; each potato of these one hundred barrels must be cut in five or six pieces, each with its precious budding eye. This was a job for evenings and for the family; a neighbor dropping in for a visit would promptly provide himself with a knife and join us all at the task. My mother too would lend a hand when the younger children were in bed. An oil lamp set on a barrel dimly lighted this homely scene and as each potato was thoughtfully handled there was the careful slice, slice into the bushel baskets to an accompaniment of friendly chat and gossip." (Fessenden, 1945). Medicine: "For caked breast: take large potatoes; put two or more in a woollen stocking. Crush them and apply to breast, hot as can be borne; repeat constantly until relieved." (Stallard, 1899/1999).	

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<i>Solidago sempervirens</i> L.	seaside goldenrod, salt-marsh goldenrod	Material culture: Whole plant, ground, put in water or oil to make paint (golden colour) (MH).	
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Material culture: “These buds give the tree another name – fountain tree – for they hold compressed water which spurts forth when small boys use them as water pistols ...” (Hannau, n.d.).	
<i>Sporobolus indicus</i> (L.) R. Br	bullgrass	Material culture: Youth used to tie the grass across paths to trip people (McCallan, 1948) (LW, RS, RC); the dried spikelets of bull-grass were made into dish-mats (McCallan, 1948).	
<i>Stachytarpheta indica</i> (L.) Vahl	Jamaica vervain	Medicine: It is useful in cases of yellow fever, the plant being boiled for tea, which given to the patient promotes perspiration (Jones, 1873).	SW153
<i>Stenotaphrum secundatum</i> (Walter) Kuntze	crab grass, St. Augustine grass	Food: Eat seeds (MH). Material culture: Used in mattresses – dry in sun, turn over; stuff mattress; used for bedding for pigs (DJ). Magical/Symbolic/Religious: “Sweetheart grass (crab-grass with chlorotic streak) was put to a unique use; when placed in the left shoe it was credited with leading one into the presence of one's future spouse, but – speaking from personal experience – was not the least bit helpful.” (McCallan, 1948).	SW56; SW104; SW117; SW47
<i>Swietenia mahagoni</i> (L.) Jacq.	mahogany tree	Material culture, Magical/Symbolic/Religious: Wood, commonly used and symbol of wealth (impoverished people had cedar; now cedar is a sign of wealth, esp. 'old Bermuda' money, culture) (RC).	
<i>Tagetes</i> sp.	marigold	Medicine: As with poppy: add sugar, put in jar in the sun.	
<i>Tamarindus indica</i> L.	tamarind	Food: Cook with green tamarind in stew for seasoning. Beverage: Drink (NJ); when stewed with molasses and brown sugar makes an excellent summer beverage (Zuill & Zuill, 1955); “To make Tamarind drink – hot water, seep it, put in fridge, sweeten it (RC). Material culture: Wood for making gun carriages (Stallard, 1899/1999); would collect it from the Zuill’s property [at Orange Grove] (NJ).	
<i>Tanacetum parthenium</i> (L.) Sch. Bip.	feverfew	Medicine: Used as a tonic; escaped from country cottages (Small, 1913).	

