The Botanic Mission to Mozambique (1942-1948): contributions to knowledge of the medicinal flora of Mozambique

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Abstract

This article reviews the historical and scientific findings of the Botanic Mission to Mozambique (1942-1948) under the Tropical Botanic Garden of the Instituto de Investigação Científica Tropical, in Lisbon, highlighting the collectors' field notes with the aim of identifying the traditional medicinal uses of Mozambican flora. Having collated information on 71 *taxa* (70 species and one genus), the medicinal usage of 34 species presumably not yet reported in Mozambique was identified, including five whose therapeutic use still had not yet been described in the African continent. Overall, 58 uses presumably not yet reported in Mozambique were recorded.

Keywords: medicinal plants; Botanic Mission to Mozambique; field notes; traditional medicine; medical botany.

Throughout History most medicine has been made from plants. The knowledge of the properties of plants and their uses is the basis of many traditional health care systems and still plays a central role in the discovery and development of new drugs. In Africa, plants have a long history of use for the treatment of different diseases and complaints and have long been the source of important products with nutritional and therapeutic value (Hostettman et al., 2000, p.973).

According to the World Health Organization (WHO), up to 80% of the population in Africa uses traditional medicine to help meet its health care needs (WHO, 2002, p.1). Traditional medicine is still the most accessible health care system, mainly in rural areas, where national health care systems are scarce, poor or practically non-existent. Plants play a fundamental role in communities' well-being as most of the African population not only depends, but largely relies on the use of traditional medicines as well as on the services provided by traditional medical practitioners, whose knowledge about plant species and their ecology is invaluable (Cunningham, 1993, p.1-4).

Like other southern African countries, Mozambique is an important repository of vegetal diversity. Harbouring about 5,500 species of plants, it is estimated that at least 800 are used for medicinal purposes (da Silva, 2004, cited in Krog, Falcão, Olsen, 2006, p.2). Research on this subject is recent and largely enrolled in the country's trajectory since its independence, especially since the nineties, trying to follow the WHO resolutions towards the optimization of the use of traditional medicine and promotion of research on medicinal plants.

In this context, ethnobotanical studies are of particular importance. The collaboration between different domestic and international research groups has resulted in works such as those of Ribeiro et al. (2010) and Bruschi et al. (2011) which contribute to the preservation of traditional knowledge and practices related to plants and their therapeutic uses. Moreover, the identification of species with medicinal uses (including the parts of plants used, the preparation processes, the modes of administration and the different pathologies associated with them) is a fertile ground for studies aiming at the scientific validation of their properties as well as the safety, efficacy and quality of traditional medicines. One might refer, in this scope, works that have been developed by the newly established Center for Research and Development on Ethnobotany (2009, Namaacha, Mozambique) in partnership with the University Eduardo Mondlane (Mozambique) and the University of Lisbon (Portugal), as is the case of Marrufo et al. (2013).

Historical documentation, in turn, prefigures an additional contribution to the inventory of plant species with therapeutic value. Works such as those of Roque (2001, 2013) have demonstrated the potential of the information held in Portuguese sources towards a better understanding of the knowledge and practices related to the use of medicinal plants and the evolution of its geographical distribution in Mozambique.

In this perspective, the historical and scientific legacy produced by the activity of the various scientific missions conducted within the frame of Portuguese colonialism in the second and third quarters of the twentieth century embodies a heritage which urges to reconsider, reaffirming the role of science in favor of the current regional and global challenges. Such is the case of the documental corpus produced during the Botanic

Mission to Mozambique (BMM) (1942-1948) and housed in the Tropical Research Institute (Lisbon, Portugal).

By the early twentieth century Mozambique was probably one of the few African territories whose flora was almost unknown. This situation was overcome with the outputs of the BMM expeditions carried out between 1942 and 1948. Indeed, its phytogeographic survey produced more than 7,600 herbarium samples, including the subsequent description of 25 new species to science. Along with the herbarium specimens, the documentation of the BMM includes cartographic, photographic and written materials. Among these, we highlight the collectors' field books where references to local medicinal uses of the sampled plants were made, but whose information was never sufficiently compiled and disclosed.

Therefore, by stressing the importance of the Portuguese sources for this knowledge, and contextualizing the BMM in space and time, we bring to light information regarding the medicinal uses of flora contained in the yet unpublished field books, seeking to highlight uses not yet mentioned in other sources, namely through: i) a literature review on the medicinal uses of the species identified as such by the BMM; ii) a categorization of their uses and comparison with reported uses for Mozambique and other African countries; iii) mapping the distribution of the species with medicinal uses based on the herbarium specimens collected by the BMM.

In view of the multiple, recent and accelerated dynamics that are causing the depletion of African vegetal resources and the rapid decline of traditional knowledge about the properties and uses of medicinal plants (Hamilton, 2004, p.1485), we hope to contribute to the knowledge of medicinal plants in Mozambique and their distribution, as well as to the valorization and preservation of traditional knowledge and practices related to its use.

The Botanic Mission to Mozambique (1942-1948): general notes

Given the urgency to fully explore the overseas territories under Portuguese jurisdiction, assessing their resources and potentialities as essential to build the colonial program, the Portuguese Estado Novo ("New State") (1933-1974) instituted one of the most important and paradigmatic bodies to assert its ideology: the Board of Geographical Missions and Colonial Research (Junta das Missões Geográficas e de Investigações Coloniais) (1936-1951), renamed Board of Geographical Missions and Overseas Research (Junta das Missões Geográficas e de Investigações do Ultramar) (1951-1973), particularly on what the administration of the overseas territories concerned. Combining knowledge and power, this institution established the basis for the colonizing process, both scientifically and technically, drawing on the contributions of all branches of knowledge for the affirmation and development of a united empire in its racial and geographic diversity. The link between scientific research and Portuguese colonial policy, and particularly the case of this institution, was recently reviewed by Castelo (2012).

As such, the different missions delineated by the Board played a key role in the knowledge and exploration of the soils, floras, faunas and populations of the overseas territories. Such was the case of the Botanic Mission to Mozambique, undertaken in an attempt to address the scarcity and discontinuity of the harvests carried out since the early thirties in both a personal and professional record by residents and staff of the then

colony of Mozambique. The BMM was enacted under the Portuguese Overseas Scientific Occupation Plan (Plano de Ocupação Científica do Ultramar Português) drawn up by the Board and presented to the Government in 1941 as emerging in a new cycle of overseas activity (Conde, Martins, 2011, p.1126-1132). In the context of a worldwide conflict, the Plan stressed the need to overcome previous improvisations and to intensify the scientific research as a supporter of colonization and rational exploitation of colonial resources (Portugal, 1945, p.11-13).

Issued with the primary goal of conducting the studies and gathering the material necessary to execute the Phytogeographic Map of Mozambique to be included in the Atlas of the Portuguese Colonial Empire (Portugal, 1942, p.404), the BMM unfolded in three expeditions: 1942, 1944-45 and 1947-48. During these expeditions, the botanical and agricultural recognition of more than seventy thousands kilometres of routes was carried out, asserting the centrality and breadth of the scientific knowledge of flora in the context of an imperial economy that sought to supply itself from colonial raw materials.

Nevertheless, beyond the identification of species and the ecological characterization and phytogeographic study of the colony, as well as the observations related to the political and economic agenda that justified its arrangement, the BMM documented numerous expressions of the territory and its people. The mission thus unravelled the material cultures, traditional knowledge and practices of the population, highlighting the different uses of local botanical resources associated with the collected specimens. Such was the case of the practices related to the use of plants for therapeutic purposes. Thus, for each sample, along with its in loco identification, usually regarding the taxonomic level of family or genus, information about its place of harvest, relevant to the characterization of its habitat, vernacular name and habit (growth form), were recorded. In some cases, the medicinal uses were also recorded, including the parts of the plants used, the preparation processes, the modes of administration and the different pathologies associated with them.

Although the recognition of the therapeutic uses of plants was not among the aims of the BMM, the field books related to the collections gathered during this Mission (Mendonça, Garcia, Rocha da Torre and Barbosa collections) embody an assemblage of major scientific importance to the knowledge, preservation and divulgation of the tangible and intangible heritage of Mozambique. They not only allow the systematization of a large body of information regarding the different collected specimens, including those listed as medicinal, but also the comparison with other therapeutic uses reported for Mozambique and other African countries. Thus reappraising it in the light of the current regional and global challenges, largely overwhelming the colonial context of their production.

Compilation and organization the ethnobotanical information and medicinal use of the Mozambican flora

Based on the Botanic Mission to Mozambique collectors' field books available at the Tropical Botanical Garden Herbarium of the Tropical Research Institute (LISC), and currently available in JSTOR,[1] we surveyed and systematized the information relating to those collected

specimens identified as medicinal. This includes the vernacular name, the habit (growth form) and the medicinal use (including the parts of plants used, the preparation processes, the modes of administration and the different pathologies associated with them). The survey was based on the harvests from the three BMM campaigns: the numbers 1 to 1704, 1800 to 3493 and 3501 to 4511 from Mendonça collection (first, second and third campaigns, respectively), 1 to 1001 from Garcia collection, 7000 to 8082 from Rocha da Torre collection and 616 to 1740 from Barbosa collection (third campaign).

The nomenclatural update of the *taxa* and their classification in the corresponding families was supported by the African Plants Database (2012) and Tropicos database (s.d.), simultaneously carried out with the cataloging and databasing of the specimens.

Taxa native distribution was determined according to the 8 biogeographic realms defined by Olson et al. (2001), namely: Nearctic, Palearctic, Neotropic, Afrotropic, Indo-Malay, Australasia, Oceania and Antarctic. The *taxa* distribution in Mozambique was assessed after mapping the specimens identified as medicinal, as well as others from the same *taxa* collected by the BMM. These were georeferenced based on the information from the labels of their herbarium sheets, as well as from the field books, which provided accuracy for the corresponding geographical coordinates. Georeferencing was accomplished using the software Specify 6 and ArcGIS 9.3 (ESRI, 2009), as well as gazetteers such as Geolocate (Bart et al., 2010), Biogeomancer (2005) and GeoNames (Wick, s.d.).[2]

In order to ascertain the potential of the information contained in the BMM's field books, various bibliographic sources (Jansen, Mendes, 1983, 1984, 1990, 1991; Watt, Breyer-Brandwijk, 1962; Burkill, 1985, 1994, 1995, 1997, 2000) and online databases (Sepasal, 1999; Prota, s.d. e Prelude, 2003) on medicinal plants and their traditional uses in Mozambique and other African countries were consulted.

Due to the large diversity of pathologies found in the literature review, medicinal uses were grouped according to the categorization available in the Sepasal database (1999). This publication distinguishes 24 diseases categories (Carvalho, 2006, p.107) from which 19 were adopted. From these, we grouped the circulatory system and blood system categories into a single category, and skin/subcutaneous cellular tissue diseases and injuries into another. We also added a category related to oral hygiene. It was therefore possible to distinguish 18 categories of diseases: circulatory and blood systems; digestive system; genitourinary system; immune system; muscular-skeletal system; nervous system; respiratory system; sensory system; nutritional disorders; mental disorders; pain; poisoning; pregnancy/birth/puerpuerium; oral hygiene; infections/infestations; neoplasms; skin/subcutaneous cellular tissue and injuries; unspecified medicinal disorders.

In addition, the *IUCN Red List of Threatened Species* (IUCN, 2012) was consulted to determinate the conservation status of these species.

Contribution of the Botanic Mission to Mozambique to the knowledge of the medicinal flora of the region

From almost 7,600 collected specimens, the Botanic Mission to Mozambique documented the medicinal use of 73 specimens corresponding to 71 *taxa* (seventy species and 1 genus). These

are distributed over fourty families, 67 genera and seventy species. For one of the *taxa*, identification was only possible to the genus level (*Pycnostachys*). The most represented families are Capparaceae and Fabaceae (six species), followed by Vitaceae (five species), Apocynaceae and Phyllanthaceae (four species). Twenty-six families are represented by only one species (Chart 1).

