Retention and loss of plant terms between Proto-Oceanic and Micronesian

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ABSTRACT

What plants did speakers of Proto-Micronesian know about, and what do they tell us about the settlement history of Micronesia? In this paper I survey the Micronesian reflexes of Proto-Oceanic plant terms. The data points to a settlement scenario that starts with high islands, and excludes an “island-hopping” scenario via closest low islands.

Keywords: Proto-Micronesian, Proto-Oceanic, plant terms

INTRODUCTION

Micronesian-speaking peoples have been living in the vast area of the Western Pacific spanning over 40 degrees of longtitude from Sonsorol to Kiribati over the last two millenia. Language, archaeology, genetics, and oral history point to a broad consensus about the timeline of their arrival into the islands (Athens 2018, a.o.). Still, many details remain open to question and many aspects of the evidence have not been explored. This paper fills one of the gaps by examining the fate of ancestral plant terms in Micronesian languages. In short, the evidence points to a settlement scenario involving continuous contact with high island flora, and excluding a prolonged period of settlement on a low-lying atoll.

In this study I focus on *linguistic Micronesia*, the territory inhabited by people speaking languages belonging to the Micronesian linguistic subfamily. Micronesian is a well-defined proper subgroup of Oceanic (Bender et al. 2003, Bender & Wang 1985, Jackson 1983, 1986, Pawley 2018), and ultimately of Austronesian languages. Geographic Micronesia includes several other linguistic subgroups, reflecting distinct waves of arrivals (Kirch 2017, Athens 2018, Pawley 2018, Liu et al. 2022). In addition to Micronesian languages, other members of the Austronesian family are spoken in geographic Micronesia: two languages more closely related to Western Malayo-Polynesian (Chamorro, spoken on Guam and in the Marianas, and Palauan), Yapese, an Oceanic outlier (Ross 1996), and the two Polynesian outliers, Nukuoro and Kapingamarangi.

Geographically from West to East, Micronesian languages include Chuukic, a dialect continuum extending "from Sonsorol to Chuuk" (Quackenbush 1968); Pohnpeic, including Pohnpeian, Mokilese, and Pingelapese; Kosraean; Nauruan; Marshallese; Kiribati (or Gilbertese). In previous literature, Nauruan was considered a coordinate branch with Nuclear Micronesian (Nathan 1973). Following work by Hughes (2020a,b) and Blumenfeld (2022), the nuclear/non-nuclear distinction is no longer necessary: Nauruan is a member of the Micronesian family.

The vast majority of Micronesian islands are low-lying coral atolls. Such are the Marshall Islands, Kiribati, and most islands in the Western Carolines. Three high islands are present in the region: Chuuk, consisting of several nearby islands within a reef, Pohnpei, and Kosrae. (Yap, Palau, and Guam, high islands in geographic Micronesia, are inhabited by speakers of languages outside of the Micronesian family). There are also several raised coral atolls, notably the isolated Banaba and Nauru.

While the uncontroversial cross-disciplinary consensus is that ancestors of modern Micronesian speakers arrived to the region from some point or points in the Oceanic-speaking area ranging from the Admiralties to Northern Vanuatu, the details how the settlement took place are uncertain. One possibility is the ISLAND-HOPPING scenario, where populations gradually settle a new region proceeding via closest land. In the case of Micronesia, such a path would take Melanesian settlers in a series of hops via Tuvalu and Kiribati before they arrive at the high islands in the Carolines, implying a lengthy period in a low-island environment. On the other hand, if Micronesia was settled by long-distance voyagers first arriving on a high island, at least two other possibilities arise. One is SINGLE SETTLEMENT AND RADIATION, where a single island is occupied by a community, followed by radiative expansion to other islands over time. Another possibility is MULTIPLE SETTLEMENT AND NETWORK-BREAKING: near-simultaneous arrivals on islands by communities that are interconnected, either from the start or following their arrival, and subsequent breaking or reconfiguring of the network.

The archaeological record appears to point to the last of these scenarios. There are overlapping time estimates for the earliest settlements across Micronesia (Rainbird 1994, 2004,

Kirch 2002, Carson 2013, Athens 2018). Both the high islands and the atolls in the Marshalls and Kiribati were "occupied virtually at a single point in time, between about 1,800 and 2,000 years ago" (Athens 2018:279). While Micronesian pottery styles vary across the three high islands, they are generally related to the style of late Lapita plainware pottery (Athens 1990a,b; Athens 2018:284). Athens takes this as evidence against an island-hopping pattern of settlement; a more likely scenario is that colonization of Micronesia originated from several distinct points in the Lapita homeland, and the settlers arrived at multiple points in Micronesia nearly simultaneously. Rainbird (1995) points out other possible scenarios, such as initial settlement of Pohnpei followed by settlement of Chuuk and Kosrae at a later date.

Linguistic evidence tentatively supports near-simultaneous settlement, but both the external connections and internal subgrouping of Micronesian are not settled matters. It is clear that Micronesian languages are related to Oceanic languages to the south, and that Micronesian forms a proper subgroup of Oceanic (Jackson 1986, a.o.), diagnosed by a number of shared innovations. It is a first-order subgroup in the rake-like, flat Oceanic tree (Ross et al. 2023). Such a tree structure suggests rapid expansion and break-up of the Oceanic-speaking community (Pawley and Ross 2006, Pawley 2018), but also means that the linguistic signal of the geographic origins of Micronesian within Oceanic is weak. Identifying the closest Oceanic relative of Micronesian, and the locus of Pre-Micronesian speakers in Melanesia or Remote Oceania, has proved challenging. There are competing claims, all tentative, placing those origins in Malaita-Cristobal (Blust 1984, 1986, 2010; *pace* Lichtenberk 2010), North-Central Vanuatu (Jackson 1986), and the Santa Cruz islands (Song 2009). An interesting underexplored claim first due to Smythe (1970) is that Micronesian shares affinities with languages of the Manus island (see Ross 1988:326).

Yet, the fact that Micronesian is an innovation-defined subgroup means that a population ancestral to modern Micronesians must have lived as a community separate from the rest of Oceanic, but internally connected, for a sufficient time in which innovations could accumulate. These facts are compatible with a single settlement and single origin scenario, where a connected ancestral population settles the new territory and, after a pause, expands outward. But the facts also do not contradict the multiple-points origin and multiple-island settlement advocated by Athens: possibly heterogeneous communities maintain contact between islands spreading shared innovations across the entire network.

The internal structure of the family is also a complicated matter. One model, developed by Jackson 1983, focuses on its arboreal structure, i.e. identifies innovation-defined subgroups. Jackson's tree, adapted by Bender et al. 2003a:3 and reproduced here in Figure 1, suggests differentiation from the high islands outward, and a general direction of expansion from East to West.

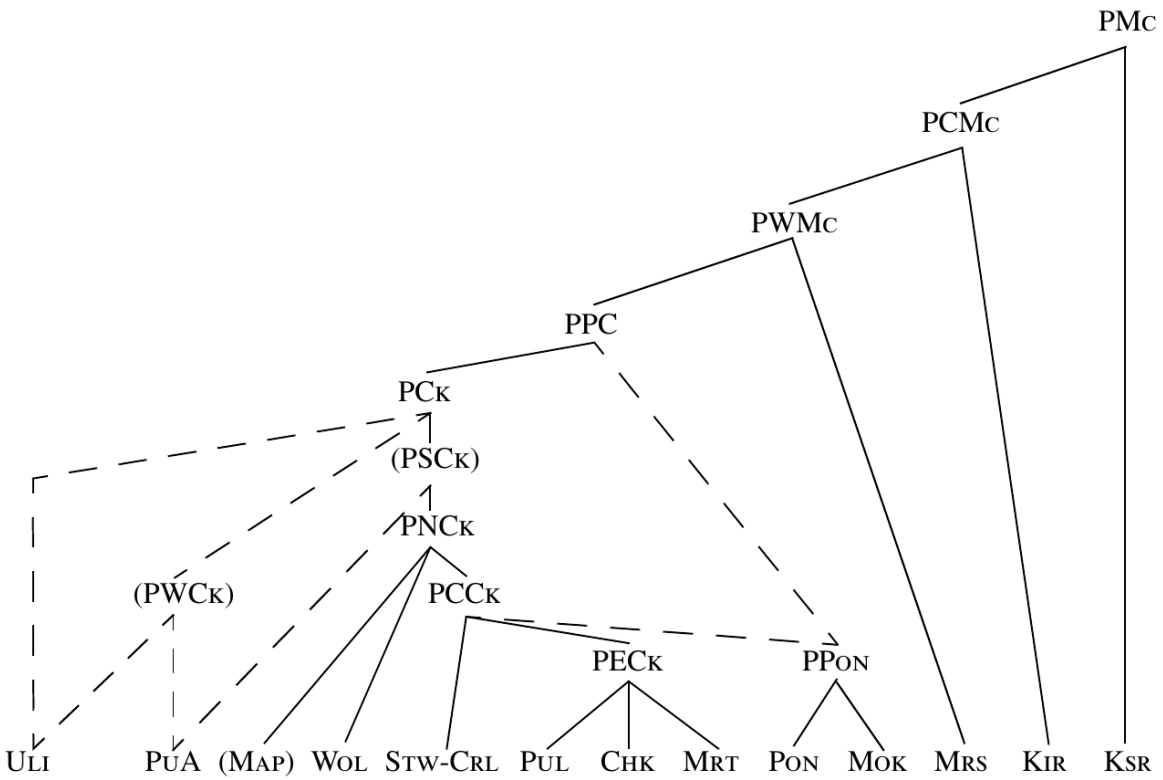

Figure. 1. The Micronesian family (Bender et al. 2003a:3)

A literal reading of the tree implies the initial settlement of Kosrae and subsequent stepwise radiation. As Kenneth Rehg notes, the tree would mean that "Micronesia was settled by a series of discrete moves through the islands, and that at each point where we identify a subgroup, there was a pause of sufficient duration to allow a unique set of innovations to develop by which we can identify the subgroup" (1995:314). Yet, such a tree cannot be taken unreflectively as a depiction of the historical radiation pattern. While the arboreal structure illuminates some aspects of the data, there are other aspects of the data which it hides: overlapping and intersecting patterns of isoglosses found in dialect continua. In early Oceanic, rapid expansion with subsequent network breaking was "the rule rather than the exception" (Pawley & Ross 2006: 55; see also Pawley & Green 1984, Rehg 1995, Geraghty 1983, Marck 1986, François 2014). Network breaking creates a linguistic signature: a complicated pattern of interlocking innovations giving rise to dialect continua, or linkages. Such a wave structure is not necessarily incompatible with Jackson's tree, but rather reflects different aspects of the data. Such a continuum is apparent in the Chuukic branch of Micronesian (Quackenbush 1968, Jackson 1983), and remains to be explored for the higher branches (Blumenfeld 2022). In sum, in the state of present knowledge the internal linguistic structure of Micronesian does not definitively exclude any of the settlement scenarios.