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<i>Tanacetum vulgare</i> L.	tansy	Food: Kitchen use, with parsley, thyme, sage, sweet marjoram (Stallard, 1899/1999). Medicine: Mostly found around country cottage, greatly used as a tonic (Small, 1913); is good for appetite, rheumatism, and to relieve stomach pains (Collett, 1987); add boiling water to tansy leaves and drink (for stomach pain) (Stallard, 1899/1999).	
<i>Taraxacum officinale</i> F.H Wigg	dandelion	Food: Leaves blanched for salads, and young boiled and used as vegetable (Small, 1913). Beverage: Roasted for coffee (Small, 1913); root as coffee (Collett, 1987). Medicine: Roots medicinal as tonic (Small, 1913); good for anaemia, jaundice and poor appetite (Collett, 1987). Magical/Religious/Symbolic: Use clocks for 'he loves me' (NJ).	SW147; SW148; SW149; SW167; SW172; SW173; SW180; SW232; SW233; SW234
<i>Tetragonia tetragonoides</i> Murray	New Zealand spinach	Food: "My mother every time we went to the beach, picked it. I still pick it when I can. At that time you had to walk over it, there was so much. Steam it, add butter; put tender tips in salad." (SR).	SW162
<i>Thymus vulgaris</i> L.	thyme	Medicine: As a gargle for coughs, colds, flu.	
<i>Tillandsia usneoides</i> (L.) L.	Spanish moss	Medicine: "When powdered and mixed with lard, it has curative powers for piles. Only in a few gardens." (Small, 1913). [now widespread, mainly on <i>Juniperus bermudiana</i>]	SW196
<i>Torilis japonica</i> (L.) Gaertn	Queen Ann's lace, erect hedge parsley	Material culture: Used as a pretend wedding ring, flowers placed between fingers; used as pretend bridal bouquets with 'money plant' (RC).	SW194
<i>Toxicodendron radicans</i> subsp. <i>radicans</i>	poison ivy	Toxin: "But let me tell you, that there cannot be/ A profit without discommodity; / For though no poisonous Living thing indeed / Inhabits there, yet grows a (l)Poyson-Weed, Whose very sight infects some, and its Juice/ Will make men itch, as if a thousand Lice /About their bodies creep, in painful Wheals / And Pimples at the last it self reveals, / But never kills; Its Couterpoyson is / Sage of the Mountain, which you cannot miss / At all times for to find, in places where /This Weed is, for it grows to't very near./ Of Fowls they have enough, such as are Hens;...." (Hardy, 1670)	
<i>Tradescantia fluminensis</i> Vell.	wandering jew	Medicine: <i>Tradescantia pallida</i> ? 'moses-in-the-bulrushes'; make a tincture, put on cuts (MH).	

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<i>Triticum</i> sp.	wheat	Food: "Wheat grows well in some places, and produces fair grain. In former years it was more extensively cultivated, and bread was frequently made in farm houses, but of late years its cultivation has ceased all together." (Jones, 1873).	
<i>Tropaeolum majus</i> L.	nasturtium	Food: Fruit, flowers and leaves eaten, nectar sucked by children; blood tonic (Collett, 1987); cook seeds in vinegar and bottle; eat leaves on sandwiches, flowers in salad (SR); seeds commonly referred to as source of capers (DWJ) (MH); nectar from flower spurs sucked by children (WF); leaves eaten in sandwiches (RC); flowers eaten in salads (RC); fruit pickled, leaves occasionally eaten (Britton, 1918). Magical/Symbolic/Religious: I have always been in love with nasturtiums. I met them for the first time in Bermuda and for me they represent new beginnings...pure delight! (JY); Nasturtiums - the beautiful strangeness of their scent which appropriately conjures up the bitter sweetness of first crush and rejection as I daydreamed along the railway trail on my way to school (HF).	
<i>Typha domingensis</i> Pers.	lesser bulrush, narrow-leaved cattail	Material culture: Baskets, plaiting (McCallan, 1948).	
<i>Urtica</i> spp.	stinging nettle	Medicine: "An infallible remedy for the stings inflicted by this plant is to rub dock (mullein) leaves on the affected parts." (Small, 1913); the young shoots in spring are eaten as a vegetable and are a blood purifier (Small, 1913); bathe for chicken pox, helps to 'dry off' the chicken pox; drink stinging nettle tea for chicken pox (Adams, 2011); anaemia, arthritis, diabetes, eczema, piles, hair growth, hypertension, nose bleeds, jaundice; tea to bath measles patients (Collett, 1987); "Steep a large bunch of nettles in boiling water. Bathe. This is supposed to bring the measles out quickly." (Stallard, 1899/1999).	SWQC15; SW74
<i>Valerianella locusta</i> (L.) Betcke	fedia	Food: Leaves said to be excellent in salad – on St. David's Island (Small, 1913).	
<i>Verbascum thapsus</i> L.	dock, Bermuda tobacco	Material culture: "It was said that in place of rouge ladies coloured their cheeks by rubbing them with the large woolly leaf of mullen which we called dock." (McCallan, 1948); in many homes dock leaves were used instead of mops for washing dishes (Stallard, 1899/1999); the woolly leaves are used by cottagers for cleaning plates and dishes (Jones, 1873). Medicine: Sometimes called Devil's Tobacco, the	