Chart 1: Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Acanthaceae					
Thunbergia lancifolia T.Anderson	"Plantas empregadas na cura da lepra" [leprosy]	Infections/ infestations	Infections/ infestations; genitourinary s.; respiratory s.; pain	Skin/ subcutaneous cellular tissue and injuries	Prota (s.d.); Hyde et al. (2002); Jansen, Mendes (1983, p.33-35).
Achariaceae					
Hydnocarpus venenata Gaertn.	"Cura da lepra" [leprosy]	Infections/ infestations	Infections/ infestations; skin/ subcutaneous cellular tissue and injuries		Wild, Vidigal (1973, p.2); Watt, Breyer-Brandwijk (1962, p.363).
Amaranthaceae					
Cyathula natalensis Sond.	"Cura as manchas da pele" [skin blemishes]	Skin/ subcutaneous cellular tissue and injuries	Skin/ subcutaneous cellular tissue and injuries; infections/ infestations		Jansen, Mendes (1983, p.55, 56); Watt, Breyer-Brandwijk (1962, p.18).
Anacardiaceae					
Lannea edulis (Sond.) Engl. var. *edulis*	"Plantas empregadas na cura da lepra" [leprosy]	Infections/ infestations	Digestive s.	Infections/ infestations; circulatory and blood s.; digestive s.; genitourinary s.; sensory s.; pain; skin/ subcutaneous cellular tissue and injuries; pregnancy/birth/ puerpuerium	Hyde et al. (2002, 2007); Sepasal (1999); Jansen, Mendes (1983, p.85-87).
Apocynaceae					
Carissa bispinosa (L.) Desf. ex Brenan	"Raiz macerada é empregada para aumentar a virilidade, ou mastigar a raiz" [root; macerated; increases virility]	Genitourinary s.	Digestive s.; muscular-skeletal s.; infections/ infestations		Prota (s.d.); Jansen, Mendes (1984, p.27-30).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Apocynaceae					
Cryptolepis oblongifolia (Meisn.) Schltr.	"Raiz medicinal, antiofídica, segundo informações dos indígenas" [root; antiophidic]	Poisonings	Muscular-skeletal s.; sensory s.; pain; infections/ infestations	Digestive s.; genitourinary s.; muscular-skeletal s.; respiratory s.; sensory s.; pain; infections/ infestations; skin/ subcutaneous cellular tissue and injuries	Prota (s.d.); Jansen, Mendes (1984, p.197-200); Burkill (1997).
Diplorhynchus condylocarpon (Müll. Arg.) Pichon	"Serve a madeira para fazer arco de azagaia e a seiva serve para curar ferida" [sap; wounds]	Skin/ subcutaneous cellular tissue and injuries	Digestive s.; pain	Skin/ subcutaneous cellular tissue and injuries; circulatory and blood s.; digestive s.; genitourinary s.; respiratory s.; sensory s.; infections/ infestations; pain; poisonings; pregnancy/birth/ puerpuerium	Prota (s.d.); Sepasal (1999); Prelude (2003); Jansen, Mendes (1984, p.51-57).
Strophanthus petersianus Klotzsch	"Raiz pisada medicinal" [root; crushed]	Unspecified medicinal disorders		Unspecified medicinal disorders	Sibis (1999); Prota (s.d.); Jansen, Mendes (1984, p.102).
Aristolochiaceae					
Aristolochia albida Duch.	"A raiz pisada serve para combater a mordedura das cobras" [root; crushed; snake bite]	Poisonings	Poisonings; pregnancy/ birth/ puerpuerium; infections/ infestations; pain	Poisonings; digestive s.; genitourinary s.; respiratory s.; sensory s.; skin / subcutaneous cellular tissue and injuries; infections/ infestations; pain	Jansen, Mendes (1984, p.167-171); Burkill (1985, p.214); Watt, Breyer-Brandwijk (1962, p.118, 119).
Asparagaceae					
Asparagus africanus var. *puberulus* (Baker) Sebsebe	"Planta medicinal. A casca da raiz, quente, cura a dor de dentes (informação indígena)" [roots' bark; toothache]	Pain	Digestive s.	Digestive s.; genitourinary s.	Nwafor et al. (2007, p.492).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Asteraceae					
Helichrysopsis septentrionalis (Vatke) Hilliard	"(para limpar o cú das crianças)" [to wipe children butt]	Unspecified medicinal disorders			
Linzia gerberiformis (Oliv. & Hiern) H.Rob.	"Os indígenas fazem cozimentos medicinais para aumentar a virilidade" [cooked; increases virility]	Genitourinary s.		Genitourinary s.; digestive s.; infection/ infestations, skin/ subcutaneous cellular tissue and injures; pain	Prota (s.d.); Burkill (1985, p.509).
Begoniaceae					
Begonia oxyloba Welw. ex Hook.f.	"Remédio para dor de barriga" [bellly pain]	Digestive s.		Unspecified medicinal disorders	Prota (s.d.).
Burseraceae					
Commiphora neglecta I.Verd.	"esfoliando a epiderme" [exfoliating the skin]	Skin/ subcutaneous cellular tissue an injures		Unspecified medicinal disorders	Paraskeva et al. (2008, p.673-674).
Capparaceae					
Capparis viminea Hook.f. & Thomson ex Oliv. var. *viminea*	"Raiz antiofídica, em papa cozida, ingerida, segundo informação local" [root; cooked; antiophidic]	Poisonings		Muscular-skeletal s.; respiratory s.; nervous s.; skin/ subcutaneous cellular tissue and injures	Burkill (1985, p.325).
Capparis viminea var. *orthacantha* (Gilg & Gilg-Ben.) DeWolf	"Pisa pau para as dores de cabeça" [crushed; headache]	Pain		Muscular-skeletal s.; respiratory s.; nervous s.; skin/ subcutaneous cellular tissue and injures	Burkill (1985, p.325).
Maerua triphylla var. *pubescens* (Klotzsch) DeWolf	"Serve para pôr na cabeça em cocção de folhas quente" [leaves; decoction; put in the head]	Unspecified medicinal disorders	Genitourinary s.; sensory s.; infections/ infestations	Genitourinary s.; muscular-skeletal s.; respiratory s.; sensory s.; pain; skin/subcutaneous cellular tissue and injuries; infections/ infestations; poisonings	Sepasal (1999); Prota (s.d.); Jansen, Mendes (1990, p.259-262).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Capparaceae					
Boscia foetida subsp. *rehmanniana* (Pestal.) Toelken	"As raízes pisadas em água são boas para beber" [root; crushed in water; is good to drink]	Unspecified medicinal disorders		Unspecified medicinal disorders; genitourinary s.	Watt, Breyer-Brandwijk (1962, p.159); Schmidt, Lötter, McCleland, (2002, p.122).
Cladostemon kirkii (Oliv.) Pax & Gilg	"Raiz medicinal como a da mandioca" [medicinal root]	Unspecified medicinal disorders	Digestive s.; genitourinary s.; muscular-skeletal s.; respiratory s.; sensory s.; infections/ infestations ; pregnancy/birth/ puerpuerium; nutritional disorders	Unspecified medicinal disorders	Ribeiro et al. (2010, p.11); Jansen, Mendes (1990, p.223-228).
Thilachium africanum Lour.	"As folhas pisadas servem para fazer rebentar os furúnculos" [leaves; crushed; busting boils]	Skin/ subcutaneous cellular tissue an injures	Digestive s.; muscular-skeletal s.; respiratory s.; pain	Infections/ infestations; pain; poisonings	Sepasal (1999); Prota (s.d.); Jansen, Mendes (1990, p.265-271); Ribeiro et al. (2010, p.11).
Celastraceae					
Gymnosporia senegalensis (Lam.) Loes.	"Planta medicinal contra a desinteria amebiana (infuso de folhas)" [leaves; infusion; amoebic dysentery]	Infections/ infestations	Infections/ infestations; digestive s.; genitourinary s.; nervous s.; respiratory s.; pregnancy/birth/ puerpuerium	Infections/ infestations; digestive s.; genitourinary s.; muscular-skeletal s.; nervous s.; respiratory s.; sensory s.; skin/ subcutaneous cellular tissue and injuries; poisonings; pain; pregnancy/birth/ puerpuerium; neoplasms	Ribeiro et al. (2010, p.11); Jansen, Mendes (1984, p.14, 1990, p.181, 202); Jansen (1991, p.41-53); Watt, Breyer-BrandwijK (1962, p.183); Palgrave et al. (1981, p.501); Burkill (1985, p.357); Prelude (2003); Sepasal (1999).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Cleomaceae					
Cleome angustifolia subsp. *petersiana* (Klotzsch) Kers	"As sementes esmagadas e postas em infusão são úteis contra a diarreia" [seeds; crushed and put into infusion; diarrhea]	Digestive s.		Infections/ infestations; pain	Sepasal (1999).
Combretaceae					
Combretum collinum Fresen.	"Folhas, esmagadas, para as dores de dentes" [leaves; cruched; toothache]	Pain	Pain; digestive s.	Pain; digestive s.; infections/ infestations; poisonings; respiratory s.; sensory s.; circulatory and blood s.	Jansen, Mendes (1991, p.109-117); Burkill (1985, p.393, 394); Sepasal (1999); Prelude (2003).
Convolvulaceae					
Bonamia mossambicensis (Klotzsch) Hallier f.	"As raízes são medicinais" [medicinal roots]	Unspecified medicinal disorders	Respiratory s.	Unspecified medicinal disorders	Jansen, Mendes (1990, p.48); Prota (s.d.).
Cucurbitaceae					
Cucumis hirsutus Sond.	"Plantas empregadas na cura da lepra … o seu carvão põe-se nas feridas" [ash; leprosy]	Infections/ infestations	Digestive S.; genitourinary s.; muscular-skeletal s.	Respiratory s., nervous s.	Prota (s.d.); Watt, Breyer-Brandwijk (1962, p.352); Bruschi et al. (2011, p.549); (Sobiecki, 2002, p.8).
Diplocyclos tenuis (Klotzsch) C.Jeffrey	"A raiz queimada, em pó, posta na cova do dente furado acalma a dor" [root; burned and powdered; toothache]	Pain			
Ebenaceae					
Diospyros villosa (L.) De Winter var. *villosa*	"Os indígenas utilizam as raízes para branquear os dentes" [root; whiten teeth]	Oral hygiene		Digestive s.; muscular-skeletal s.; skin/ subcutaneous cellular tissue and injuries	Watt, Breyer-Brandwijk (1962, p.393).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

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		Field books	Bibliographic sources		
Ebenaceae					
Euclea natalensis subsp. *acutifolia* F.White	"Serve para fazer remédio das mulheres quando estão prenhas. Põe raiz num frasco com água e depois mulher bebe água e faz bem, faz filho bem" [root in water; drink the water; pregnancy]	Pregnancy/birth/ puerpuerium	Infections/ infestations; respiratory s.; skin/ subcutaneous cellular tissue and injuries; oral hygiene; pain	Digestive s.; infections/ infestations; oral hygiene; pain	Prota (s.d.); Watt, Breyer-Brandwijk (1962, p.390); Bandeira, Gaspar, Pagula (2001, p.71).
Euphorbiaceae					
Croton megalobotrys Müll. Arg.	"Utilizam a casca da árvore e os frutos como remédio intestinal; folhas medicamentosas para os indígenas" [bark and fruits; intestinal remedy; medicinal leaves]	Digestive s.; unspecified medicinal disorders	Infections/ infestations	Digestive s.; genitourinary s.; infections/ infestations; nutritional disorders; pain	Radcliffe-Smith (1996, p.288, 289); Watt, Breyer-Brandwijk (1962, p.399, 400); Palgrave et al. (1981, p.417); Sepasal (1999).
Tragia okanyua Pax	"O indígena esfrega a cabeça com esta planta quando tem dores" [rub on the head; headhache]	Pain		Unspecified medicinal disorders; genitourinary s.; circulatory and blood s.; poisonings	Cheikhyoussef et al. (2011, p.1); Sepasal (1999).
Euphorbia graniticola L.C.Leach	"Aplica-se o leite sobre os furúnculos e estes rebentam" [busting boils]	Skin/ subcutaneous cellular tissue and injuries			