Another area is lexical evidence; reconstructed terms for the physical environment, including names of plants and animals, stand as witnesses to the material world with which the speakers interacted. Previous literature on such terms is discussed in the following section. In the main part of the paper I turn to lexical evidence from Micronesian plant terms. In short, the task at hand is to cross-reference data on lexical retention of plant terms with data on plant

distribution across the islands. It will be apparent that ancestors of Micronesians knew about high islands.

PREVIOUS WORK ON LEXICAL EVIDENCE

Many Proto-Oceanic terms referring to high island features do not survive in Micronesian. There are no reflexes of POC *koro 'mountain, hill',[1] POC *pʷaka(r,R) 'steep rocky ground, cliff', POC *rau(n) 'flat land', POC *mala 'valley, ravine', or POC *waiR 'fresh water; river, stream'. (Language and data source abbreviations are listed at the end of the paper).

Still, in a survey of Micronesian physical environment vocabulary, Marck (1994) identified several clear retentions. POC *solos 'inland mountain country, highland interior' > PMC *Solo 'peak, hill' is reflected in all branches of Micronesian except KIR and NAU, including in languages spoken on atolls, e.g. MRS *teḷw* 'mountain, hill'. Related to it is the verbal sense the root, *(s,S)olo 'fade from view, sink, subside', present at least in Chuukic. Likewise, POC *qutan 'bushland, hinterland' > PMC *uta is retained in MOK, MRS, KSR, and NAU. Marck (1994: 320) places some significance on KSR *unohn* 'spring, well', corresponding, with reduplication, to PPN *puna 'bubble or well up (of water); a spring' (Pollex), POC *puna 'base of a tree; source, origin' (ACD). Marck also notes MRS *wūn* 'base, basis, root' (A09); Kir *un* 'principal or central root' (TG09). This etymology is important because low islands have no freshwater springs.

At least two animals were identified by Marck (1994) as belonging to high island fauna. POC *tuna 'freshwater eel' is retained in KSR *ton*; it is found only on islands with freshwater streams. POC *bʷeka 'flying fox, large fruit bat' > PMC *pʷeka 'k. of bat', retained in KSR, MOK, PON, may also be indicative, but its distribution may also include at least some low islands. However, Marck did not undertake a systematic survey of animal vocabulary in Micronesian, and I likewise leave animals for another day.

Some additional Micronesian retentions relating to physical environment are worth mentioning. There are two words for 'lagoon' in Micronesian. The first set contains reflexes of POC *namo 'lagoon inside a reef; deep pool or hole in reef ' > PMC *namʷo 'lagoon, harbor'. The second, smaller set reflects POC *laman 'deep sea beyond the reef ' > PMC *lama 'lagoon, lake', with a meaning shift encroaching on the meaning of *namo, present in MOK, MRS, and KIR. This pair of etyma received attention from Blust because the semantic shift appears parallel with Cristobal-Malaita languages. (Blust 1984: 115, 2010: 562; cf. Jackson 1986:224 and RPO 3:94).

Despite these occasional retentions, Marck expressess the general impression is that little high island vocabulary survives in Micronesian, but suggests that the dearth of high-island vocabulary "is less significant than we have long suspected" (Marck 1994: 326–327). Instead of pointing to a low-island homeland, it may be indicative instead of initial settlement of high islands by coastal populations not interested in interiors, a lack of interest shared by Oceanic speakers more generally (RPO 3:28). A longer quote from Marck, with a call to look at plant vocabulary specifically, will introduce the rest of the paper.

> "Thus the results of the present work [...] relieve us of some pressure to keep producing more [high-island etyma in MC]. It seems we now have gone from an ambiguous situation with the linguistic evidence slightly favouring an atoll homeland or atoll filter on the way to the homeland to a situation where we are developing reason to believe high islands were at least part of the overall environment where PMC or its dialects were spoken, and that they applied at least some POC terms to high island features. *We need to look at plants, continuities in their*

> *vocabularies and which plants cannot be grown on atolls*. But that is work for another day" (Marck 1994: 327; emphasis mine).

Heeding Marck's call, this paper looks at the fate of Proto-Oceanic plant vocabulary in Micronesian.[2]

METHODS AND ISSUES

Scope of the Study

Ross, Pawley and Osmond (2008, henceforth RPO; see below for abbreviations) document over 200 POC reconstructed plant terms; this paper discusses just over 50 of them. Many of the the plants with Oceanic etymologies are now and appear to have always been absent from Micronesia. This is particularly true of the lowland forest ecosystem.

I will not have much to say about terms for widely cultivated staple crops; there appear to be too few Micronesian retentions in this area of the vocabulary to be a useful source of evidence. Instead, the focus will be on terms for *wild* plants, although, as many authors have noted, the boundary between wild and cultivated can be fuzzy in Oceania (cf. RPO 3:27; McClatchey 2012). As Athens et al. (1996) have documented, deliberate establishment of an agroforest appears to have been an early activity at least on Kosrae (see also Rainbird 1995).

Some terms for plants common elsewhere in Oceania and reconstructed to POC in RPO, but absent or only recently introduced in Micronesia, is given in table 1.

Table 1: Plants with POC reconstructions absent or recently introduced in Micronesia

Albizia sp.	*Dillenia schlechteri*	*Licuala* sp.
Alphitonia spp.	*Donax cannaeformis*	*Litsea* sp.
Alstonia scholaris	*Dracontomelon dao*	*Myristica* sp.
Bischofia javanica	*Dysoxylum* spp.	*Octomeles sumatrana*
Burckella obovata	*Endospermum* sp.	*Phaleria tree* sp.
Calamus spp.	*Falcataria moluccana*	*Semecarpus forstenii*
Caryota sp.	*Garuga floribunda*	*Trema orientalis*
Coix lachryma-jobi	*Gyrocarpus americanus*	*Trichospermum peekelii*
Corynocarpus cribbianus	*Hornstedtia lycostoma*	*Vitex cofassus*
Cryptocarya sp.	*Imperata cylindrica*	

Conversely, plant terms which are covered in this paper are listed in Table 2. (Full data are found in the appendix.)

Table 2: Plants investigated in the present study

Acalypha sp.	*Casuarina equisetifolia*	*Dolichandrone spathacea*
Atuna racemosa	*Cerbera* spp.	*Elaeocarpus angustifolius*
Barringtonia asiatica	*Cinnamomum* spp.	*Erythrina variegata*
Bruguiera spp.	*Commersonia bartramia*	*Fagraea berteroana*
Calophyllum inophyllum	*Cordia subcordata*	*Ficus* strangler taxon
Campnosperma brevipetiolatum	*Decolobanthus peltatus*	*Flagellaria indica*
	Derris sp.	*Flueggea flexuosa*

Garcinia sp.
Glochidion philippicum
Guettarda speciosa
Heritiera littoralis
Hernandia nymphaeifolia
Hibiscus tiliaceus
Hoya sp.
Intsia bijuga
Ipomoea spp.
Kleinhovia hospita
Laportea, Dendrocnide spp.
Lygodium circinnatum
Macaranga spp.
Miscanthus floridulus
Nypa fruticans
Ochrosia oppositifolia
Pangium edule
Pemphis acidula
Pipturus argenteus
Pisonia spp.
Planchonella spp.
Pongamia pinnata
Premna spp.
Pterocarpus indicus
Rhus taitensis
Scaevola taccada
Terminalia catappa
Thespesia populnea
Vitex trifolia
Wollastonia biflora
Xylocarpus granatum

The paper focuses on linguistic Micronesia, i.e. geographic Micronesia including Marshall Islands, Nauru, and Kiribati but excluding the areas where Chamorro, Palauan, Yapese, and the Polynesian outlier languages are spoken. Banaba, while linguistically Kiribati-speaking, possesses a distinct plant environment. Its plant terms were subject to a separate survey (Thaman & Samuelu 2016), and thus it is treated as its own category in this paper.

Data Sources and Data Presentation

This paper brings together two kinds of data: linguistic data on plant terms and botanical data on plant distribution. Linguistic data consists of vernacular plant terms and etymological hypotheses about cognatehood with other terms and descent from reconstructed protoforms in Proto-Oceanic (POC) and Proto-Micronesian (PMC). It is sourced from general works on Oceanic and Micronesian families, general plant checklists, dictionaries of specific languages, and botanical surveys and checklists of individual islands. Etymological claims are discussed and updated in several cases in this paper.

Botanical data consists of information about presence or absence of a given plant at a given location, and claims about its status as indigenous or introduced. In many cases a single work serves both as a source of linguistic and botanical data (e.g. Thaman 1987, Thaman et al. 1994, Balick 2009). A full list of sources is given at the end of the paper, along with abbreviations used to cite data in the appendix and elsewhere. Languages are referred to by the same abbreviations as in Bender et al. 2003.

Reconstructed POC forms are given in the orthography of RPO; PMC forms in the orthography of Bender et al. 2003. Data from spoken languages is shown in the form found in the source. While keeping source orthographies causes the data to be presented in a non-homogeneous way, it was not practical to bring all data into a uniform transcription system, not just because of the variety of conventions used in sources, but because some key sources lack a transcription system altogether. This is particularly apparent in the case of data from Falanruw et al. 1990, which gathers forms from multiple sources, some in standard orthographies, others in ad-hoc transcriptions used by non-linguist fieldworkers.

What Counts as Evidence?

While the task of cross-referencing data on plant distribution with data on protoform retention appears straightforward, there are several complications and limitations.

On the linguistic side, inferences about retention are only as good as the input data. On the whole, data quality for Micronesian and Oceanic plant terms is high, but varies from

language to language, ranging from extremely detailed ethnobotanical and lexicographic work on Pohnpeian (Balick 2009, Sohl et al. 2022) to sparser documentation on Kosrae (e.g. the vast majority of tree terms in Lee 1976 are glossed as 'kind of tree'). There are no doubt some plant term retentions that remain unknown. Sound correspondences for Micronesian and Oceanic are well-worked out (Bender et al. 2003a,b; Ross et al. 1998–2023), such that if a form is known, it is usually possible to tell if it is a reflex of a known proto-form or a cognate of another form in a sister language. However, not all data is available in high-quality trancriptions; much data amassed by Falanruw et al. (1990), for example, is trancribed impressionistically.