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		<p>leaves being smoked for asthma (Small, 1913); "Early Bermudians dried and rolled leaves and smoked them to help relieve asthma. Therefore it was given the name 'Bermuda tobacco'. The strained infusion counteracted hay fever and chronic bronchitis. A poultice of 1 oz fresh flowers with olive oil on a low heat until moisture evaporates was used to counteract piles; mixture pressed through muslin and stored in airtight jar." (Duncan, n.d.). Additional notes: Based on Jones' description of the 'noble' spike of yellow flowers rising five feet high around Bermuda, it is clear that this plant was once far more common here than it currently is. Reason for its demise is unknown. I have seen several plants on Spice Hill, but not many if any elsewhere.</p>	
<i>Yucca aloifolia</i> L.	Spanish bayonet	<p>Material culture: 'Needle and thread'; rope (NJ); children make a primitive musical instrument from the leaves (Zuill); "Native uses for the plant are as needles and thread combined and for a liquid which ferments into a potent liquor." (Hannau); with stiff leaves, called 'stickers', made mouth organs (McCallan, 1948).</p>	
<i>Zanthoxylum flavum</i> Vahl.	yellowwood	<p>Material culture: Wood, inlay (in furniture – Clebrig) yellowwood desk in Verdmont inventory; decorative 'stringing' in cedar furniture; caulk bead moulding at Mt. Pleasant (KA). Magical/Symbolic/Religious: yellowwoods found with an inscribed brass plate and a cross nailed to it; from late 1500s; also marked trees from 1630-1640; on Ireland island, and Cooper's Island, possibly denoted Spanish treasure (Verrill, 1902). Cash crop: Historically exported. Conservation/Ecology: Very rare now in Bermuda, an important part of any native planting program (DW).</p>	
<i>Zea mays</i> L.	corn	<p>Food: "Fish Patatos and a sort of loblolly made of Indian Corne and water being theire most accustomed Food and Subsistance their genll Drink is adams ale wch they receive by Shedd's into Sisters Dug in a soft rock and Plastered with tarris." (Governor Robinson); had to grow 2 acres per person in early 1600s; corn was prepared for cooking by beating or pounding in mortars; boys required to help in preparation of corn on returning from school; "Within my memory poor people bought imported corn, beat it in the old mortars, and cooked it for food." (McCallan, 1948); first raised in 1610, was at first, and for many years after, the principal article of vegetable food though sweet potatoes, common potatoes, and pumpkins were largely used (Verrill,</p>	

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		<p>1902); one of the crops grown by the three kings (1612); 1619 story about how the corn left unhusked by the lazy survived the weevils better than that husked by the virtuous; 1639 shipwrecked Spaniard describes how corn was grown on each little farm and there was plenty; 1792, Daniel Wadsworth complains how little there was and how expensive (Collett, 1987); “Christopher Carter, Edward Chard and Edward Waters succeeded in growing corn, beans, melons, pumpkins, tobacco. They grew an acre of corn (Maize), built a cabin, made salt from sea-water, cured bacon, held a reserve of turtles and searched for and found ambergris. They built their home and planted their garden on Smith's Island.” Material culture: White inner leaves used as fresh filling for truckle bed and cot mattresses; outer husks bedding for livestock, dry kernel for fodder, cobs for fuel (Fessenden); husks for plaiting hats (Carter House); use dried corn silk for mattresses (SR); use corn husk for mattresses (NJ). [For more on maize cultivation see McCallan, 1948, page 59.]</p>	
<i>Zingiber officinale</i> L.	common ginger	<p>Food: “And obviously in food. You could add it to make coconut cakes and add that ginger in there. That’s delicious.” (Adams, 2011). Beverage: Homemade ginger beer (Stallard, 1999; RC); ginger beer – fresh ginger, mashed, with warm water and yeast (RC); homemade ginger beer with sugar, water, yeast; commonly made (RC; Adams, 2011); “Not many people grow it. You may have a few people have it in their garden. Obviously, we know ginger as our ginger beer. I always wonder how we actually became famous for ginger beer when we actually don’t grow it, but we utilize the ginger to make Bermuda ginger beer.” (Adams, 2011); Bermuda’s famous drink ‘Dark N Stormy’ with ginger beer and dark rum (RC). Medicine: A tea made from the root is used for colic, spasms, and wind. (Collett, 1979) “Good for soothing the stomach. [for motion sickness], and also to help rid you of gas and upset stomach. That’s another good way to use ginger.” (Adams, 2011)</p>	
POACEAE (general)	grass	<p>Material culture: dry cow dung mixed with grass awns used as fuel for cooking in place of wood or coal (Musson, 1979).</p>	