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Fabaceae					
Abrus precatorius agg	"As folhas come gente quando a barriga dói tem bom gosto" [leaves; belly pain]	Digestive s.	Digestive s.; genitourinary s.; skin/ subcutaneous cellular tissue and injuries; respiratory s.	Circulatory and blood s.; digestive s.; genitourinary s.; muscular-skeletal s.; nervous s.; respiratory s.; sensory s.; skin/ subcutaneous cellular tissue and injuries; infections/ infestations; poisonings; pain; neoplasms; nutritional disorders; immune s.	Jansen, Mendes (1983, p.169, 1991, p.166); Burkill (1995, p.268-271); Watt, Breyer-Brandwijk (1962, p.535); Prelude (2003); Sepasal (1999); USDA (s.d.); Bruschi et al. (2011, p.547); Roque (2001, p.250).
Cassia abbreviata Oliv.	"As vagens verdes cortadas em rodelas, aplicam-se sobre as feridas para não infectar " [frutis; sliced; wounds]	Skin/ subcutaneous cellular tissue and injuries	Digestive s.; sensory s.; infections/ infestations; genitourinary s.; muscular-skeletal s.; pregnancy/birth/ puerpuerium; poisonings; pain	Skin/ subcutaneous cellular tissue and injuries; circulatory and blood s.; digestive s.; genitourinary s.; respiratory s.; sensory s.; infections/ infestations; pain; poisonings; nutritional disorders	Sepasal (1999); Prota (s.d.); Prelude (2003); Palgrave et al. (1957, p.93-96, 1981, p.288); Bruschi et al. (2011, p.548).
Erythrina lysistemon Hutch.	"Infuso para febre" [infusion; fever]	Infections/ infestations		Genitourinary s.; muscular-skeletal s.; skin/ subcutaneous cellular tissue and injuries; pregnancy/birth/ puerpuerium; pain	Palgrave et al. (1957, p.321, 1981, p.332); USDA (s.d.).
Newtonia buchananii (Baker f.) G.C.C.Gilbert & Boutique	"O indígena diz que a Piptadenia é afrodisíaco (a casca posta na água)" [bark in water; aphrodisiac]	Genitourinary s.	Genitourinary s.	Genitourinary s.; skin/ subcutaneous cellular tissue and injuries; infections/ infestations	Prota (s.d.); Feijão (1961. p.373, 374); Kokwaro (2009, p.168).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Fabaceae					
Pericopsis angolensis (Baker) Meeuwen	"Remédio para dor de barriga (a folha pisada e coada)" [leaf; crushed and sieved; belly pain]	Digestive s.		Circulatory and blood s.; digestive s.; genitourinary s.; sensory s.; respiratory s.; infections/ infestations; pain; neoplasms	Prota (s.d.); Palgrave et al. (1957, p.309-312, 1981, p.297); Watt, Breyer-Brandwijk (1962, p.552).
Schotia brachypetala Sond.	"Dizem ter utilidade medicinal, como decocto para limpeza do estômago e dos intestinos" [decoction; stomach and intestines]	Digestive s.		Digestive s.; circulatory and blood s.; mental disorders; respiratory s.; pain; skin/ subcutaneous cellular tissue and injuries	Prelude (2003); Prota (s.d.); Palgrave et al. (1981, p.275, 1957, p.119); Watt, Breyer-Brandwijk (1962, p.645, 646).
Lamiaceae					
Ocimum gratissimum L. var. *gratissimum*	"Medicinal para os indígenas: desinteria (chá) e dores de cabeça (uso externo)" [dysentery (tea); headache (external use)]	Digestive s.; pain		Digestive s.; pain; genitourinary s.; respiratory s.; infections/ infestations; nervous s.; muscular-skeletal s.; sensory s.; poisonings; nutritional disorders	USDA (s.d.) Burkill (1995, p.27); Watt, Breyer-Brandwijk (1962, p.524).
Pycnostachys sp.	"Quando tem a cabeça com dor esfrega assim com mão e depois se cheira e depois fica bom cabeça" [rub and smell; headache]	Pain			
Loganiaceae					
Strychnos henningsii Gilg	"A raiz e o pau serve de remédio contra as cólicas; a raiz raspada dá força para rapariga" [roots; colics; gives strength to the girl]	Digestive s.; unspecified medicinal disorders		Digestive s.; genitourinary s.; muscular-skeletal s.; infections/ infestations; pain; poisonings	Sepasal (1999); Watt, Breyer-Brandwijk (1962, p.728, 729); Palgrave et al. (1981, p.765).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Loranthaceae					
Erianthemum dregei (Eckl. & Zeyl.) Tiegh.	"Cortada aos bocados em verde, posta ao fogo, passando o fumo pela cara afugenta a febre" [cut in pieces and burned; fever]	Infections/ Infestations		Infections/ infestations; digestive s.; nervous s.; skin/ subcutaneous cellular tissue and injuries; neoplasms	Prelude (2003); Watt, Breyer-Brandwijk (1962, p.731).
Malvaceae					
Thespesia populnea	"(a raiz dá remédio para a febre)" [ferver]	Infections/ infestations		Infections/ infestations; circulatory and blood s.; digestive s.; genitourinary s.; muscular-skeletal s.; pain; skin/ subcutaneous cellular tissue and injuries; infections/ infestations; neoplasms; respiratory s.	USDA (s.d.); Feijão (1963, p.45); Burkill (1997).
Triumfetta welwitschii Mast. var. *welwitschii*	"Plantas empregadas na cura da lepra" [leprosy]	Infections/ infestations		Unspecified medicinal disorders	Prota (s.d.).
Moraceae					
Maclura africana (Bureau) Corner	"As folhas e raízes para combater a tosse (em chá)" [roots and leaves; tea; cough]	Respiratory s.	Respiratory s.; genitourinary s.; pain	Pain; poisonings	Jansen, Mendes (1983, p.169, 1984, p.14, 199, 1990, p.202, 1991, p.48, 49); Watt, Breyer-Brandwijk (1962, p.772).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Myrtaceae					
Syzygium guineense (Willd.) DC. subsp. *guineense*	"Plantas empregadas na cura da lepra … (cascas num saco)" [bark; leprosy]	Infections/ infestations		Infections/ infestations; digestive s.; genitourinary s.; nutritional disorders; pain; skin/ subcutaneous cellular tissue and injuries; respiratory s.; muscular-skeletal s.; nervous s.; sensory s.; poisonings	Palgrave et al. (1981, p.691); Burkill (1997); Prota (s.d.); Watt, Breyer-Brandwijk (1962, p.800); Feijão (1961, p.102); Sepasal (1999); Prelude (2003).
Ochnaceae					
Brackenridgea zanguebarica Oliv.	"Medicinal" [medicinal]	Unspecified medicinal disorders	Nervous s.; infections/ infestation; digestive s.; skin/ subcutaneous cellular tissue and injuries; pregnancy/birth/ puerpuerium; muscular-skeletal s.	Skin/ subcutaneous cellular tissue and injuries; poisonings	Watt, Breyer-Brandwijk (1962, p.802); Bruschi et al. (2011, p.548).
Orobanchaceae					
Cycnium adonense E.Mey. ex Benth. subsp. *adonense*	"Plantas empregadas na cura da lepra" [leprosy]	Infections/ infestations		Sensory s.; poisonings	Watt, Breyer-Brandwijk (1962, p.937); Prota (s.d.).
Phyllanthaceae					
Bridelia cathartica G.Bertol. subsp. *cathartica*	"Planta medicinal, purgativa (infuso de folhas e raízes)" [leaves and roots; infusion; purgative]	Digestive s.	Infections/ infestations; genitourinary s.	Digestive s.; skin/ subcutaneous cellular tissue and injuries	Sepasal (1999); Prota (s.d.); Jansen, Mendes (1983, p.56); Watt, Breyer-Brandwijk (1962, p.397); Bandeira, Gaspar, Pagula (2001, p.71).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Hymenocardia acida Tul.	"medicinal para feridas" [wounds]	Skin/ subcutaneous cellular tissue and injuries	Infections/ infestations; genitourinary s.; nutritional disorders	Skin/ subcutaneous cellular tissue and injuries; circulatory and blood s.; digestive s.; genitourinary s.; muscular-skeletal s.; nervous s.; pregnancy/birth/ puerpuerium; respiratory s.; sensory s.; infections/ infestations; poisonings; pain; neoplasms; nutritional disorders	Watt, Breyer-Brandwijk (1962, p.420); Palgrave et al. (1981, p.404); Burkill (1994, p.85-87); Prota (s.d.); Bruschi et al. (2011, p.551).
Phyllanthus reticulatus Poir.	"Para limpar os dentes e para curar feridas" [washing teeth; wounds]	Oral hygiene; skin/ subcutaneous cellular tissue and injuries	Genitourinary s.	Oral hygiene; skin/ subcutaneous cellular tissue and injuries; circulatory and blood s.; digestive s.; genitourinary s.; muscular-skeletal s.; nervous s.; sensory s.; infections/ infestations; neoplasms; nutritional disorders	Burkill (1994, p.125, 126); Jansen, Mendes (1983, p.157); Watt, Breyer-Brandwijk (1962, p.427); Sepasal (1999).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Phyllanthaceae					
Uapaca sansibarica Pax	"Cascas num saco (cascas empregadas em decoche e para banho)" [barks; decoction; bath]	Unspecified medicinal disorders		Digestive s.; infections/ infestations	Radcliffe-Smith (1996, p.100); Gowela et al. (2005, p.39-48).
Piperaceae					
Piper capense L.f.	"Folha medicinal para dor de barriga" [leaf; belly pain]	Digestive s.		Digestive s.; circulatory and blood s.; genitourinary s.; muscular-skeletal s.; nervous s.; respiratory s.; skin/ subcutaneous cellular tissue and injuries; infections/ infestations	Prota (s.d.); Burkill (1997); Watt, Breyer-Brandwijk (1962, p.846).
Polygalaceae					
Securidaca longipedunculata Fresen.	"A raiz em água, infusão, e bebida aumenta a virilidade" [root; infusion; drink; increases virility]	Genitourinary s.	Infections/ infestations; poisonings; digestive s.; skin/ subcutaneous cellular tissue and injuries	Genitourinary s.; digestive s.; muscular-skeletal s.; respiratory s.; sensory s.; skin/ subcutaneous cellular tissue and injuries; infections/ infestations; pain; poisonings; nervous s.	USDA (s.d.); Palgrave et al. (1957, p.346); Feijão (1961, p.231, 232); Watt, Breyer-Brandwijk (1962, p.853-857); Romeiras, et al. (2012, p.1033); Bruschi et al. (2011, p.554).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Portulacaceae					
Portulaca quadrifida L.	"Serve de remédio contra as doenças venéreas Ingere-se a infusão" [infusion; drink; venereal diseases]	Infections/ infestations	Infections/ infestation; digestive s.	Infections/ infestations; circulatory and blood s.; digestive s.; genitourinary s. muscular-skeletal s.; respiratory s.; pregnancy/birth/ puerpuerium; skin/ subcutaneous cellular tissue and injuries; pain; poisonings; nutritional disorders	USDA (s.d.); Sepasal (1999); Prelude (2003); Prota (s.d.); Watt, Breyer-Brandwijk (1962, p.424, 869, 1962, p.869); Burkill (1997).
Ranunculaceae					
Clematis brachiata Thunb.	"Quando esfregar na mão e cheirar faz bem à cabeça e também põe no tabaco" [rub on the hand and smell; does well to the head]	Unspecified medicinal disorders	Respiratory s.; infections/ infestations	Circulatory and blood s.; pain; genitourinary s.; respiratory s.; infections/ infestations; poisonings	Prota (s.d.); Watt, Breyer-Brandwijk (1962, p.878).
Ranunculus multifidus Forssk.	"Usado como remédio para tratamento das blenorragias" [gonorrhea]	Infections/ infestations		Infections/ infestations; digestive s.; muscular-skeletal s.; nervous s.; respiratory s.; sensory s.; skin/ subcutaneous cellular tissue and injuries; pain; neoplasms; genitourinary s.; circulatory and blood s.; pregnancy/birth/ puerpuerium	USDA (s.d.); Prelude (2003); Prota (s.d.); Burkill (1997); Watt, Breyer-Brandwijk (1962, p.880, 881).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Rhamnaceae					
Helinus integrifolius (Lam.) Kuntze	"Raiz dá espuma quando esfrega no água; espuma faz limpar o barriga do menino" [root; clean belly boy]	Digestive s.		Digestive s.; infections/ infestations; skin/ subcutaneous cellular tissue and injuries; mental disorders; immune s.	Prota (s.d.); Schmidt, Lötter, McCleland (2002, p.218).
Rubiaceae					
Catunaregam swynnertonii (S.Moore) Bridson	*A raiz cozida em água serve para dar força a gente com mulher* [root; cooked in water; give strength to the person with women]	Genitourinary s.			
Gardenia ternifolia Schumach. & Thonn. subsp. *jovis-tonantis* (Welw.) Verdc. var. *goetzei* (Stapf & Hutch.) Verdc.	"A raiz é medicinal. Molha com água e esfrega com os mão e depois sai aquela espuma como sabão e começa a lamber aquela espuma e faz bem à barriga mesmo e purga mesmo" [root; put in water and rub with the hands; does well to the belly; purgative]	Digestive s.	Digestive s.; infections/ infestations; respiratory s.; pregnancy/birth/ puerpuerium	Digestive s; nervous s.; mental disorders; unspecified medicinal disorders	Palgrave et al. (1957, p.385-388, 1981, p.855); Bruschi et al. (2011, p.550); Sobiecki (2002, p.16).
Gardenia volkensii K.Schum. subsp. *volkensii* var. *volkensii*	"Os frutos em infusão em água fria são bons para as desinterias, a raiz mastigada provoca satiríase" [fruits; infusion; dysentery]	Digestive s.	Digestive s.	Unspecified medicinal disorders	Sibis (2009); Ribeiro et al. (2010, p.8, 10).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Rutaceae					
Zanthoxylum humile (E.A.Bruce) P.G.Waterman	"É utilizada pelos indígenas para remédio para os dentes, assando a raiz" [root; baked; teeth remedy]	Pain	Pain; infections/ infestations; skin/ subcutaneous cellular tissue and injuries	Pain	Jansen (1984, p.199, 1990, p.217); Watt, Breyer-Brandwijk (1962, p.920); Ribeiro et al. (2010, p.8, 10, 13).
Salicaceae					
Flacourtia indica (Burm.f.) Merr.	"A folha dá remédio contra a diarreia" [leaf; diarrhoea]	Digestive s.	Nervous s.; digestive s.; infections/ infestations	Digestive s.; genitourinary s.; respiratory s.; nervous s.; infections/ infestations; pain; skin/ subcutaneous cellular tissue and injuries; muscular-skeletal s.; nutritional disorders; poisonings	Prota (s.d.); Sepasal (1999); Watt, Breyer-Brandwijk (1962, p.444); Burkill (1994, p.156); Bruschi et al. (2011, p.550).
Oncoba spinosa Forssk.	"A raiz é utilizada para mezinhas indígenas. A casca da raiz fervida é antivenérea empregada antes da cópula, em lavagem. A cinza da raiz empregada à maneira de vacina nos pulsos e nos tornozelos previne a mordedura das cobras, tornando-a inofensiva. Informa o Lourenço que depois desta vacina a pessoa pode ser mordida	Infections/ infestations; poisonings	Infections/ infestations; genitourinary s.	Infections/ infestations; digestive s.; genitourinary s.; skin/ subcutaneous cellular tissue and injuries; pain; nutritional disorders; nervous s.; sensory s.	Jansen, Mendes (1991, p.48); Prota (s.d.); Roux (2003); Palgrave et al. (1981, p.624); Burkill (1994, p.160); Watt, Breyer-Brandwijk (1962, p.446); Prelude (2003); Bruschi et al. (2011, p.552).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Continued					
	sem perigo. Os indígenas assim preparados podem brincar com as cobras. Colher casca desta planta para estudo desta propriedade preventiva" [root; anti-venereal (boiled); snake bite (ash)]				
Salvadoraceae					
Salvadora persica L. var. *persica*	"É utilizada para curar as constipações moendo as folhas em verde e cheirando-as como rapé" [leaves; grinding; smell like snuff; colds]	Respiratory s.		Oral hygiene; infections/ infestations ; digestive s.; respiratory s.	Prelude (2003); Schmidt, Lötter, McCleland (2002, p.218).
Santalaceae					
Viscum triflorum DC.	"Planta medicinal" [medicinal plant]	Unspecified medicinal disorders		Unspecified medicinal disorders	Prota (s.d.).
Solanaceae					
Solanum aculeatissimum Jacq.	"O leite dos frutos é empregado contra as dores de cabeça" [fruits; headache]	Pain		Pain; digestive s.; genitourinary s.; muscular-skeletal s.; respiratory s.; sensory s.; infections/ infestations; skin/ subcutaneous cellular tissue and injuries; poisonings	USDA (s.d.); Prota (s.d.); Welman (2003, p.5); Burkill (2000); Watt, Breyer-Brandwijk (1962, p.990).
Vitaceae					
Ampelocissus obtusata subsp. *kirkiana* (Planch.) Wild & R.B.Drumm.	"Plantas empregadas na cura da lepra" [leprosy]	Infections/ Infestations		Circulatory and blood s.; digestive s.; genitourinary s.	Sepasal (1999); Prota (s.d.).