While reconstructions themselves might be secure, more uncertainty lies in what the "words and things" method of inferring prehistory from vocabulary can and cannot do (Blust 1986, Geraghty 2004, 2022; Epps 2015; Heggarty 2015; Mallory 2020). Imputing a reconstructed form to a proto-language is not a mere consequence of observing regular reflexes in daughter languages. As Geraghty (2004:66) notes, one "irreverent wag" discovered a Proto-Micronesian reconstruction for 'motorcar' based on regular sound correspondences[3]; another one found the Proto-Algonguian word for 'whiskey' (Bloomfield 1946). Lateral influence of certain antiquity—even not very great antiquity—can create false cognate sets. Particularly in situations of intense contact, inheritance from the protolanguage might not be distinguishable from later borrowings. Such lateral influence, however, obscures the lower structure of the family tree more so than reconstructions at the family level.

Heggarty's (2015) criticism of the "words and things" method focuses on terms for technological innovations, whose meanings can develop indepedently along similar pathways in different branches of the family and create false reconstructions, such as Heggarty's example of 'computer mouse' reconstructible to at least Proto-Germanic, if not Indo-European. Plant terms are not subject to such criticism in an obvious way.

An interesting consequence of the problem of lateral influence is that the weight of evidence of an isolated reflex in a single language is at least as strong, and perhaps even stronger, than the weight of a chain of reflexes across neighbouring languages which may have arisen through lateral influence. An example in the Micronesian data are retentions of the words for *Garcinia* and for *Planchonella* in Pohnpeian and apparently nowhere else in the family.

A related problem is that inference from a protoform to claims about the physical environment are only as strong as our certainly about the meaning of that protoform. Generally for plant terms examined here, there is strong agreement in the glosses of the descendant languages. Meaning shifts, when they occur, are mostly well-motivated, such as the change from *Derris,* a vine used for fish poison, to *Barringtonia*, a tree used for the same purpose, which took place in Marshallese, spoken where *Derris* is absent. For the vast majority of etyma there is little reason to doubt the meanings of the protoforms.

While these general methodological problems complicate the analysis, I believe they do not undermine the basic conclusions of the study. I will return to these issues in the conclusion, asking the following question: what scenarios other than direct inheritance would have produced the observed data?

There are also serious caveats and limitations on the botanical side. Reports of presence and absence of plants in modern checklists and surveys do not guarantee an identical state of affairs at the time of settlement. A plant reported 'present' is not necessarily indigenous to an island. Many sources (e.g. Fosberg et al. 1979, Thaman 1987, Thaman et al. 1994, Balick 2009, POWO 2023) classify plants as indigenous or introduced, but, as Fosberg et al. (1979: 44) note, "[i]n many cases it is difficult to be sure how plants got to the islands, and we have used our best judgement."

Likewise, a plant reported 'absent' might have been indigenous to an island at an earlier time and become extinct more recently. No doubt this is the case for at least some species on Nauru and Banaba, whose ecosystems suffered radical disturbance in the last century due to phosphate mining. Ecosystems of other islands, both high and low, are also different today than they were at the time of settlement, due to both modern and aboriginal influence. Both human and natural causes contribute to uncertainty about the indigenous status of a plant on an island. On islands subject to catastrophic droughts, for example, such as Banaba, only the hardiest species survive, and other plants needed to be reintroduced (Alkire 1978:17). Thus, even plants that appear wild may be brought to a place by humans.

As noted above, the wild/cultivated distinction in Oceania is not a sharp one. In contrast to well-understood recent introductions, it is difficult to distinguish an indigenous plant from an early aboriginal introduction. An example of such uncertainty is *Thespesia populnea*: while adapted to oceanic dispersal, the tree, useful for its wood (Balick 2009:434), may have been an early canoe plant, and listed as such for Polynesia in POWO 2023, though not ty Fosberg et al. 1979. On the other hand, the kou tree in Hawai'i (*Cordia subcordata*), previously thought to have been an aboriginal introduction, was recently found to be indigenous (Prebble 2008).

Other complexities both on the linguistic and botanical sides arise due to contact between islands, as already mentioned in the introduction. Exchange systems such as the well-known *sawei*, an extensive contact and exchange network in the Western Carolines, as well as smaller interisland systems such as the "hook" *hui* (Alkire 1977:49, 1978:119), ensured formalized contact between distand islands, but also facilitated less formal everyday interactions that no doubt served as a vehicle for both plants and plant terms. Frequency of interisland marriages attests to close contacts (Alkire 1978:124). Contact between Marshall Islands and Mokil is another example of long-standing channel of linguistic borrowing (Rehg and Bender 1990), as is the Kiribati-Nauru connection (Blumenfeld 2022). In recent and not-so-receent prehistory, populations of entire atolls in the Western Carolines suffered conflict-driven replacement (Alkire 1978:116), e.g. Ifaluk-Woleai, Lamotrek-Satawal. Such interactions weaken the inferences that can be drawn from presence or absence of a plant or term on a single island, particularly low islands with small populations.

To the extent the interisland communication network was present at the time of settlement, as in the NETWORK-BREAKING scenario mentioned in the introduction, the methods of historical linguistics run up against a general limitation. In studying linguistic linkages typical of Oceania, terms related by common descent are indistinguishable from terms that are due to contact and borrowing within an early settlement community that was still linguistically uniform between islands in close contact. Linguistic evidence alone cannot distinguish one from the other. Thus, it is probably futile to look for lexical evidence of which of the three high islands (Kosrae, Pohnpei, Chuuk) is a likely first point of settlement. Even if such a first point of settlement did in fact take place, whatever lexical imprint an island may have left on Proto-Micronesian would have been obscured by subsequent contact and borrowing.

Rather, instead of attempting to reconstruct fine-grained settlement scenarios on the basis of noisy data where the signal of individual islands is obscured, we may seek the lexical imprint of an environment *type*, such as that of a high island vs. a low-lying atoll. I hope to demonstrate below, such a signal is more stable and detectable after two millenia of history.

RESULTS

I now turn to the fate of wild plant terms in Micronesian. The key observation is that retention is possible even in absence of a plant on low islands. Such retentions point to a PMc speech community that was aware of high island features at the time of initial settlement of the three main high islands.

General Retention Patterns

While retention or loss of any individual etymon is a largely random event, there are some broad expectations. Most obviously, a word is more likely to be retained the more frequently it is used, which in the case of plants is related to the plant's usefulness to the speakers. As Ross et al. (3:428) put it, "[t]here appears to be a reasonably high correlation between the durability of a POc plant name and the plant's frequency of use". Thus plants with many and diverse uses might be denoted by more stable terms. Epps (2015) discusses similar conclusions based on evidence from other language families.

Pawley (4:142), citing personal communication from Malcolm Ross, suggests another factor influencing retention likelihood, orthogonal to frequency. Retention is more likely for those terms whose denotation is sharply distinct from other denotata. In the case of plants, terms for visually or functionally distinct taxa are more likely to be retained than those denoting vague or overlapping categories. Together these and possibly other factors create a hierarchy of retention likelihood. Such a hierarchy for fish terms was investigated by Pawley (RPO 4:137).

While distinctiveness might be difficult to quantify, the usefulness of a plant has been quantified by Thaman (1992), who simply counted the number of documented uses for the most common taxa. The claim that more useful plant names are more commonly retained can thus be tested by checking the correlation between Thaman's use counts and some measure of how often a term is retained. I computed such a RETENTION INDEX by counting the number of primary branches of Oceanic that show retentions of a given POc etymon, as documented in RPO. A total of 28 taxa have both a retention index and a use count in Thaman (1992) (excluding *Cocos nucifera*, an outlier with 127 uses), shown in Table 3 below. The two measures do indeed correlate, albeit weakly ($r = 0.35$; $t = 1.89$, $df = 26$, $p = 0.07$).

Table 3. Plant uses and retention index.

	USES	RI
Hibiscus tiliaceus	57	11
Pandanus tectorius	53	11
Calophyllum inophyllum	43	7
Cordia subcordata	40	6
Guettarda speciosa	36	5
Scaevola taccada	32	6
Pemphis acidula	30	7
Thespesia populnea	26	3
Rhizophora spp.	25	3
Casuarina equisetifolia	22	8
Premna serratifolia	22	7
Morinda citrifolia	22	5

Pipturus argenteus	21	8
Terminalia catappa	21	8
Ficus tinctoria	21	9
Erythrina varietaga	19	3
Inocarpus fagifer	18	4
Hernandia sonora	18	8
Pisonia grandis	17	6
Bruguiera gymnorhiza	16	11
Nypa fruticans	14	3
Barringtonia asiatica	14	11
Intsia bijuga	13	6
Cycas circinalis	13	5
Cerbera manghas	10	3
Crinum asiaticum	9	4
Neisosperma oppositifolia	8	4
Ipomoea pes-caprae	7	9

In the remainder of this section I examine approximately 60 plant terms, starting with the most widely distributed and then turning to plants with progressively narrower distribution. For each POc term, information will be provided on its fate in nine Micronesian languages or groups of languages, distinguishing retention, replacement by an new term, absence of data, and absence of plant in the locale in question. Full data with notes on some individual terms is given in the Appendix.

Cosmopolitan Species

There are a small number of hardy, pantropical, cosmopolitan trees and shrubs found on all island types, including low-lying atolls, and reported present across Micronesia. Reconstructed terms for such plants are well-supported for POc and are mostly retained in PMc. While retention of such vocabulary is not informative about settlement history, it serves to introduce general retention tendencies across the Micronesian family.

The data is presented in table 4. The following abbreviations are used here and in the rest of the section and summarized under each table: an "R" indicates retention of the POc term, an n-dash (–) indicates data absence, i.e. the plant is reported present and appears to be indigenous, but the vernacular name is not available to me, and a blank cell indicates that a term is known but is not a retention from POc. The last two columns show the number of uses from Thaman 1992: 21–22 and the "retention index" as described above.

A general observation from this table is that Pohnpeic and Chuukic languages, on the whole, retain more terms, while Kosraean, Nauruan, and Marshallese retain fewer, and Kiribati is somewhere in the middle. Most terms are known, with the exception of *Thespesia populnea* in Marshallese and several terms for *Vitex trifolia*.

Table 4: Retention of POc terms for cosmopolitan species

POC	taxon	WCH	ECH	PON	MOK	KSR	NAU	BAN	KIR	MRS	uses	RI
*(p,b)anaRo	*Thespesia populnea*	R	R	R	R	R				–		3
*putun	*Barringtonia asiatica*			R	R		R		R		14	11
*pitaquR	*Calophyllum inophyllum*	R		R	R	R	R	R	R	R	43	7
PRO *buka	*Pisonia* spp.			R?		R?		R?	R?		17	6
*qarop	*Premna* spp.	R	R	R						R	22	7
*qayawan	*Ficus* strangler taxon	R?	R	R	R		R	R	R		21	9
*paRu	*Hibiscus tiliaceus*	R	R		R			R	R		57	11
*na[su]-nasu	*Scaevola taccada*	R	R	R						R	32	6
*kanawa(n)	*Cordia subcordata*	R	R		R						40	6
*drala	*Vitex trifolia*	–	R		–	–					11	4

"R": retention of POc term; "–": no term is known; blank cell: term with no POc etymology

There are four terms for widely distributed plants with no apparent reflexes in Micronesian languages, listed in Table 5. For the nettles, *Laportea* and *Dendrocnide*, terms in several languages are unknown. While such complete loss of a POC term is not particularly informative, it is interesting that in all but one case there is no PMC-level innovation. The one PMC-level innovation is the word for *Guettarda speciosa*, PMc *uSi (ULI *iuth*, PON *ihd*, KSR *i* 'kind of tree', NAU *iut*, KIR *uti*, MRS *wut* (F)). PMC *[ce]ceni '*Heliotropium arboreum* (Blanco) Mabb. (syn. *H. foertherianum*, *Messerschmidia argentea*, *Tournefortia argentea*)' is one example of a pantropical plant common in Micronesia and elsewhere on high as well as low islands with a PMC-level reconstruction and no cognates elsewhere and no higher-level reconstruction.

Table 5: Loss of POc terms for cosmopolitan species

POC	taxon	WCH	ECH	PON	MOK	KSR	NAU	BAN	KIR	MRS	uses	RI
*puRe	*Ipomoea* spp.										7	9
*[pwano]pwano	*Guettarda speciosa*										36	5
*talise	*Terminalia catappa*											8
*[ja]latoŋ	*Laportea* & *Dendrocnide* sp.				–	–	–			–		8

"–": no term is known; blank cell: term with no POc etymology

Species Absent on Nauru and Banaba

Nauru and Banaba are species-poor. Apart from their isolation, these islands are subject to periodic droughts that wipe out all but the hardiest species. Many common tropical plants, such as *Pemphis acidula*, *Ficus tinctoria*, *Pipturus argenteus*, and *Ochrosia opositifolia*, are absent on these raised atolls (Thaman et al. 1994: 20). According to Thaman et al. (1994:19), dicots on Nauru consist "almost exclusively of salt-tolerant, widely-dispersed, pantropical coastal species". Because the low plant diversity is in part due to the natural environment and isolation, it must have been similar at time of initial settlement, but in addition, both Nauru and Banaba, phosphate-rich raised atolls, have suffered drastic environmental disruption due to mining, which almost certainly exterminated at least some species originally present. Thus, absence of a plant on these islands may be recent.

There are several plants with POC terms that are reported absent on Banaba or Nauru but are otherwise widely distributed. Of these, four terms are clearly retained from POC, while the terms for *Intsia* and *Wollastonia* are not (PCK *adúadú appears related to the POC etymon but is a loan because PCK *-t- is expected from POC *-t-; cf. 3:133).

Table 6: Retention and loss of POc terms for plants absent on Nauru or Banaba

POc	taxon	WCh	ECh	Pon	Mok	Ksr	Nau	Ban	Kir	Mrs	uses	RI
*biRi-biRi	*Hernandia nymphaeifolia*			R	R	R		Ø	R	R		8
*toŋoR	*Bruguiera* sp., mangrove	R	R	R?			R	Ø	R	R	16	11
*ŋiRac	*Pemphis acidula*	R	R	R	R		Ø	Ø	R	R	30	7
*qaram^{w}aqi	*Pipturus argenteus*	R	R		R		Ø	Ø	R	R		8
*(qate-)qate	*Wollastonia biflora*				–	–	Ø					2
*qipil	*Intsia bijuga*	–				–	Ø	Ø	Ø		13	5

"R": retention of POc term; "–": no term is known; blank cell: term with no POc etymology; "Ø": plant reported either absent or recently introduced

Species Absent on all or most Low Islands

Several POc terms for plants systematically absent on all or almost all low islands are retained in PMc, shown in table 7 below. All but one of the plants, *Derris* vine, are also absent on Nauru and Banaba.

Table 7: Retention of POc terms for species absent on low islands

POc	taxon	WCh	ECh	Pon	Mok	Ksr	Nau	Ban	Kir	Mrs	RI
*(q,k)atita	*Atuna excelsa*	ØRS	R	R	ØRS?	R	Ø	Ø	Ø	Ø	5
*buRat	*Fagraea berteroana*	Ø	R?	R	ØRS	R?	Ø?	Ø	Ø	Ø	6
*kalaka	*Planchonella* sp.	Ø	–	RS	Ø		Ø	Ø	Ø	Ø	6
PRO *vuba	*Derris* sp.	RS	R	R	RS	R	–	R?	Ø	ØRS	2
*[baR]baR	*Erythrina variegata*	R	R	R	Ø	–		Ø	Ø	–?	3

"R": retention of POc term; "RS": retention with meaning shift; "–": no term is known; blank cell: term with no POc etymology; "Ø": plant reported either absent or recently introduced

The retention of these POc terms in Micronesian languages is significant and indiciative of a settler population that was aware of these plants, excluding a long-term low-island bottleneck scenario of settlement.

Perhaps the strongest evidence comes from the retention of *(q,k)atita '*Atuna excelsa* subsp. *racemosa* (syn. *Parinari laurina*), the putty nut'. It is systematically absent on low islands (Kiribati, Marshalls, Nauru, Banaba, and atolls in the Carolines), and present on all three high islands in the Carolines (Kosrae, Pohnpei, and Chuuk). It occurs at upper elevations on Kosrae in dense stands (Maxwell 1982: 116). The POc etymon, *(q,k)atita, PMc+ *atita (PPC in MCD), is retained on high islands (Chk *ais*, Pon *ais*, Ksr *aset* (F90)), and retained, sometimes with an apparent shift in meaning, on some low islands where *Atuna* is not found, such as Mok *ayj* 'tree sp.', Wol *yaise* 'tree with fragrant fruit'. Nml *eis* is glossed as '*P.* sp.' (Davis 1999:200), despite the fact that the plant is absent on the island; speakers of Western Caroline islands in close contact with high islands may have retained terms for plants absent in their home.

Likewise, *buRat '*Fagraea berteroana*, pua kenikeni', present only on high islands, is generally retained there. The situation is complicated by another POc etymon, *p^{w}i(r,R)a '*Cananga odorata*'; the Pon term *pwuhr* covers both trees, and is compatible with both of these POc sources. In fact, RPO (3:163 and 3:209) list it under both nests. While merger of these two etyma is not out of the question, it is not clear whether *Cananga* is in fact native in Micronesia. It is listed as introduced there by Fosberg et al. (1979) and by POWO 2023, and as 'cultivated,

naturalized' by Balick 2009:546. Thus, it is more likely that *Cananga* formed a taxon with *Fagraea* after its introduction—while not particularly similar visually, the two trees share the feature of fragrant flowers used in leis—and retentions from POc *buRat '*Fagraea*' may have been extended to the newly introduced *Cananga*. A similar situation appears to have taken place with newly introduced plumeria in Chuuk. Davis (1999:210) notes that several terms for *Fagraea*, such as *pééngas* and *séúr*, also apply to plumeria. "Interestingly," Davis writes, "these trees do not closely resemble each other except in the flowers."

The term for *Planchonella*, POc *kalaka, appears in Pon *kalak* '*Palaquium karrak*', an endemic plant on Pohnpei, also from the family Sapotaceae. It is possible that this term is a loan from Polynesian (an early one, predating final vowel loss in Pohnpeian); however, it is equally compatible with regular retention from POc.

PRO *vuba '*Derris* sp., fish poison vine' is another telling example of retention of a high-island term. Chk *wúúp*, Pon *uhp* '*Paraderris elliptica*', Ksr *op* 'plant used as fish poison, to poison or kill with the sap of this plant' are clear retentions, as is Mrs *wōp* '*Barringtonia asiatica*', a superficially very different plant (a large tree) which shares with *Derris* its use as fish poison. The Banaba/Kiribati term *obu* (Thaman & Samuelu 2016:15,63) may also belong here, but the term is doubtful and in any case the vowels are irregular. The term is also retained in some locations where *Derris* is not reported present, with a meaning generalization, such as Stw *yúúp* 'fish poison' and Mok *ipɔyp* 'use a repellent to force fish from hiding'.

Erythrina variegata is found in Chuuk and Pohnpei. Similar-looking *E. fusca* is found on Kosrae. The only low islands where *E.* is reported are Woleai and Pulo Anna, possibly introduced there, as well as on Marshall Islands. POc *[baR]baR is clearly retained in both Chuukic and Pohnpeic. In at least some languages its reflexes mean 'red'.

Alongside these retentions, there are the following losses of plant terms which are only present on high islands. As Table 8 illustrates, the Ksr terms are often unknown.

Table 8: Losses of POc terms for species absent on low islands.