Chart 1(cont.): Reference to medicinal uses reported in the Botanic Mission to Mozambique collectors' field books (1942-1948) and in bibliography

Family; *taxa*	Quote of the field book	Referentes to medicinal uses in Mozambique		Medicinal uses in Africa	Bibliographic sources
		Field books	Bibliographic sources		
Vitaceae					
Cissus cornifolia (Baker) Planch.	"Os indígenas usam a casca em coecção fervida para a febre puerperal" [bark; decoction; puerperal fever]	Infections/ infestations	Skin/ subcutaneous cellular tissue and injuries	Infections/ infestations; respiratory s.	Burkill (2000); Ribeiro et al. (2010, p.9, 10, 13).
Cyphostemma gigantophyllum (Gilg & M.Brandt) Desc. Ex Wild & R.B.Drumm.	"Plantas empregadas na cura da lepra … o seu carvão põe-se nas feridas" [ash; leprosy wounds]	Infections/ infestations			
Cyphostemma junceum (Webb) Wild & R.B.Drumm.	"Plantas empregadas na cura da lepra" [leprosy]	Infections/ infestations		Infections/ infestations; digestive s.; genitourinary s.; poisonings; circulatory and blood s.; pregnancy/birth/ puerpuerium	Prota (s.d.); Sepasal (1999); Prelude (2003); Burkill (2000).
Cissus quadrangularis L.	"Para tratar feridas do gado" [cattle wounds]	Skin/ subcutaneous cellular tissue and injuries	Skin/ subcutaneous cellular tissue and injuries; muscular-skeletal s.; respiratory s.; sensory s.; poisonings; infections/ infestations	Skin/ subcutaneous cellular tissue and injuries; digestive s.; genitourinary s.; muscular-skeletal s.; respiratory s.; sensory s.; infections/ infestations; poisonings; mental disorders; pain; nervous s.; pregnancy/birth/ puerpuerium	Prota (s.d.); Prelude (2003); Burkill (2000); Watt, Breyer-Brandwijk (1962, p.1058); Bruschi et al. (2011, p.548); Ribeiro et al. (2010, p.9, 10, 13).

Source: Organized by the authors from Mendonça (1942-1945, 1947-1948); Garcia (1948); Torre (1947-1948) and Barbosa (1947-1948) and the literature mentioned in the chart. The categorization of medicinal use was adapted from the Sepasal (1999) database

Regarding their habit (growth form), most are woody plants (12 trees, 21 shrubs or small trees and 15 shrubs), with the remaining *taxa* falling into the category of herbs (16) and climbing plants (seven). Concerning their native distribution, sixty species are afrotropical and ten are from other biogeographic realms, notably from the indo-malay. Only one species (*Hydnocarpus venenata*) is indo-malay (Chart 2).

In order to better understand the contribution of the BMM to the knowledge of the distribution of medicinal plants in Mozambique, all other records of the same taxa were mapped, despite not having an indication of therapeutic use, totalling 326 specimens distributed over 167 different localities (Figure 1). One might verify that most of the species were collected in more than one location and that their distribution extends for more than one province. The provinces with the highest collected number are Manica and Sofala, but the number of samples in Maputo province is also noteworthy.

Chart 2: Habits, vernacular names and sampling sites of the *taxa* referred as having medicinal use in the Botanic Mission to Mozambique collectors' field books (1942-1948)

Family; *taxa*	Habit	Vernacular name	Location	Distribution in Mozambique	Biogeographic realm
Acanthaceae					
Thunbergia lancifolia T.Anderson	Herb	*sata*	**130**	Zambezia	Afrotropic
Achariaceae					
Hydnocarpus venenata Gaertn.	Tree		**83**	Manica	Indo-Malay
Amaranthaceae					
Cyathula natalensis Sond.	Herb		**6**	Maputo	Afrotropic
Anacardiaceae					
Lannea edulis (Sond.) Engl. var. *edulis*	Subshrub	*diacamba*	**130**, 152	Tete, Zambezia	Afrotropic
Apocynaceae					
Carissa bispinosa (L.) Desf. ex Brenan	Shrub	*pica-pica*	2, 68, 70, 95, **117**	Manica, Maputo, Sofala	Afrotropic
Cryptolepis oblongifolia (Meisn.) Schltr.	Shrub	*rucangaza*	83, **89**, 90, 103, 136	Manica, Tete,	Afrotropic
Diplorhynchus condylocarpon (Müll. Arg.) Pichon	Shrub or small tree	*m'tôa*	56, **60**, 66, 81, 91, 104, 135, 159	Cabo Delgado, Manica, Zambezia	Afrotropic
Strophanthus petersianus Klotzsch	Shrub or liana	*ncêquêce*	3, 6, 18, 39, 42, 77, 78, **160**	Cabo Delgado, Inhambane, Manica, Maputo, Sofala	Afrotropic
Aristolochiaceae					
Aristolochia albida Duch.	Climber	*nhongoeangone*	94, **122**	Manica, Sofala	Afrotropic
Asparagaceae					
Asparagus africanus var. *puberulus* (Baker) Sebsebe	Shrub	*cissanemba*	32, **93**, 116	Manica, Maputo, Sofala	Afrotropic

Chart 2 (cont.): Habits, vernacular names and sampling sites of the *taxa* referred as having medicinal use in the Botanic Mission to Mozambique collectors' field books (1942-1948)

Family; *taxa*	Habit	Vernacular name	Location	Distribution in Mozambique	Biogeographic realm
Asteraceae					
Helichrysopsis septentrionalis (Vatke) Hilliard	Herb	*ruingate*	35, **50**	Gaza, Inhambane	Afrotropic
Linzia gerberiformis (Oliv. & Hiern) H.Rob.	Herb	*nhacavava*	9, 67, 73, 79, 98, **99**, 137	Manica, Maputo, Sofala, Tete	Afrotropic
Begoniaceae					
Begonia oxyloba Welw. ex Hook.f.	Herb	*moluco*	**141**	Zambezia	Afrotropic
Burseraceae					
Commiphora neglecta I.Verd.	Tree		3, 4, **23**	Maputo	Afrotropic
Capparaceae					
Capparis viminea Hook.f. & Thomson ex Oliv. var. *viminea*	Shrub	*rucato*	**92**	Manica	Afrotropic
Capparis viminea var. *orthacantha* (Gilg & Gilg-Ben.) DeWolf	Shrub	*mualangue*	**165**	Cabo Delgado	Afrotropic
Maerua triphylla var. *pubescens* (Klotzsch) DeWolf	Shrub or small tree	*chimuamarruca*	**50**, 126	Inhambane, Tete	Afrotropic
Boscia foetida subsp. *rehmanniana* (Pestal.) Toelken	Shrub or small tree	*chucutza*	10, 47, **48**	Gaza, Inhambane, Maputo	Afrotropic
Cladostemon kirkii (Oliv.) Pax & Gilg	Shrub or small tree	*combocôre*	8, 41, **74**	Gaza, Maputo, Sofala	Afrotropic
Thilachium africanum Lour.	Shrub or small tree	*chimuamarruca*	5, 20, **48**, 123, 124, 128, 131, 161	Cabo Delgado, Inhambane, Maputo, Tete, Zambezia	Afrotropic
Celastraceae					
Gymnosporia senegalensis (Lam.) Loes.	Shrub or small tree	*xichângue*	**25**, 44, 54	Gaza, Inhambane	Afrotropic, Indo-Malay, Palearctic, Australasia
Cleomaceae					
Cleome angustifolia subsp. *petersiana* (Klotzsch) Kers	Herb		**13**, 35	Gaza, Maputo	Afrotropic
Combretaceae					
Combretum collinum Fresen.	Tree		49, 84, 90, **92**, 111	Gaza, Manica	Afrotropic