POc	taxon	WCh	ECh	Pon	Mok	Ksr	Nau	Ban	Kir	Mrs	RI
*waR[e]	*Flagellaria indica*	Ø		Ø		–	Ø	Ø	Ø	Ø	4
*kayu qone	*Heritiera littoralis*	Ø		Ø			Ø	Ø	Ø	Ø	2
*nipaq	*Nypa fruticans*	Ø		Ø			Ø	Ø	Ø	Ø	3
*tapi(l)	*Xylocarpus granatum*	Ø		Ø			Ø	Ø	Ø	Ø	3
*ma(i)tagaR(a)	*Kleinhovia hospita*	Ø		Ø		–	Ø	Ø	Ø	Ø	3
*paliaRua	*Decalobanthus peltatus*	Ø		Ø		–	Ø	Ø	Ø	Ø	3
*jamaR	*Commersonia bartramia*	Ø		Ø		–	Ø	Ø	Ø	Ø	6
*koka	*Macaranga* spp.	Ø		Ø			Ø	Ø		Ø	3
*pi(y)uŋ	*Miscanthus floridulus*	Ø		Ø		–	Ø	Ø	Ø	Ø	3

"–": no term is known; blank cell: term with no POc etymology; "Ø": plant reported either absent or recently introduced

Species Absent on at Least One of the Three High Islands

There are four plants with retained POc terms which are reported absent on at least one of the three high islands, four of them on Kosrae and one on Chuuk. In at least some of these cases the reported absence may be a data quality issue. In most of these cases the plants are not found on low islands either.

Table 9: Retentions of POc terms for plants with narrower distribution

POc	taxon	WCh	ECh	Pon	Mok	Ksr	Nau	Ban	Kir	Mrs	RI
PRO *vaRo	*Ochrosia oppositifolia*					Ø	Ø	Ø		R	4
*bulu	*Garcinia* sp.	Ø		R?	Ø	Ø	Ø	Ø	Ø	Ø	5
*m$^{(w)}$aso(q)u	*Cinnamomum* sp.	Ø	Ø	R?	Ø		Ø	Ø	Ø	Ø	6
*(k)a(r,l)adroŋa?	*Acalypha* sp.	–		–	Ø	Ø	Ø	Ø	R?	Ø?	2

"R": retention of POc term; "–": no term is known; blank cell: term with no POc etymology; "Ø": plant reported either absent or recently introduced

PRO *vaRo '*Ochrosia oppositifolia*' (syn. *Neisosperma oppositifolium*) is reflected in Mrs (*kõj*)*bar.* It is "one of the dominant climax species of the original inland mixed forest of the Marshall Islands" (Vander Velde 2003:65). The plant is found widely in the Carolines but apparently absent on Kosrae, as well as Nauru and Banaba.

There are three less certain retentions. First, POc *bulu '*Garcinia* sp.' is possibly reflected in Pon (*kehn*)*pwil* '*G. ponapensis'* (the initial element is a reflex of PMc *kayu 'wood'). (The vowel is a regular reflex, via PMc *p^{w}ulu > Pre-Pon *p^{w}uli > *p^{w}ili > *pwil*; see Rehg 1984:303). The plant may have been cultivated in Melanesia (RPO 3:225).

Second, POc *m$^{(w)}$aso(q)u '*Cinnamomum* sp., wild cinnamon' is certainly related to Pon *madeu* '*C. camphora*, *C. carolinense*', but the final vowel here may be irregular.

Third, RPO 3:239 reconstruct POc *(k)a(r,l)adroŋa '*Acalypha* sp.', on the strength of two terms: Ulawa (Southeast Solomonic) *aladoŋa* and Kir *aroŋa* '*A. amentacea*', and a few other terms showing the initial element *ka(r,l)a-. The reconstruction is "weakly supported", as RPO acknowledge.

Most terms plants with a limited distribution are not reflected in Micronesian, as summarized in the following table.

Table 10: Loss of POc terms for plants with narrower distribution

POc	taxon	WCh	ECh	Pon	Mok	Ksr	Nau	Ban	Kir	Mrs	RI
*dradrap	*Hoya* spp.	Ø	–		Ø	Ø	Ø	Ø	Ø	Ø	1
*aRu	*Casuarina equisetifolia*	–			Ø	Ø	Ø	Ø	Ø	Ø	8
*p(w)awa(t)	*Cerbera* sp.	Ø			Ø					–	3
*olaŋa	*Campnosperma brevipetiolatum*	Ø	Ø		Ø		Ø	Ø	Ø	Ø	2
PEO *melo	*Elaeocarpus* spp.	Ø	Ø		Ø		Ø	Ø	Ø	Ø	2
*naRa, *Rigi	*Pterocarpus indicus*	Ø	–	–	Ø	Ø	Ø	Ø	Ø	Ø	5
*qasam	*Lygodium circinnatum*	Ø	–	Ø	Ø	Ø	Ø	Ø	Ø	Ø	2
*mwala(q)u	*Glochidion* spp.	Ø			Ø	Ø	Ø	Ø	Ø	Ø	5
*tawasi	*Rhus taitensis*	Ø	–	–	Ø	Ø	Ø	Ø	Ø	Ø	4
*pesi	*Pongamia pinnata*	Ø	–	–	Ø	Ø	Ø	Ø	Ø	Ø	3
*tui	*Dolichandrone spathacea*	Ø	–	Ø	Ø	Ø	Ø	Ø	Ø	Ø	2
*paRage	*Pangium edule*	Ø	Ø		Ø	Ø	Ø	Ø	Ø	Ø	2
*mapuqan	*Flueggea flexuosa*	Ø		Ø	Ø	Ø	Ø	Ø	Ø	Ø	3

"–": no term is known; blank cell: term with no POc etymology; "Ø": plant reported either absent or recently introduced.

CONCLUSION

In approximate descending order of strength of evidence, the following POc terms point to continuous knowledge of high-island flora by speakers of Proto-Micronesian

Atuna excelsa
Fagraea berteroana
Erythrina variegata
Derris sp.
Ochrosia oppositifolia
Planchonella sp.
Garcinia sp.
Cinnamomum sp.
Acalypha sp.

These retentions are difficult to reconcile with with an island-hopping scenario of Micronesian settlement, where populations ancestral to Micronesian speakers spent significant time on species-poor low islands in Kiribati, or raised atolls on Banaba and Nauru. Settlement of the three high islands, Kosrae, Pohnpei, and Chuuk must have taken place by a population that had knowledge of the high island flora of Melanesia from which the population originated.

Heggarty (2015) objects to the entire "words and things" method on the ground that there are often plausible scenarios resulting in the observed picture that do not require cultural reconstruction inference. It is thus useful to ask, what other scenarious could have produced the observed data? Marck (1994:328) suggests two other possibilities: "[t]he terms could have been retained in the cultural memory on atolls and applied to high island referents upon re-encountering them. It is also possible that the terms could have been forgotten in Pre-Micronesian but reintroduced through continuing immigration from Melanesia."

The first of these possibilities—"latent" retention of words in absence of referents—would have produced more cases of meaning shifts, where POc terms were applied to visually or functionally similar taxa. Instead, we observe that for the most part meanings are retained faithfully. Marck's second scenario, reintroduction by later loans, would have produced more cases with apparently phonologically irregular retentions. Instead, we observe that the reflexes are generally formally impeccable.

While the island-hopping scenario is excluded, it is impossible to glean from the data any evidence distinguishing, on the one hand, the scenario of "single settlement and radiation", where one high island is initially occupied and the population expands outward while maintaining contact, and, on the other hand, "multiple settlement and network breaking" scenario, where many high islands are occupied nearly simultaneously, and their speakers maintain lateral contacts for a prolonged time. Linguistic evidence alone is probably powerless to tell these two scenarios apart.

ABBREVIATIONS

Data and source abbreviations:

Language(s)	Source	Notes/Abbreviations
General	POWO 2023	POWO
Oceanic	Blust et al. 2023	ACD
Oceanic	Ross et al. 1998–2016	RPO, cited by volume and page, e.g. 3:112
Micronesian	Falanruw et al. 1990	F90
	Fosberg et al. 1979, 1987	
	Wagner et al. 2012	
	Bender et al. 2003a,b	MCD
Woleai	Sohn & Tawerilmang 1976	ST76
Carolinian	Jackson & Marck 1991	JM91
Puluwat	Manner & Mallon 1989	MM89
Chuuk	Goodenough & Sugita 1980	GS80
	Davis 1999	D99
Pohnpei	Balick 2009	B09
	Sohl et al. 2022	S22
Mokil	Harrison & Albert 1977	HA77
Kosrae	Lee 1976	L76
	Maxwell 1982	
	Whitesell et al. 1986	
Nauru	Thaman et al. 1994	T94
	Blumenfeld 2022	B22
Banaba	Thaman & Samuelu 2016	TS16
Kiribati	Thaman 1987	T87
	Trussel & Groves 2003	TG03
Marshalls	Vander Velde 2003	VV03
	Abo et al. 2009[1976]	A09
Yapese	Jensen 1977	J77

Language abbreviations:

CHK	Chuukese
CRL	Saipan Carolinian
CRN	Saipan Carolinian Tanapag
KIR	Kiribati (Gilbertese)
KSR	Kosraean
MOK	Mokilese
MRS	Marshallese
MRT	Mortlockese
NAU	Nauruan
NML	Namolukese
PAL	Palauan
PCK	Proto-Chuukic
PCP	Proto-Central Pacific
PEO	Proto-Eastern Oceanic
PNG	Pingelapese
POC	Proto-Oceanic
PON	Pohnpeian
PPC	Proto-Pohnpeic-Chuukic
PPN	Proto-Polynesian
PRO	Proto-Remote Oceanic
PUA	Pulo Annian
PUL	Puluwatese
PWO	Proto-Western Oceanic
SNS	Sonsorolese
STW	Satawalese
ULI	Ulithian
WOL	Woleaian
YAP	Yapese

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NOTES

[1] RPO 2:50 and ACD incorrectly place KSR *ɔl* ‘mountain’ under POC *koro; KSR *k-* would be expected from POC *k-. Instead, KSR *ɔl* belongs under POC *solos ‘inland mountain country’ (2:50; ACD), PMC *Solo ‘peak, hill’.

[2] Christian (1897) made an early attempt at a survey of Micronesian plant terms. His work includes some valuable forms otherwise not recorded, such as Western Carolinian forms for *Calophyllum inophyllum* showing the reflex of PMC *f-. Still, Christian completed his survey long before serious comparative work on the family, and it shows. For example, he links Chuukic forms for *Barringtonia*, which we now understand to descend from PCK *kulu and ultimately POC *kuluR ‘breadfruit’, with a more distant source: Persian *gul* ‘rose’.

[3] PMC *TisooTaa ‘automobile’: WOL *sitoosaa*; PON *sidohsa*; MOK *jidohsa*; MRS *jitoja*; KSR *sitosah*. MOK *-s-* is irregular.

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APPENDIX A: DATA BY TAXON

The two appendices organize data in the following ways. Appendix A lists all the species, in alphabetical order by taxa, that have a POC-level reconstruction and that are reported indigenous at least somewhere in Micronesia. Appendix B lists all reconstructions at PMC level and below, including those not listed in Appendix A because they have no POC etymologies.

Taxa are arranged in alphabetical order. Within each taxon, data are given by etymological nest: first retentions from POC, if any, then other terms. Within each nest, languages are arranged in approximate West-to-East order. Abbreviations for language names and sources are found at the end of the paper. PMC forms that do not appear in Bender et al. 2003a,b are marked as "PMC+".

***Acalypha* sp. (Euphorbiaceae)**
POC *(k)a(r,l)adroŋa. KIR *aroŋa* '*Acalypha amentacea*' (TG03) is a possible retention, but the reconstruction is uncertain, on the strength of only this form and Ulawa (Southeast Solomonic) *aladoŋa* (3:329).

Other forms: PUL *luhuealen kaatu* (MM89); CHK *mónnow* (GS80).

***Atuna excelsa* (Jack) Kosterm.; *A. excelsa* subsp. *racemosa* (Raf.) Prance (Chrysobalanaceae)** (syn. *Parinari laurina* A.Gray), the putty nut
POC *(q,k)atita; PMC+ *atita;
CHUUKIC: WOL *yaise* 'a tree with fragrant fruit' (MCD); PUL *yááyih* (?) (MCD); NML *eis* '*P.* sp.' (D99); CHK *ayis* (D99, GS80);
POHNPEIC: PON *ais* (S22), MOK *aij* 'tree sp.' (HA77, MCD);
KSR *aset* (F90);

The etymon shows no reflexes in KIR, NAU, or MRS.

Other terms with no MC cognates: POC *tita, POC *maRakita, PCP *sea '*P. insularum*'.

***Barringtonia asiatica* (L.) Kurz (Lecythidaceae)**, fish poison tree
POC *putun, PMC+ *wutu (*futu incorrectly in MCD). Some reflexes also denote *B. racemosa* (L.) Spreng.
POHNPEIC: PON *wih* (S22), MOK *wi* (HA77, B09), PNG *wi* (F90, B09)
NAU (*eijin*)*ut* (T94);
KIR *uti* (TG03).

The NAU form alternatively possibly reflects PMC *uS(i,u). Geraghty 2004:83 notes that that Pingelapese term might be a loan from Fijian *wī* '*Spondias dulcis*'.

In Chuukic, reflexes of POC *kuluR 'breadfruit' denote *Barringtonia* spp..
CHUUKIC: SNS *xuːr* (F90); ULI *hul* (F90); STW *kuul* (MCD); WOL *gulu* (ST76); PUL *kuul* (MM89); MRT *kuul* 'large tree' (MCD); CRL *ghuul* (JM91); CHK *kuun* (GS80).

The MRS term is *wōp* (A09) reflects PMC *upa '*Derris* vine' (VV03), PRO *vuba 'k.o. vine, probably *D. elliptica*' (3:441). *Derris* is absent on Marshall Islands but shares with *Barringtonia* the use as fish poison.

Bender et al. (2003) reconstruct PMC (?) *(t,T)upa 'fish poison' < POC *tupa 'fish poison, *Derris* sp.' on the strengh of WOL *supa* 'poison, fish poison' (ST76), but the reconstruction is doubtful because PMC *-f- should give WOL †-*f*-, not -*p*- (cf. RPO 3:410).

Other innovations:

MOK *kange* (F90); cf. PAL *koranges* (F90), YAP *changad* (F90);
KSR *puhspuhs* '*B. asiatica*' (L76, F90); *kanegul* '*B. racemosa*' (F90);
KIR (Banaba): *baireati* (TS16)

Other terms with no MC cognates: PNCV *vuabu.

***Bruguiera* spp. (Rhizophoraceae)**, mangrove
POC *toŋoR, PMC *toŋo 'mangrove'

CHUUKIC: WOL *soŋo* (ST76); CRL *yooŋ* (MCD, JM91); PUL *eong* (MM89); CHK *woong* '*B. conjugata*' (GS80);
NAU *etʌm* (MCD, T94);
MRS *joñ* (VV03, A09);
KIR *toŋo* (MCD, TG03).

PON *sohmw* (S22) in place of expected †*sohng* matches the final consonant of NAU, where it is a regular development. PNG *sol* (F90) matches KSR *sral* (F90).

***Calophyllum inophyllum* L. (Calophyllaceae)**, tamanu, kamani, Alexandrian laurel
POc *pitaquR, PMc+ *fitau (MCD *itau);

CHUUKIC: ULI *fotoi* (F90) IFL *vitou* (F90);
POHNPEIC: PON *isou* (S22); MOK *ijoau* (B09);
KSR *ituh* 'kind of tree' (L76), *itʌ* '*C. inophyllum'* (MCD);
NAU *ijo* (T94);
MRS *jijo* (A09);
KIR *itai* (TG03, T87).

The ULI and IFL terms appear to be taken from Christian 1897. CHK *ijau* (F90) is a loan from Pohnpeic, where loss of PMC *p- is regular before *i*.

PCK *rakici and reflexes is a likely loan from YAP *ragich* 'type of tree' (J77); PUL *rakihr* (MM89). Other sporadic innovations: PPC *tafaŋa, CHK *weengú* 'a tree (*Calophyllum*)' (GS80); PNG *sepang* (MCD, B09); CRL *safang* 'flower of the Alexandrian laurel', WOL *sefanga* 'mahogany tree, kamani tree' (ST76); MRS *lukwej* (A09) is claimed by MCD to be a loan from Chuukic, though a source is not identified.

Other terms with no MC cognates: POC *dalo, POC *tamanu '*C.* sp.', PCP *dilo, PEO *bakuRa
'C. sp.', PMM *bu(y)ap, PNGO *sabwa(r,R)i '*C.* sp.'

***Campnosperma brevipetiolatum* Volkens (Anacardiaceae)**
POc *olaŋa, no Mc reflexes.

Pon *dohng* (S22), Ksr *elahk* (F90, L76), *ka* (F90).

***Cananga odorata* (Lam.) Hook.f. & Thomson (Annonaceae)**, ylang-ylang
See comments under *Fagraea berteroana.*

***Casuarina equisetifolia* L. (Casuarinaceae)**
POc *aRu, *aRu-taŋis, *pila(q)u, *qipil, no Mc reflexes. Recent introduction on the low islands (Marshalls, Nauru, Kiribati). All the known terms are loans.

Pul *weeku* (MM89); Chk *weekú* (D99); Crl *weighu* (JM91); Pon *wehku* (S22) are suggested by MCD to be loans from Yap *walguw* 'a type of tree'.

Other terms: *machinoki* '*C.* sp., not *weekú*' (D99), Mok *masnoki* (HA77), from Japanese *matsunoki* 'pine tree'; Nau *tanenbaum*, from German *Tannenbaum* 'fir tree'.

***Cerbera* spp., probably *C. floribunda* K.Schum. and *C. manghas* L. (Apocynaceae)**
POc *p$^{(w)}$awa(t), no Mc reflexes. Pul *raatta* (MM89); Pon *kiti* (S22); Ksr *sos* (F90); Kir *reiango* (T87), Nau *dereiongo* (T94; a loan from Kir).

Other terms with no Mc cognates: PCP *rewa '*C*. sp., probably *C. odollam*'.

***Cinnamomum* spp. (Lauraceae),** wild cinnamon
POc *m$^{(w)}$aso(q)u, PMc+ ? masou.
Pon *madeu* '*C. camphora*, *C. carolinense*' (S22), a possible retention, but the final vowel may be irregular.

Ksr *masro* (F90) points to PMc †-c- rather than *-s-; Lee (1976) lists *mahsro* 'a plant name, sassafras'.

***Commersonia bartramia* (L.) Merr. (Malvaceae)**
POc *jamar. No Mc reflexes. Forms: Chk *oun* (F90, D99), *tupuchol* (F90); Pon *keil* (S22), *acarido* (F90).

***Cordia subcordata* Lam. (Boraginaceae)**, kou tree
POc *kanawa(n); PMc *kanawa:
Chuukic: Sns *harawa* (F90); Uli *halau* (F90); Wol *galiuwa* (ST76), *xarüw* (3:134); Stw *anau* (F90); Crl *alúw* (MCD); Pul *aluw* (MM89); Chk *anaw* (MCD), *alau* (F90);
Pohnpeic: Mok *kanaw* (F90);
Nau *eongo* (T94);
Kir *kanawa* (TG03, T87);
Mrs *kōṇo* (VV03).

PON *ahlew* (F90) is a borrowing from Chuukic (*k- is normally retained in PON).

Another innovation is PMC+ *pikopiko; cf. POC *piko 'bent, crooked' (ACD); PWMC *piko, *piko-si 'bent, twisted' (MCD):

POHNPEIC: PON *ikoik* (S22); PNG *ikoh ik* (F90);
KSR *ikoak* (F90); cf. *ikoack* 'leaves used in covedring a ground oven' (L76).

Terms with no MC cognates: POC *toRu, POC *jasi, PWO *nagi 'C. sp.'

***Decalobanthus peltatus* (L.) A.R.Simões & Staples (Convolvulaceae)** (syn. *Merremia peltata* (L.) Merr.)
POC *paliaRua, no MC reflexes. Introduced in the Caroline Islands according to PWO but native according to Fosberg et al. 1979. PON *ioll*, *selioll*, *salomp*, (*sahl* 'rope, cord') (S22); cf. MOK *iohl* 'vine sp.' (HA77); CHK *fitaw* 'a vine (*M. peltata*)' (GS80).

***Dendrocnide* spp. (Urticaceae)**, see *Laportea*

***Derris sp.* (Fabaceae)**
PROC *vuba 'k.o. vine, probably *Derris elliptica*'; PMc *upa:

CHUUKIC: STW *yúúp* 'fish poison' (MCD); PUL *wúúp* (MCD); CRL *úúp* (JM91); CHK *wúúp* (MCD, GS80);
POHNPEIC: PON *uhp* '*Paraderris elliptica*' (S22); MOK *ipoaip* 'use a repellent to force fish from hiding' (HA77, MCD);
KSR *op* 'plant used as fish poison, to poison or kill with the sap of this plant' (MCD, L76);
MRS *wōp* '*Barringtonia asiatica*' (VV03, A09);
KIR *obu* ? '*D. trifoliata ?*' (TS16).