Chart 2 (cont.): Habits, vernacular names and sampling sites of the *taxa* referred as having medicinal use in the Botanic Mission to Mozambique collectors' field books (1942-1948)

Family; *taxa*	Habit	Vernacular name	Location	Distribution in Mozambique	Biogeographic realm
Convolvulaceae					
Bonamia mossambicensis (Klotzsch) Hallier f.	Climber	*náquidumba*	160, **166**	Cabo Delgado	Afrotropic
Cucurbitaceae					
Cucumis hirsutus Sond.	Herb	*eragabué*	**130**	Zambezia	Afrotropic
Diplocyclos tenuis (Klotzsch) C.Jeffrey	Climber	*zangane*	**50**	Inhambane	Afrotropic
Ebenaceae					
Diospyros villosa (L.) De Winter var. *villosa*	Shrub or climber	*chibabane*	27, **28**	Gaza, Inhambane	Afrotropic
Euclea natalensis subsp. *acutifolia* F.White	Shrub or small tree	*namedine*	65, 84, 107, **108**	Manica	Afrotropic
Euphorbiaceae					
Croton megalobotrys Müll. Arg.	Tree	*chungué-chungué*	**21**, **26**, 38	Maputo	Afrotropic
Tragia okanyua Pax	Herb	*xicumba-cumba*	**43**, 126	Gaza, Tete	Afrotropic
Euphorbia graniticola L.C.Leach	Shrub or small tree	*muconde*	**94**, 104	Manica	Afrotropic (endemic of Mozambique)
Fabaceae					
Abrus precatorius agg	Climber	*metituaroi*	30, 36, **72**, 87, 105	Gaza, Inhambane, Manica	Afrotropic, Indo-Malay, Australasia
Cassia abbreviata Oliv.	Shrub or small tree	*mulumanhama*	**80**	Sofala	Afrotropic
Erythrina lysistemon Hutch.	Tree	*namecolocoma*	60, 114, **139**	Manica, Sofala, Zambezia	Afrotropic
Newtonia buchananii (Baker f.) G.C.C.Gilbert & Boutique	Tree		90, **106**, 108, 117, 121	Manica, Sofala	Afrotropic
Pericopsis angolensis (Baker) Meeuwen	Tree	*muhanga*	94, 97, 103, **116**, 132, 133	Manica, Sofala, Zambezia	Afrotropic
Schotia brachypetala Sond.	Tree	*shitibzana*	5, 8, 12, **24**	Maputo	Afrotropic
Lamiaceae					
Ocimum gratissimum L. var. *gratissimum*	Herb	*chinuanúa*	**88**	Manica	Afrotropic, Indo-Malay, Australasia
Pycnostachys sp.	Herb	*munganhunho*	**64**	Manica	Afrotropic

Chart 2 (cont.): Habits, vernacular names and sampling sites of the *taxa* referred as having medicinal use in the Botanic Mission to Mozambique collectors' field books (1942-1948)

Family; *taxa*	Habit	Vernacular name	Location	Distribution in Mozambique	Biogeographic realm
Loganiaceae					
Strychnos henningsii Gilg	Shrub or small tree	*manouno panda*	**3**, 8, 76 **78**	Maputo, Sofala	Afrotropic
Loranthaceae					
Erianthemum dregei (Eckl. & Zeyl.) Tiegh.	Shrub	*pacama*	1, 19, 22, 46, **50**	Inhambane, Maputo	Afrotropic
Malvaceae					
Thespesia populnea	Shrub or small tree		**167**	Cabo Delgado	Afrotropic, Indo-Malay, Australasia, Oceania, Neotropic
Triumfetta welwitschii Mast. var. *welwitschii*	Herb	*tutuma*	**130**, 150, 152, 153	Niassa, Tete, Zambezia	Afrotropic
Moraceae					
Maclura africana (Bureau) Corner	Shrub or small tree	*pumbulo*	4, 34, **50**, 75, 128	Inhambane, Maputo, Sofala, Tete	Afrotropic
Myrtaceae					
Syzygium guineense (Willd.) DC. subsp. *guineense*	Tree or small tree	*nanhoa*	62, **130**, 156	Niassa, Sofala, Zambezia	Afrotropic
Ochnaceae					
Brackenridgea zanguebarica Oliv.	Shrub or small tree	*mino*	**88**, 103, 159, 163	Cabo Delgado, Manica	Afrotropic
Orobanchaceae					
Cycnium adonense E.Mey. ex Benth. subsp. *adonense*	Herb	*saila*	**130**	Zambezia	Afrotropic
Phyllanthaceae					
Bridelia cathartica G.Bertol. subsp. *cathartica*	Tree	*balatangate*	3, **25**	Gaza, Maputo	Afrotropic
Hymenocardia acida Tul.	Shrub or small tree	*m pute coche*	84, 93, 100, 104, 115, **159**	Cabo Delgado, Manica, Sofala	Afrotropic
Phyllanthus reticulatus Poir.	Shrub or small tree	*cuatima*	16, **51**, 155	Inhambane, Niassa, Maputo	Afrotropic
Uapaca sansibarica Pax	Tree	*mutú*	59, 71, 96, 104, 107, **130**, 134, 148, 154, 158	Manica, Niassa, Sofala, Tete, Zambezia	Afrotropic
Piperaceae					
Piper capense L.f.	Shrub or subshrub	*mona moluco*	**133**, 140	Zambezia	Afrotropic

Chart 2 (cont.): Habits, vernacular names and sampling sites of the *taxa* referred as having medicinal use in the Botanic Mission to Mozambique collectors' field books (1942-1948)

Family; *taxa*	Habit	Vernacular name	Location	Distribution in Mozambique	Biogeographic realm
Polygalaceae					
Securidaca longipedunculata Fresen.	Shrub or small tree	*tçatçu*	7, 11, **48**, 52, 53, 63, 78, 83, 87, 94, 102, 112, 118, 132, 142	Gaza, Inhambane, Manica, Maputo, Sofala, Tete, Zambezia	Afrotropic
Portulacaceae					
Portulaca quadrifida L.	Herb	*chineane*	**4**, 145	Nampula, Maputo	Afrotropic, Indo-Malay, Palearctic, Oceania
Ranunculaceae					
Clematis brachiata Thunb.	Climber	*mucoca; mucoco*	**72**, 108	Manica	Afrotropic
Ranunculus multifidus Forssk.	Herb	*cambi*	**2**	Maputo	Afrotropic, Palearctic
Rhamnaceae					
Helinus integrifolius (Lam.) Kuntze	Shrub	*pupuma*	15, **69**, 86	Manica, Maputo	Afrotropic
Rubiaceae					
Catunaregam swynnertonii (S.Moore) Bridson	Shrub or small tree		**61**, 91	Manica	Afrotropic
Gardenia ternifolia Schumach. & Thonn. subsp. *jovis-tonantis* (Welw.) Verdc. var. *goetzei* (Stapf & Hutch.) Verdc.	Shrub or small tree	*mutara*	**60**, 84	Manica	Afrotropic
Gardenia volkensii K.Schum. subsp. *volkensii* var. *volkensii*	Tree	*chitzalala*	8, **14**	Maputo	Afrotropic
Rutaceae					
Zanthoxylum humile (E.A.Bruce) P.G.Waterman	Shrub	*manunguane*	23, 29, **37**	Maputo	Afrotropic
Salicaceae					
Flacourtia indica (Burm.f.) Merr.	Shrub or small tree	*mundiduè*	50, 51, 58, 84, 87, 91, 94, 101, **110**, 125, 129, 144, 147, 157, 162	Inhambane, Manica, Nampula, Niassa, Sofala, Tete, Zambezia	Afrotropic, Indo-Malay
Oncoba spinosa Forssk.	Shrub or small tree	*m´tuio*	79, **109**	Manica, Sofala	Afrotropic
Salvadoraceae					
Salvadora persica L. var. *persica*	Shrub or small tree	*m´bôcô*	**37**, 161, 164	Cabo Delgado, Maputo	Afrotropic, Indo-Malay, Palearctic

Chart 2 (cont.): Habits, vernacular names and sampling sites of the *taxa* referred as having medicinal use in the Botanic Mission to Mozambique collectors' field books (1942-1948)

Family; *taxa*	Habit	Vernacular name	Location	Distribution in Mozambique	Biogeographic realm
Santalaceae					
Viscum triflorum DC.	Shrub	*coma*	40, **82**	Inhambane, Sofala	Afrotropic
Solanaceae					
Solanum aculeatissimum Jacq.	Shrub	*numuruah; numurua*	**119**	Sofala	Afrotropic, Neotropic
Vitaceae					
Ampelocissus obtusata subsp. *kirkiana* (Planch.) Wild & R.B.Drumm.	Climber	*inacúa*	28, 31, 84, 91, 108, **130**	Inhambane, Manica, Zambezia	Afrotropic
Cissus cornifolia (Baker) Planch.	Shrub	*munguingue*	33, 45, 55, **57**, 113, 120, 138, 143, 146, 151	Gaza, Manica, Moçambique, Nampula, Maputo, Sofala, Tete	Afrotropic
Cyphostemma gigantophyllum (Gilg & M.Brandt) Desc. Ex Wild & R.B.Drumm.	Herb	*muanameluco*	85, 91, 94, 106, 108, **130**	Manica, Zambezia	Afrotropic
Cyphostemma junceum (Webb) Wild & R.B.Drumm.	Herb	*mucutuco*	**130**, 149	Tete, Zambezia	Afrotropic
Cissus *quadrangularis L.*	Climber	*shobólólo*	17, 20, **45**, 78, 127	Gaza, Maputo, Sofala, Tete	Afrotropic, Indo-Malay, Palearctic

Source: Organized by the authors from Mendonça (1942-1945, 1947-1948); Garcia (1948); Torre (1947-1948) and Barbosa (1947-1948). In the column with the location number are highlighted in bold the harvest locations of the specimens mentioned in the field books as having medicinal use. The remaining locations correspond to other specimens of the same taxa collected during the field work of Botanic Mission to Mozambique (1942-1948). See designation of the harvest location in the Annex

In total, there were references of treatments belonging to ten categories of diseases, and in the case of five species, there were indications for more than one category (*Croton megalobotrys*, *Ocimum gratissimum* var. *gratissimum, Oncoba spinosa*, *Phyllanthus reticulatus* and *Strychnos henningsii*). For example, *Oncoba spinosa* is used as a prophylactic, particularly to prevent venereal diseases (infections/infestations) and poisonings by snake bites (poisonings) (Chart 1).

In terms of the species' distribution according to the different disease categories, 18 were identified for the treatment of infections/infestations, 14 for digestive system diseases, nine for pain relief and nine for the treatment of skin/subcutaneous cellular tissue and injuries, thus comprising the major disease categories represented. Twelve species were also reported for the treatment of unspecified medicinal disorders usually under the description of "medicinal root" (e.g. *Cladostemon kirkii*) or "medicinal plant" (e.g. *Viscum triflorum*) (Graph 1).