On PMC (?) *(t,T)upa 'fish poison' (Bender et al. 2003), see comments under *Barringtonia asiatica*.

Terms with no MC cognates: POC *puna(t) 'vine used for fish poison, probably *D. elliptica*', PWO *maRi '*D.* root', PWO *m(ʷ)ali '*D.* sp.'

***Dolichandrone spathacea* (L.f.) K.Schum. (Bigoniaceae)**
POC *tui, no MC reflexes, no known terms.

***Elaeocarpus* spp. (Elaeocarpaceae)**
PEO *melo. No MC reflexes. PON *sadak* (S22); *maratte* (F90), *opop* '*E. kusanoi*' (F90, B09); KSR *nanek* (F90).

***Erythrina variegata* L., coral tree (Fabaceae)**
POC *[baR]baR; PMC *para (also 'red'; see MCD):

CHUUKIC: WOL *para* (ST76); PUL *paar* (MM89); CHK *paar* (GS80);
POHNPEIC: PON *pahr* (S22).

An innovation is found in NAU *yora* (T94). Might be a recent introduciton in the Marshalls; no MRS term is known.

Other terms with no MC cognates: POC *rarap '*E*. spp.'

***Fagraea berteroana* A.Gray ex Benth. (Gentianaceae),** pua kenikeni
POC *buRat, PMC+ *pwuRa; PPC *p^{w}ure (MCD).
CHUUKIC: CHK *pwuur* 'ilangilang tree (*Cananga odorata*)' (GS80);
POHNPEIC: PON *pwuhr* '*F. berteroana*, *Cananga odorata*' (S22); MOK *pwur* 'tree sp' (HA77, MCD).

Another possible retention is KSR *for kuhlak* 'a kind of bush with blue or white flowers'; cf. *kuhlahk* 'creep' (L76).

Fagraea may have formed a taxon with *Cananga odorata*, an introduced plant, both trees having fragrant flowers used in leis. The Pohnpeic terms cover both trees. Contamination with POC *pwi(r,R)a '*Cananga odorata*' is not out of the question (RRO list PON *pwuhr* under both etyma, 3:163 and 3:209), but *Cananga* is likely introduced in Micronesia. More likely, POC *pwi(r,R)a is not reflected in MC, and reflexes of *buRat were extended to *Cananga* after its introduction. See additional comments in the text of the paper.

Other terms: CHK *péengas* (GS80); PON *seir* (S22).

***Ficus* strangler taxon (Moraceae)**
POC *qayawan; PMC+ ayawa:
CHUUKIC: STW *aaw* (MCD); WOL (*gili-*)*yawa* 'a hardwood tree (*F. prolixa*) (ST76);
CRL *aaw*, (*ghili-*)*aw* (JM91); PUL *yaaw* (MM89); CHK *aaw* 'F. *carolinensis*' (GS80);
POHNPEIC: PON *aiau* '*F. prolixa* and *F. virens* (S22); MOK *au* 'tree sp., banyan' (HA77);
NAU *e-aeo* '*F. prolixa*' (T94);
KIR *aiao* (3:304; T87), *aioo* (TS16).

MCD suggest the forms may be a loan from Yapese, but this is unlikely in view of the NAU and KIR items; more likely Yapese *qaaw* (J77) is itself a loan from Chuukic.

Some reflexes are compounded with the initial element, probably related to PMC *kuli, PCK *kili 'skin, bark' (cf. similar comounding in terms for '*Hibiscus tiliaceus*'), listed by MCD under PCK *ki(l,n)i-awa 'k. of tree'. See also notes under *Terminalia*. In addition to the items above, cf. CHK *kiniyaw* 'species of palm native to Chuuk' (GS80), possibly a loan because *k > *s* is expected before *i*. KIR *kiriawa* (T87, TG03) is a loan from this source; it is not not inherited because *l > *n* in KIR.

PCK *kawannú 'banyan tree (*Ficus tinctoria*)' is an apparent doublet; RPO (3:304) suggest it is a loan from a Western Oceanic language that preserves the final consonant of *qayawan. WOL *gewaniu* '*F. tinctoria*' (ST76); KSR *kohnyac* 'banyan tree' (L76) might also belong here.

Another likely retention is POC *nunuk 'fig trees, *Ficus* taxon', PMC+ *nunu, PON *nihn* '*F. tinctoria*' (S22). The vowel development here is regular (Rehg 1984:303).

The MRS term *tōpdo* (VV03, A09) is a loan from KIR *te bero* (T87, TG03) (with the definite article and medial syncope); on Majuro said to be an aboriginal introduction from the Gilbert Islands (Van der Velde 2003: 110), though listed as native on Marshall islands by PWO. Also cf. NAU *debero* '*F. tinctoria*' (T94), a loan from the same source.

***Flagellaria indica* L. (Flagellariaceae)**
POC *waR[e], no MC reflexes. CHK *nikésúk* 'a vine, *F. indica*' (GS80); PON *idahnwel* (S22).

KSR *oa* 'a kind of vine' (L76) could be a retention of POC *waRe, but there is not enough in either the form or the semantics to be certain.

***Flueggea flexuosa* Müll.Arg. (Phyllanthaceae)** (syn. *Securinega flexuosa* (Müll.Arg.) Müll.Arg.)
POC *mapuqan, no MC reflexes.

CHK *afór* 'a shrub, *Securinga flexuesa* [sic]'.

***Garcinia* sp. (Clusiaceae)**
POC *bulu, PMC+ *p^{w}ulu:
POHNPEIC: PON (*kehn*)*pwil* '*G. ponapensis*' (S22).

Other terms: CHK *aama, chamai* '*G. ponapensis* var. *trukensis*' (D99); PON *nikenpiri* (S22).

***Glochidion philippicum* (Cav.) C.B.Rob., other *G.* spp. (Phyllanthaceae)**
POC *m^{w}ala(q)u. No MC reflexes. CHK *afor* '*G.* sp.' (GS80, D99), CHK *emweses* '*G.* sp.' (D99); PON *luwekidinloal* '*G. spp.*' (G22); *mwehk* '*G. ramiflorum*' (S22); MRS *homosasu* (F90);

The PON form *mwehk* appears related to Chuukic forms for *Pisonia* sp.

***Guettarda speciosa* L. (Rubiaceae)**
POC *[p^{w}ano]p^{w}ano. No MC reflexes.

The terms are well-documented but none reflect the POC form. PMC *us(i,u), possibly related to other Oceanic terms (3:199; 3:212; 3:346), has the following reflexes mostly referring to *G. speciosa*. The KSR reflex is doubtful.
CHUUKIC: ULI *iuth* (F90); WOL *utu* (ST76); IFL *wut* (F90); NMW *ood* (F90);
POHNPEIC: PON *ihd* (S22); MOK *eet* (F90);
KSR *i* 'kind of tree' (MCD; L76);
NAU *iut* (T94);
KIR *uri* (TG03, T87).

Another nest is found in the following Chuukic forms: CRL *mweesor* (JM91); PUL *mwohor* (MM89); CHK *mwoosor* (GS80).

Other forms referring to *G.*: KSR *koin lahk* (F90); PNG *eles* (B09, F90).

***Heritiera littoralis* Aiton (Malvaceae)**
POC *kayu qone, no MC reflexes.

Other terms: CHK *chéépwech* (D99, GS80); PON *mworop, mworopwensed* (S22, B09), *chaiping* (B09); KSR *lum* (F90).

***Hernandia nymphaeifolia* (C.Presl) Kubitzki (Hernandiaceae)**
POC *biRi-biRi; PMC *piŋipiŋi shows a sporadic innovation of the medial consonant (cf. POC *mauRi 'left' > PMC *ma(i,u)ŋi-). According to 3:137, this tree may have formed a taxon with *Thespesia populnea* for early Oceanic speakers; indeed, the Kiribati term applies to both.

POHNPEIC: PON *pingiping* (S22); MOK *pingping* 'tree sp.' (HA77);
KSR *pihngpihng* 'k. of tree' (L76);
KIR *bingibing* '*Thespesia, Hernandia*' (T87, TG03);
MRS *piñpiñ* (VV03).

Other Chuukic terms appear related to YAP *guchoel* 'turmeric' (F90): ULI *hochol* (F90); WOL *goshali*, *giusheliu* (ST76); IFL *koral* (F90); NMN *ojal* (F90, D99); PUL *orhal* (MM89).

Other innovations: CHK *ékúrang* '*H. ovigera*' (GS80) is said to be onomatopoetic of the sound its fruit makes when rattling in the wind; also cf. STW *orang* (F90).

Other forms: CHK *mosul* (F90); NAU *etsiw* (T94); KIR *nimareburebu* (TG03, T87).

Terms with no MC cognates: PRO *buavu '*H.* sp.'

***Hibiscus tiliaceus* L. (Malvaceae)**
POC *paRu, PMC *-fau. In Chuukic it is only retained in compounds together with apparent reflexes of PMC *kuli, PCK *kili 'skin, bark'; (cf. similar compounding in reflexes of *qayawan '*Ficus* strangler fig taxon'; see also notes under *Terminalia*):

CHUUKIC: PUA (*kini*)-*daú* (MCD); WOL (*gili-*)*feo* (ST76), STW (*kili*)-*fé* (MCD); CRL (*ghúlú*)-*fé* (MCD, JM91); PUL (*kili*)-*fé* (D99, MM89, MCD); CHK (*sini*)-fé (MCD, GS80);
POHNPEIC: MOK *pah* (F90);
KIR (*ki*)-*ai*-*ai* (TG03, T87).

The term is replaced with an assortment of other innovations, including PMC *lawa '*H.*', which MCD links to POC *lawaq 'spider web':

POHNPEIC: PON (*ke*)*leu* (S22); MOK (*ke*)*leu* (HA77);
KSR *lo* (L76, F90, MCD);
MRS *l̦o* (A09).

Other innovations: CHK *sáápwow* (GS80); PON *koht, pahtakai*, *rehr*, *ihdamwahu* (S22); KSR *sikuhk* (L76); NAU *equane* (T94).

Other terms with no MC cognates: PEO *pakalo, *p^{w}akala (?) '*H.* sp.'

***Hoya* sp. (Apocynaceae)**
POc *dradrap, no Mc reflexes. Pon *tekitek* '*H. schneei*' (S22).

***Intsia bijuga* (Colebr.) Kuntze (Fabaceae)** and hardwoods
POc *qipil, no Mc reflexes. POc *toRas 'a taxon of hardwood trees including *I. bijuga*' appears in PMc *ma-toa 'firm, hard, strong', but the prefixed form is reconstructible to POc and beyond (ACD) and thus does not indicate retention of the tree term.