In the category infections/infestations, leprosy is indicated for the highest number of species (ten). This may be due to a deliberate route deviation during the BMM's first expedition to visit a "healer" called Mafuneia who, in the outskirts of Milange, Zambezia province, happened to be known for curing leprosy, employing at least nine species collected near

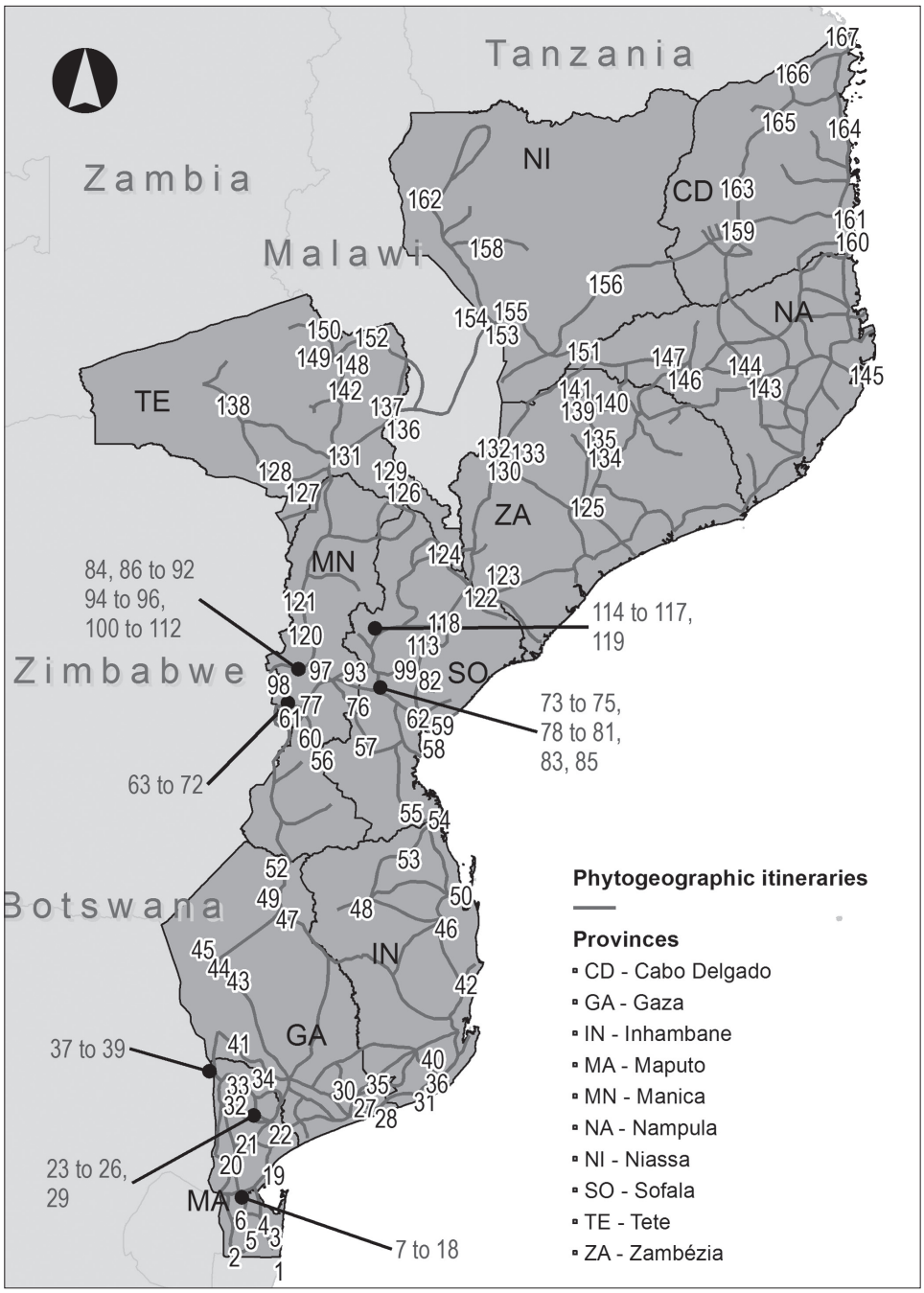
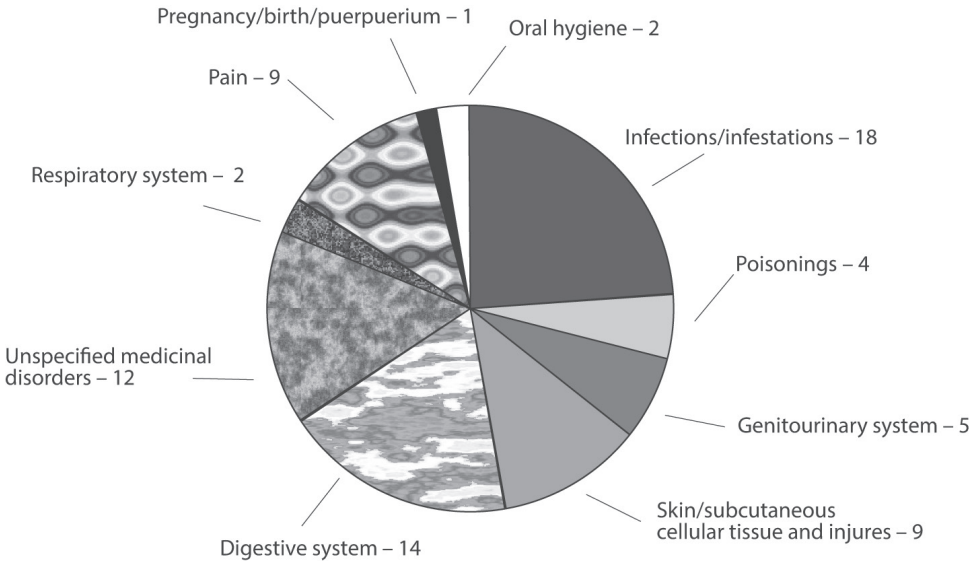


Figure 1: Phytogeographic itineraries and location of specimens that represent *taxa* reported as medicinal in the field books of Botanic Mission to Mozambique (1942-1948). Detailed information of each location, including the geographic coordinate is available in the Appendix. (Produced by authors from the georeferenced specimens, from the administrative division of Mozambique (Geonetwork, 2003) and the digitization of phytogeographic itineraries)

Graph 1: Disorder categories that aggregate medicinal uses reported in field books of Botanic Mission to Mozambique (1942-1948)



Source: Organized by the authors from Mendonça (1942-1945, 1947-1948); Garcia (1948); Torre (1947-1948) and Barbosa (1947-1948), whichever is the categorization on the basis of available Sepasal (1999) database

his accommodations. Also referring to the treatment of Hansen's disease is the registration and collection of a specimen of *Hydnocarpus venenata* during the BMM´s third expedition at the Catholic Mission of Amatongas (Figure 1, location 83) in Manica and Sofala province (currently Manica province). The mission's priests farmed this plant due to the therapeutic properties attributed to chalmoogra oil extracted from its seeds (Wild, Vidigal, 1973, p.2). The fact that this species is native to the indo-malay realm might suggest its introduction for the specific treatment of this disease. In this sense, rather than reveal the impact of this disease in the then colony of Mozambique, the BMM field books assign valuable contributions for a critical debate on the various networks of circulation of knowledge and agents involved in the health care assistance established.

In the category of digestive system diseases, most of the occurrences recorded by the BMM are related to gastrointestinal problems, including diarrhoea and dysentery. A fact which is not surprising insofar as diarrhoea have long been associated, in Mozambique, to a wide range of diseases, including therein the very dysentery (Ribeiro et al., 2010, p.3).

In the pain category, only two types of pain are distinguishable: toothache and headache. For the treatment of headaches, a specimen whose determination was only possible to the level of genus (*Pycnostachys*) was referred, corresponding to the specimen collected in Manica under the vernacular name *munganhunho* (Chart 2).

In the category of skin/subcutaneous cellular tissue and injuries, wound treatments include the largest number of species. In this category we emphasize the treatment of boils, a pathology for which was recorded the harvest of a specimen of the genus *Euphorbia*, later classified as *E. graniticola*. This species is endemic in Mozambique and restricted to the area between Chimoio and Manica (Carter, Leach 2001, p.408-409).

After consulting various bibliographic sources and online databases on traditional medicinal uses of the *taxa* referred in the BMM field books, the medicinal uses of 34 of the species were found to have not yet been reported for Mozambique, corresponding to 36 therapeutic uses. Two species have more than one use indicated, namely: one specimen of *Ocimum gratissimum* var. *gratissimum* collected in Manica (Figure 1, location 88) referred for the treatment of disentery and headaches (Chart 1); and two specimens of *Strychnos henningsii*, one from Maputo referred for the treatment of colics (Figure 1, location 3) and the other from Sofala (Figure 1, location 78) for an unspecified disease.

Moreover, from the intersection between the species whose medicinal use was already reported for Mozambique and the species identified by the BMM, the field books revealed 22 uses that are presumably new to Mozambique. This number is related to the fact that each disease category might include several pathologies. For instance, the species *Cyathula natalensis* and *Flacourtia indica*, already mentioned respectively for the treatment of wounds and stomachache, and O*ncoba spinosa* and *Thunbergia lancifolia*, for schistosomiasis treatment, are mentioned in the BMM field books for the treatment of skin blemishes, diarrhoea, to prevent venereal diseases and poisonings by snake bites and leprosy. One may also point out the difficulty in categorizing symptomatic descriptions. For example, *Maclura africana*, reported for the treatment of bronchitis and tuberculosis, is mentionated in the field books for the treatment of cough. Although coughing can be a symptom of bronchitis and tuberculosis, we have chosen to distinguish them within the same category.

There are thus 58 new uses recorded for Mozambique based on the BMM field books, when summing up the new uses with new references for plant species already reported as medicinal. No references to medicinal uses for five of the species were found in the literature review, neither in Mozambique nor in other African countries. Such is the case of *Catunaregam swynnertonii, Cyphostemma gigantophyllum, Diplocyclos tenuis, Euphorbia graniticola* and *Helichrysopsis septentrionalis* (Chart 1). Furthermore, references for three other species (*Carissa bispinosa, Cyathula natalensis, Hydnocarpus venenata*) were found for Mozambique, but not for other African countries (Chart 1). The new references highlight the importance and the potential of the field books of botanical expeditions as a source of medicinal uses. Nevertheless, the total number of samples with references to therapeutic uses, ascertained by reading the BMM field books, is much higher than would be possible by consulting the corresponding herbarium sheet labels, as only five of these register medicinal uses. In this sense, it is reasonable to consider that the BMM field books, along with those of other similar missions, can provide unpublished information about the medicinal uses of plants.

The number of herbarium samples with medicinal uses indicated only represents about 1% of the total collected specimens, which might be justified mainly by the fact that the identification of medicinal plant uses was not a primary goal of the BMM survey. Indeed, the first two campaigns aimed at preparing the Phytogeographic Map of Mozambique, whereas the third campaign was directed at gathering data on spontaneous species with economic interest, namely for forage, wood production, textile fibers, tanniferous bark and resins (Mendes, 1980, p.207; Saraiva, Figueira, Conde, 2012). Other reasons may be related with the short span of the campaigns, usually carried out during the wet season in order to find specimens with flowers and fruits, and therefore restraining longer stops to collect

information of ethnobotanic character. It is important to note that local communities may not always disclose the knowledge they have on the use of natural resources, particularly medicinal uses, as this is often a privilege of specialists in health curing processes. Moreover, a fact that was then noticed by the scientific elite who sought to inscribe the subject and the urgency of the knowledge about colonial medicinal plants in the economic and scientific program of the empire (Lima, 1948).

None of the species identified as medicinal by the BMM are included in the *IUCN Red List of Threatened Species* (IUCN, 2012). It is possible, however, that existing data for some species might be insufficient, as is the case of the endemic species mentioned above (*E. graniticola*), which is not a part of this list but is included in Appendix II of the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES, 2012), hence prompting the need for monitoring its trade in order to avoid incompatibilities between its use and the survival of the species.

Final considerations

Herbarium collections often include references or notes on their specimens' sheets about the different uses of species registered in the field. However, it seems that the information recorded in collectors' field books hasn't always been transferred to the herbarium labels. Thus, despite the efforts of many herbaria to catalogue and divulge information in recent years, only actively seeking references to, in this case, medicinal uses in field books may reveal all the information collected. From the information on 71 *taxa* (seventy species and 1 genus), the medicinal uses of 34 species that might not yet have been reported for Mozambique were identified. The therapeutic uses of five of these species might have not yet been reported for the African continent. In total, there are 58 uses presumably not yet reported for Mozambique.

The majority of the plant species referred are woody plants (trees or shrubs), mostly from the afrotropical realm.

The results presented in this study uncover the contribution of the Botanical Mission to Mozambique to the identification of plants with potential medicinal use, also allowing to consider whether undiscovered information is available from other Missions organized in the same context and which might have not been sufficiently assessed. As such, efforts should be made to readdress this sort of documentation in search of new information about the uses and applications of medicinal plants.

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NOTES

[1] See http://plants.jstor.org.

[2] Catalogued specimens are available online through the Tropical Research Institute collections catalogue in http://maerua.iict.pt/colecoes.

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Appendix 1: List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
1	26° 50′ 25″ S	32° 52′ 53″ E	Maputo	Matutuíne	Zitundo	Maputo, Ponta do Ouro
2	26° 50′ 11″ S	32° 17′ 04″ E	Maputo	Matutuíne	Catuane	Maputo, Catuane
3	26° 33′ 59″ S	32° 49′ 31″ E	Maputo	Matutuíne	Bela Vista	Maputo, Salamanga, forests of Magala
4	26° 28′ 31″ S	32° 38′ 54″ E	Maputo	Matutuíne	Bela Vista	Maputo, Salamanga
5	26° 19′ 17″ S	32° 30′ 41″ E	Maputo	Matutuíne	Bela Vista	Maputo, between Bela Vista and Porto Henrique
6	26° 18′ 00″ S	32° 20′ 56″ E	Maputo	Namaacha	Changalane	Maputo, Porto Henrique surroundings
7	26° 17′ 05″ S	32° 27′ 02″ E	Maputo	Matutuíne	Bela Vista	Maputo, Bela Vista, mountain ridge of Portugal
8	26° 11′ 59″ S	32° 09′ 06″ E	Maputo	Namaacha	Changalane	Maputo, Goba surroundings
9	26° 11′ 49″ S	32° 08′ 40″ E	Maputo	Namaacha	Changalane	Maputo, near Goba
10	26° 09′ 59″ S	32° 22′ 02″ E	Maputo	Boane	Boane	Maputo, between Umbeluzi and Bela Vista
11	26° 09′ 48″ S	32° 22′ 09″ E	Maputo	Boane	Boane	Maputo, between Umbeluzi and Porto Henrique
12	26° 06′ 18″ S	32° 08′ 41″ E	Maputo	Namaacha	Namaacha	Between Goba and Umbeluzi
13	26° 02′ 30″ S	32° 19′ 31″ E	Maputo	Boane	Boane	Boane
14	26° 00′ 58″ S	32° 24′ 18″ E	Maputo	Boane		Umbeluzi surroundings
15	25° 57′ 23″ S	32° 02′ 08″ E	Maputo	Namaacha	Namaacha	Sábiè, Namaacha
16	25° 57′ 02″ S	32° 36′ 06″ E	Maputo	Cidade de Maputo	Cidade de Maputo	Polana
17	25° 54′ 47″ S	32° 38′ 00″ E	Maputo	Cidade de Maputo	Cidade de Maputo	L. Marques, between Polana and Costa do Sol
18	25° 51′ 43″ S	32° 33′ 51″ E	Maputo			Region of Maputo
19	25° 44′ 13″ S	32° 40′ 35″ E	Maputo	Marracuene	Marracuene	Marracuene, woods of Infulene
20	25° 35′ 46″ S	32° 14′ 36″ E	Maputo	Moamba		Sábiè, plantation of Moamba
21	25° 17′ 55″ S	32° 25′ 49″ E	Maputo			Magude

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
22	25° 04′ 14″ S	32° 52′ 07″ E	Maputo	Manhiça		Detour to Xinavane, at 85km from Vila João Belo
23	25° 01′ 34″ S	32° 37′ 07″ E	Maputo	Magude	Magude	Magude, between Magude and river Uanetze
24	24° 59′ 38″ S	32° 34′ 57″ E	Maputo	Magude	Magude	River Uanetze surroundings, between Magude and Panjane
25	24° 57′ 20″ S	33° 07′ 12″ E	Gaza	Bilene-Macia		Bilene, 8km from Macia, route to Mianga
26	24° 53′ 22″ S	32° 28′ 56″ E	Maputo	Magude		Magude, "Delagoa Plantation"
27	24° 50′ 07″ S	34° 01′ 55″ E	Gaza	Mandlakaze		Between Manjacaze and Chindenguele
28	24° 47′ 19″ S	34° 18′ 46″ E	Inhambane	Zavala	Zandamela	Zavala, Zandamela
29	24° 44′ 31″ S	32° 29′ 50″ E	Maputo	Magude		Magude, road from Moine to Uanetze, 17km from Moine
30	24° 42′ 42″ S	33° 52′ 58″ E	Gaza	Mandlakaze	Mandlakaze	Manjacaze
31	24° 34′ 04″ S	34° 50′ 09″ E	Inhambane			Inharrime, at km 5
32	24° 33′ 50″ S	32° 16′ 00″ E	Maputo	Magude		Moamba, from Mahel to Mapulanguene
33	24° 32′ 14″ S	32° 20′ 17″ E	Maputo	Magude		Magude, between Mahel and Mapulanguene
34	24° 32′ 10″ S	32° 20′ 11″ E	Maputo	Magude		Magude, near Mapulanguene
35	24° 31' 28" S	34° 11' 38" E	Gaza	Mandlakaze	Chibonzane	Muchopes, Chicomo
36	24° 30′ 31″ S	34° 59′ 32″ E	Inhambane	Zavala	Quissico	Between Inharrime and Chidenguel, 5km from Inharrime

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
37	24° 29′ 28″ S	32° 05′ 09″ E	Maputo	Magude	Mapulanguene	Magude, between Mapulanguene and Macaene, 5 km from Mapulanguene
38	24° 28′ 52″ S	32° 07′ 42″ E	Maputo	Magude	Mapulanguene	Magude, Mapulanguene surroundings, banks of river Uanetze
39	24° 24′ 31″ S	32° 07′ 14″ E	Maputo	Magude	Mapulanguene	Magude, Uanetze surroundings, flatlands up to 10km from Uanetze site
40	24° 18′ 10″ S	34° 55′ 25″ E	Inhambane			Between Inharrime and Cabo Maiuana
41	23° 59′ 12″ S	32° 21′ 07″ E	Gaza	Massingir		Between Massingire and Caniçado, right bank of river Elefantes
42	23° 11′ 42″ S	35° 23′ 01″ E	Inhambane	Massinga	Massinga	Massinga, river of stones
43	23° 08′ 19″ S	32° 15′ 26″ E	Gaza			Guijá, between Mapai and Combomune, banks of river Limpopo
44	22° 55′ 29″ S	32° 01′ 47″ E	Gaza	Chicualacuala	Mapai	Guijá, between Mapai and Mabalane, 13 miles from Mapai
45	22° 50′ 35″ S	31° 57′ 47″ E	Gaza	Chicualacuala	Mapai	Alto Limpopo, Mapai
46	22° 16′ 02″ S	35° 06′ 58″ E	Inhambane	Vilankulo	Mapinhane	Vilanculos, Mapinhane
47	22° 15′ 14″ S	32° 54′ 59″ E	Gaza	Chigubo	Chigubo	Alto de Limpopo, Mapai, régulo Machaila
48	22° 10′ 30″ S	33° 59′ 09″ E	Inhambane	Mabote	Mabote	Govuro, between Mabote and Zimane, 47,373km

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
49	22° 00′ 51″ S	32° 48′ 02″ E	Gaza	Chigubo	Chigubo	Alto Limpopo, between Massangena and Mapai, indigenous settlement of Chêgaméne
50	22° 00′ 00″ S	35° 19′ 00″ E	Inhambane	Vilankulo	Vilankulo	Vilanculos, near Vilanculos
51	21° 59′ 01″ S	35° 19′ 02″ E	Inhambane	Vilankulo	Vilankulo	Vilanculos, Mucoque
52	21° 38′ 01″ S	32° 51′ 08″ E	Gaza	Massangena		Alto Limpopo, between Massangena and Mapai
53	21° 30′ 53″ S	34° 37′ 08″ E	Inhambane	Govuro	Save	Govuro, between Mabote and Nova Mambone
54	20° 59′ 17″ S	35° 01′ 20″ E	Inhambane	Govuro	Nova Mambone	Govuro, Mambone surroundings, banks of river Save
55	20° 53′ 42″ S	34° 38′ 50″ E	Sofala	Machanga		Mambone, km 50, route to Buzi
56	19° 58′ 40″ S	33° 25′ 03″ E	Manica	Sussundenga	Dombe	Manica, banks of river Lucite
57	19° 51′ 33″ S	34° 02′ 49″ E	Sofala	Chibabava	Goonda	Buzi, between Quicuaxa and Grudga
58	19° 50′ 37″ S	34° 53′ 58″ E	Sofala	Cidade da Beira		Beira, near the lighthouse
59	19° 43′ 39″ S	34° 49′ 26″ E	Sofala			From Macuti (lighthouse) to Buzi
60	19° 41′ 20″ S	33° 18′ 04″ E	Manica	Sussundenga		Manica, Mavita, Chicuizo
61	19° 35′ 47″ S	33° 21′ 52″ E	Manica	Sussundenga	Sussundenga	Manica, forest of Muribane
62	19° 35′ 43″ S	34° 44′ 25″ E	Sofala	Dondo	Dondo	Beira, Dondo
63	19° 32′ 49″ S	33° 02′ 09″ E	Manica	Sussundenga		Manica, Mavita, between administrative site and Rotanda
64	19° 32′ 47″ S	32° 53′ 13″ E	Manica	Sussundenga	Rotanda	Manica, Mavita, between grains site and the border

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
65	19° 32′ 19″ S	33° 06′ 02″ E	Manica	Sussundenga		Manica, between Mavita and the intersection of route to Macequece
66	19° 31′ 07″ S	33° 09′ 02″ E	Manica	Sussundenga		Manica, Mavita, Mabongo
67	19° 30′ 30″ S	32° 53′ 13″ E	Manica	Sussundenga	Rotanda	Manica, Mavita, valley of Mozambique
68	19° 30′ 27″ S	32° 53′ 21″ E	Manica	Sussundenga	Rotanda	Manica, Mavita, valley of Mozambique
69	19° 29′ 11″ S	33° 17′ 12″ E	Manica			Manica, Mavita, between the intersection of route to Alface and Mabongo
70	19° 29′ 00″ S	32° 51′ 01″ E	Manica	Sussundenga	Rotanda	Manica, Rotanda, Xirôso mount
71	19° 27′ 23″ S	33° 07′ 14″ E	Manica	Sussundenga		Manica, between Mavita and river Munhinga
72	19° 27′ 03″ S	33° 17′ 07″ E	Manica	Sussundenga	Sussundenga	Manica, Mavita, banks of river Munhinga
73	19° 26′ 36″ S	34° 31′ 56″ E	Sofala			Buzi, banks of river Púnguè, on the way to Dondo
74	19° 25′ 27″ S	34° 19′ 53″ E	Sofala	Nhamatanda		Vila Machado, right bank of river Muda
75	19° 21′ 22″ S	34° 18′ 08″ E	Sofala	Nhamatanda	Tica	Vila Machado, Lamego, banks of river Muda
76	19° 20′ 04″ S	33° 56′ 26″ E	Sofala	Nhamatanda	Nhamatanda	Vila Machado, between rivers Mucuzi and Muda
77	19° 18′ 58″ S	33° 18′ 50″ E	Manica			Between Vila Pery and Mavita
78	19° 14′ 32″ S	34° 04′ 11″ E	Sofala	Nhamatanda	Nhamatanda	Vila Machado, mountain ridge of Chiluvo
79	19° 14′ 23″ S	34° 07′ 23″ E	Sofala	Nhamatanda	Nhamatanda	Vila Machado, Nharuchonga

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
80	19° 13′ 20″ S	34° 13′ 25″ E	Sofala	Nhamatanda	Nhamatanda	Between Vila Machado and river Metuchira
81	19° 11′ 16″ S	33° 52′ 42″ E	Manica	Gondola	Inchope	Between Vila Machado and Amatongas
82	19° 07′ 40″ S	34° 53′ 47″ E	Sofala	Muanza	Galinha	Cheringoma, Durúndi
83	19° 06′ 16″ S	33° 48′ 47″ E	Manica	Gondola	Amatongas	Chimoio, Catholic Mission of Amatongas
84	19° 05′ 45″ S	33° 15′ 57″ E	Manica	Manica	Vandúzi	Chimoio, Bandula, mountain ridge of Chibata
85	19° 05′ 31″ S	33° 46′ 58″ E	Manica	Gondola	Amatongas	Chimoio, between Amatongas and mountain ridge of Braunstein
86	19° 04′ 17″ S	33° 27′ 12″ E	Manica	Gondola		Chimoio, between Tembe and Vila Pery
87	19° 04′ 05″ S	33° 29′ 24″ E	Manica	Gondola		Chimoio, Tembe, mountain ridge of Chindaza, Chizombero mountain
88	19° 03′ 13″ S	33° 12′ 16″ E	Manica	Manica		Chimoio, between Bandula and Chibata
89	19° 03′ 05″ S	33° 45′ 18″ E	Manica	Gondola	Amatongas	Chimoio, Gondola, 5km from mountain ridge of Braunstein
90	19° 02′ 46″ S	33° 48′ 42″ E	Manica	Gondola	Amatongas	Gondola, banks of river Nhamissenguere
91	19° 02′ 45″ S	33° 50′ 54″ E	Manica	Gondola	Amatongas	Chimoio, Gondola, near river Nhamouare
92	19° 01′ 50″ S	33° 45′ 56″ E	Manica	Gondola	Amatongas	Chimoio, mountain ridge of Nharo-Nharo
93	19° 00′ 57″ S	33° 53′ 52″ E	Manica	Gondola	Amatongas	Chimoio, Gondola, Mupindanganga
94	19° 00′ 42″ S	33° 08′ 36″ E	Manica	Manica	Messica	Chimoio, Bandula
95	19° 00′ 06″ S	33° 06′ 53″ E	Manica	Manica	Messica	Region of Garuzo, Vila Pery

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
96	18° 59′ 45″ S	33° 09′ 25″ E	Manica	Manica	Messica	Chimoio, between Garuzo and Bandula
97	18° 59′ 30″ S	33° 25′ 13″ E	Manica	Gondola	Matsinho	Mountains of Tembe, Chimoio
98	18° 59′ 24″ S	32° 52′ 54″ E	Manica	Manica		Manica, Macequece, mountain ridge of Vumba
99	18° 59′ 08″ S	34° 34′ 25″ E	Sofala			Between Amatongas and Gorongosa, river Púnguè
100	18° 57′ 58″ S	32° 47′ 45″ E	Manica	Manica		Between Macequece and the border
101	18° 57′ 29″ S	33° 01′ 21″ E	Manica	Manica		Between river Douro and Vila de Manica
102	18° 57′ 07″ S	33° 02′ 55″ E	Manica	Manica	Messica	Chimoio, right bank of river Revuè
103	18° 57′ 04″ S	33° 16′ 07″ E	Manica	Manica	Vandúzi	Chimoio, Vandúzi, near the beginning of route Vandúzi-Tete
104	18° 56′ 54″ S	33° 13′ 17″ E	Manica	Manica	Vandúzi	Chimoio, Belas
105	18° 56′ 54″ S	33° 13′ 19″ E	Manica	Manica	Vandúzi	Bottom of mountains of Belas, Chimoio
106	18° 56′ 51″ S	33° 04′ 07″ E	Manica	Manica	Messica	Chimoio, Garuzo surroundings
107	18° 56′ 50″ S	33° 12′ 37″ E	Manica	Manica	Vandúzi	Chimoio, from Zembe to Garuso (mountain ridge), hill of quarry
108	18° 56′ 42″ S	33° 09′ 04″ E	Manica	Manica		Chimoio, Serra de Garuso
109	18° 56′ 11″ S	33° 13′ 04″ E	Manica	Manica	Vandúzi	Chimoio, river Vanduzi, route to Vila Pery
110	18° 56′ 00″ S	32° 53′ 00″ E	Manica	Manica		Manica, Macequece, Mission of N.S. do Rosário de Jécua
111	18° 54′ 59″ S	33° 09′ 14″ E	Manica	Manica		Chimoio, mountain ridge of Garuso

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
112	18° 53′ 19″ S	33° 16′ 32″ E	Manica	Manica	Vandúzi	Chimoio, route to Báruè, river Licui
113	18° 39′ 37″ S	34° 48′ 00″ E	Sofala			Cheringoma, between mountain ridge of Durundi and Inhaminga
114	18° 32′ 35″ S	34° 04′ 16″ E	Sofala	Gorongosa		Gorongosa, bottom of mountain ridge of Gorongosa
115	18° 31′ 51″ S	34° 02′ 28″ E	Sofala	Gorongosa		Gorongosa, bottom of mountain ridge of Gorongosa, river Chitunga
116	18° 29′ 08″ S	33° 58′ 51″ E	Sofala	Gorongosa	Nhamadzi	Gorongosa, bottom of mountain ridge of Gorongosa, régulo Canda
117	18° 25′ 44″ S	34° 02′ 18″ E	Sofala	Gorongosa	Nhamadzi	Mountain ridge of Gorong, Gogôgo mountain
118	18° 25′ 12″ S	35° 03′ 45″ E	Sofala	Cheringoma	Inhaminga	Cheringoma, Inhaminga, mountaind ridge of Tumba
119	18° 24′ 02″ S	34° 04′ 18″ E	Sofala	Gorongosa		Gorongosa, mountain ridge Gorongosa
120	18° 18′ 40″ S	33° 13′ 36″ E	Manica	Báruè		Chimoio, Catholic Mission of Amatongas
121	18° 04′ 18″ S	33° 08′ 57″ E	Manica	Báruè	Catandica	Vila Gouveia, mountain ridge of Choa, bank of Talanganga
122	18° 01′ 16″ S	35° 33′ 51″ E	Sofala	Marromeu	Chupanga	Marromeu, near Site of Lacerdónia
123	17° 54′ 23″ S	35° 48′ 23″ E	Zambézia	Mopeia	Mopeia	Mopeia, from Mopeia to Nicuadala
124	17° 26′ 24″ S	35° 04′ 26″ E	Tete	Mutarara		Mutarara
125	16° 48′ 53″ S	36° 59′ 40″ E	Zambézia	Mocuba	Mocuba	Mocuba, Farming Site of Mocuba
126	16° 29′ 06″ S	34° 28′ 26″ E	Tete	Mutarara	Doa	Mutarara, km 148 of Railway of Tete

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
127	16° 27′ 29″ S	33° 08′ 56″ E	Tete	Changara		Tete, between Tete and Chioco
128	16° 25′ 00″ S	32° 49′ 29″ E	Tete	Changara	Chipembere	Chioco, banks of river Luia
129	16° 19′ 42″ S	34° 21′ 11″ E	Tete	Mutarara	Doa	Near Moatize
130	16° 12′ 21″ S	35° 47′ 42″ E	Zambézia	Milange	Milange	Milange, Milange surroundings
131	16° 07′ 21″ S	33° 45′ 12″ E	Tete	Moatize	Moatize	Moatize surroundings
132	16° 06′ 09″ S	35° 46′ 12″ E	Zambézia	Milange	Milange	Milange, tea plantation of S. Miguel
133	16° 04′ 53″ S	35° 48′ 33″ E	Zambézia	Milange	Milange	Milange, mountain ridge of Tumbine
134	16° 01′ 18″ S	37° 09′ 05″ E	Zambézia			Gúruè, km 83, route to Errego
135	15° 54′ 11″ S	37° 09′ 10″ E	Zambézia	Ile		Ile, 137km from Gurué to Mocuba
136	15° 36′ 47″ S	34° 27′ 28″ E	Tete	Moatize	Zobué	Mountain of Zóbuè
137	15° 35′ 42″ S	34° 24′ 56″ E	Tete	Moatize	Zobué	Zóbuè
138	15° 27′ 13″ S	32° 15′ 28″ E	Tete	Marávia	Chipera	Marávia, between Fínguè and Chicoa
139	15° 26′ 32″ S	36° 57′ 49″ E	Zambézia	Gúruè	Gúruè	Near Tea Society of Mozambique. Mountain ridge of Gúruè
140	15° 24′ 59″ S	37° 04′ 21″ E	Zambézia	Gúruè		Gúruè, on top of mountain ridge. Banks of river Marrequelo.
141	15° 24′ 34″ S	36° 58′ 12″ E	Zambézia	Gúruè	Gúruè	Mountain ridge of Gúruè, near waterfall of river Licungo
142	15° 15′ 10″ S	33° 44′ 58″ E	Tete	Macanga	Furancungo	Macanga, mountain ridge Pandalanjala
143	15° 07′ 11″ S	39° 15′ 53″ E	Nampula	Cidade de Nampula		Nampula, Nampula surroundings

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
144	15° 03′ 22″ S	39° 09′ 11″ E	Nampula	Nampula		Nampula, Navaca cliff
145	15° 02′ 48″ S	40° 43′ 37″ E	Nampula	Ilha de Moçambique	Ilha de Moçambique	Ilha de Moçambique
146	14° 59′ 22″ S	38° 16′ 02″ E	Nampula	Ribaué	Ribaué	Ribáuè, near the Farming Site
147	14° 58′ 29″ S	38° 07′ 46″ E	Nampula	Ribaué		Ribáuè, 25km from Farming Site
148	14° 51′ 21″ S	33° 36′ 40″ E	Tete	Macanga	Furancungo	Macanga, 7km from Furancungo
149	14° 45′ 16″ S	33° 38′ 51″ E	Tete	Macanga	Furancungo	Between Furancungo and Angónia, 15-20km from Furancungo, route to Vila Coutinho
150	14° 45′ 15″ S	33° 38′ 51″ E	Tete			Angónia, in the plateau
151	14° 43′ 54″ S	36° 57′ 06″ E	Niassa	Cuamba	Cuamba	Amaramba, Cuamba surroundings
152	14° 37′ 11″ S	34° 05′ 07″ E	Tete	Angónia	Domué	Angónia, route from Furancungo to Angónia, near Régulo Chide
153	14° 19′ 05″ S	35° 36′ 22″ E	Niassa	Mandimba	Mandimba	Amaramba, route from Mandimba to Vila Cabral
154	14° 16′ 47″ S	35° 33′ 51″ E	Niassa	Mandimba	Mandimba	Amaramba, 13km from Mandimba, route to Vila Cabral
155	14° 11′ 34″ S	35° 58′ 03″ E	Niassa	Mandimba		Amaramba, Mandimba, banks of river Lugenda
156	13° 49′ 42″ S	37° 14′ 28″ E	Niassa	Maúa	Maúa	Marrupa, Maúa, route to Montepuez, at km 10, stream Namisso
157	13° 49′ 03″ S	37° 13′ 08″ E	Niassa	Maúa	Maúa	Metonia, mountain ridge Mecopo
158	13° 21′ 00″ S	35° 38′ 36″ E	Niassa	Lichinga	Chimbonila	Between Vila Cabral and Litunde, 60km from Vila Cabral

Appendix 1 (cont.): List of harvest locations of the specimens collected by the Botanic Mission to Mozambique (1942-1948) and their inclusion in the current administrative division

Locality	Latitude	Longitude	Province	District	Administrative site	Locality description
159	13° 07′ 32″ S	38° 59′ 59″ E	Cabo Delgado	Montepuez		Montepuez, flatland near Montepuez
160	13° 00′ 45″ S	40° 31′ 55″ E	Cabo Delgado	Cidade de Pemba		Porto Amélia surroundings, route from Montepuez
161	12° 58′ 01″ S	40° 30′ 27″ E	Cabo Delgado	Cidade de Pemba		Porto Amélia, at bathing beach
162	12° 41′ 42″ S	34° 48′ 57″ E	Niassa	Lago	Metangula	Metangula, bank of lake Niassa
163	12° 33′ 21″ S	38° 59′ 44″ E	Cabo Delgado	Montepuez		Macondes, 67km from Montepuez to Mueda, near Nairoto
164	11° 45′ 11″ S	40° 25′ 54″ E	Cabo Delgado	Macomia		Between Palma and Mocimboa da Praia
165	11° 39′ 46″ S	39° 33′ 02″ E	Cabo Delgado	Mueda	Mueda	Macondes, between Mueda and Nangade
166	11° 01′ 19″ S	39° 43′ 59″ E	Cabo Delgado	Nangade	Nangade	Tungue, 10km from Nangade, route to Palma
167	10° 31′ 28″ S	40° 23′ 51″ E	Cabo Delgado	Palma		Palma, bank of river Rovuma

Source: Organized by the authors from Mendonça (1942-1945; 1947-1948); Garcia (1948); Torre (1947-1948) and Barbosa (1947-1948).
Geographic coordinates using WGS84 datum