Terms: Pul *pakureng* (MM89); Chk *kuren, nityanmis* (F90), *kamachúri* '? *I.* sp.' (D99); Pon *joio* (B09); Mok *kebuk* (B09); Mrs *kubōk* (VV03).

***Ipomoea* spp.; taxon of beach creepers (Convolvulaceae)**
POc *puRe, no Mc reflexes.

There are many attested terms forming several nests, none plausibly continuing the POc etymon. Wol *garebaliu* (ST76); Wol *shaiuweliu* (ST76), CrT *rheiwal*, Crl *scheiwal* (JM91); Pul *rhaiwal* (MM89, D99); Chk *aanuu* '*I.* sp., beach morning glory' (D99); Chk *ruke, rukruk* '*I. gracilis*' (GS80); Pon *omp* (S22); Nau *erekogo* (T94); Kir *ruku* '*I.* spp.'; *maeao* '*I. pes-caprae*' (T87); Mrs *markinenjojo* (VV03, A09).

***Kleinhovia hospita* L. (Malvaceae)**
POc *ma(i)tagaR(a), *paqu, no Mc reflexes. Chk *monou* (F90); Pon *keleun* (S22); *koloun Ahnd* (B09). The form *keleu-n* also refers to *Hibiscus tiliaceus* (S22). Other terms with no Mc cognates: PNCV *matala, PMM *p(i,u)lakis.

***Laportea* and *Dendrocnide* spp. (Urticaceae); nettles**
POc *[ja]latoŋ, no Mc reflexes.

Reflexes of PCk *kafalafala 'a plant' refer to nettles in the Western languages: Sns *hafarefare* (MCD); Uli *hafalfal* 'nettle' (MCD); Wol *gefalefale* 'coffee senna (*Fleurya ruderalis*)' (MCD); Stw *afelefele-* 'nettle (*Laportea ruderalis*)' (MCD); Pul *afanafana(nikerh*) (MM89); Chk *afanafan* 'rattle bean (*Crotolaria mucronata*), coffee senna (*Cassia occidentalis*)' (GS80; MCD). Other terms: Pon *soumwehl* 'L. spp.' (S22); *leles* 'D. *latifolia*' (S22); Kir *ukeuke*, *nekeneke* (T87).

***Lygodium circinnatum* (Burm.f.) Sw. (Schizaeaceae)**
POc *qasam, no Mc reflexes.

***Macaranga* spp. (Euphorbiaceae)**
POc *koka; POc *pinu(q)an. No Mc reflexes.

Other forms: Chk *tuupw*, *ttupw* (GS80); *apwid* (S22); Ksr: *lo lep*, *lo lap* (F90); Kir *nimatore*, *kimatore* (T87).

***Miscanthus floridulus* (Labill.) Warb. ex K.Schum. & Lauterb. (Poaceae)**
POc *pi(y)uŋ, no Mc reflexes. Pon *sapeleng* (S22), *alek* (B09); Chk *áset*, *ene* (GS80).

***Nypa fruticans* Wurmb (Arecaceae)**

CHK *kié* (D99); PON *parem* (S22); KSR *faasha*, *fals* (F09), *fahsr* 'a kind of plant' (L76).

***Ochrosia oppositifolia* (Lam.) K.Schum (Apocynaceae)** (syn. *Neisosperma oppositifolium* (Lam.) Fosberg & Sachet)
POC *paoq (ACD); PRO *vaRo (3:167); PMC+ *paro
MRS (*kōj*)*bar* (F90, VV03).

The MRS term appears a retention but the first element is unidentified. MOK *kacshpar* (F90) is a loan from MRS (cf. Rehg and Bender 1990 on Marshallese-to-Mokilese loans).

Other terms: PCK *um^{w}ao and reflexes; PON *kite*.

***Pangium edule* Reinw. (Achariaceae)**
POC *paRage, no MC reflexes. PON *duhrien* (<Eng.), *rawahn* (S22), *manka* (B09).

***Pemphis acidula* J.R.Forst. & G.Forst. (Lythraceae)**
POC *ŋiRac; PMC *-ŋ(e,i)a. The MC terms are generally prefixed with reflexes of *kayu 'wood'.
CHUUKIC: WOL (*gai*)*ngiya* (ST76); CRL (*ee*)*ngi* (JM91); PUL (*e*)*ngiy* (MM89); CHK (*ee*)*ngi* (GS80);
POHNPEIC: PON *ngih* (S22); MOK (*kai*)*ngi*; PNG (*kai*)*nge* (B09);
KIR *ngea* (TG03);
MRS (*kō*)*ñe* (A09).

KSR *kasugel* (F90) is an innovation.

Cf. PCK *ŋŋaú 'a tree', WOL *nngeo* 'k. of tree, *Allophylus timorensis*' (MCD); CHK *ŋŋé* 'a tree with smooth seeds' (MCD).

***Pipturus argenteus* (G.Forst.) Wedd. (Urticaceae)**
POC *qaramwaqi; PMC+ *aramwai;
CHUUKIC: ULI *iourama* (F90); WOL *yaromaa* (ST76); IFL *aroma* (F90); PUL *yoroma* (MM89); CHK *arome* (F90);
POHNPEIC: MOK *ormuh* (F90, B09); PNG *oroma* (F90, B09);
KIR *aroma* (TG03);
MRS *arṃwe* (A09);

Cf. CHK *aroma* 'a shrub (*Abutilon*)' (GS80). Innovations: ULI *iourarha* (F90); CHK *tupwpwunuwén* 'a shrub; *Macaranga carolinensis; Pipturus repandus*) (GS80); MOK *tiwarenga* (F90); KSR *alko* (F90), PON *kehrari* (S22).

***Pisonia* spp.; *P. grandis* R.Br.; taxon of littoral trees (Nyctaginaceae)**
PRO *buka, PMC+ ? *p^{w}uka:
POHNPEIC: PON *puek* 'tulip tree species' (3:168);
KSR: *fok srohpoh* 'kind of plant'; cf. *srohpoh* 'trunk' (L76);
KIR *buka*.

None of the retentions are particularly secure. The Pohnpeian form cannot be located in other sources. The KIR form could be a Polynesian loan.

In Chuukic languages reflexes PPC *mʷakú refer to *Pisonia* (MCD): ULI *mokh* (F90); WOL *mwegiu* (ST76); STW *mwéék* (MCD, F90); PUL *mweek* (F90); CRL *mwéégh* (JM91); PUL *mweek* (MM89); CHK *mwaak* (D99, GS80). The PON reflex of this item appears to be *mwehk* '*Glochidion ramiflorum*' (S22); cf. MOK *mehs* '*P.* sp.' (MCD, F90); PNG *mas* (B09); cf. POC *mʷala(q)u '*G. philippicum*'. Other terms: MRS *kañal* (VV03, A09); NAU *yangis* (T94).

Other terms with no MC cognates: POC *[a]ñuliŋ '*P.* sp.'

***Planchonella* spp. (Sapotaceae)**
POC *kalaka; PMC+ *kalaka:
POHNPEIC: PON *kalak* '*Palaquium karrak*' (S22, B09, F90).

Cf. KSR *kihrak* 'kind of tree' (L76); *-r-* here indicates it is a loan.

***Pongamia pinnata* (L.) Pierre (Fabaceae)**
POC *pesi, no MC reflexes, no known terms.

***Premna* spp. (Lamiaceae)**
POC *qarop; PMC+ *aro; PCK *aro '*P. integrifolia*';
CHUUKIC: ULI *yaar* (F90); WOL *yaro* (ST76); PUL *yóór* (MCD); CRL *óór* (MCD);
MRT *óór* (D99); CHK (*ni*)*yóór* '*P. obtusifolia*' (GS80);
POHNPEIC: PON *oahr* '*P. serratifolia*' (S22);
MRS: (*k*)*aar* '*P. corymbosa*, *P. obtusifolia*' (A22).

Yapese *qaar* 'kind of tree' is a loan from Chuukic.

KIR *aŋo* '*Premna* spp.' (TG09) is a reflex of PMC *aŋo '*Curcuma longa,* turmeric'. A Pohnpeic innovation is PPO+ *cepʷukV; cf. PRO *buka 'taxon of littoral trees, including *Pisonia* spp.'
POHNPEIC: PON *tepwuk* (B09), MOK *supwuk* (B09); PNG *sobuk* (F90).

Other innovations: PON *tuhkehn amwise* (B09); PON *awk* (F90); CHK *wumukaw* '*P. integrifolia*' (GS80); KSR *fienkahk* (L76, F90); NAU *idibiner* (T94).

***Pterocarpus indicus* Willd. (Fabaceae)**
POC *naRa, *Rigi. No MC reflexes, no known terms.

***Rhus taitensis* Guill. (Anacardiaceae)**
POC *tawasi. No MC reflexes, no known terms.

***Scaevola taccada* (Gaertn.) Roxb. (Goodeniaceae)**, half-flower, beach naupaka
POc *na[su]-nasu, PMc+ *nanasu (PWMc MCD):

CHUUKIC: SNS *not* (F90); ULI *luth* (F90); WOL *natiu* (ST76); STW *nnat* (MCD); PUL *nnat* (F90, MM89); CHK *nnét* (GS80);

POHNPEIC: PON *enat* (B09);

MRS (*kō*)*ṇṇat* (A09).

A parallel innovation with unclear meaning difference is PPC *ramaki '*Scaevola* tree' (MCD); Yapese *rimeaq*, *rumeaq* 'type of tree' appears to be a loan from this source.

CHUUKIC: WOL *remagi* 'k. of tree, usually growing on the coast' (ST76); STW *remak* (MCD);

POHNPEIC: PON *remek* (S22), MOK *roamoak* (HA77,B09); PNG *ramek* (B09).

Other terms: CHK *amoloset* (F09); CHK *fremes* (F09); KSR *kusrosr* (F09); NAU *emet* (T94); KIR *mao* (TG03).

***Terminalia catappa* L., beach almond (Combretaceae)**
POc *talise, no Mc reflexes.

There are several nests of attested forms, none continuing the POc etymon. Only the first possibly suggests a PMc-level reconstruction: PMc+ *kin[i,a], on the basis of Chuukic and KIR forms. The final vowel doublet is indicated both by WOL and KIR forms. This may be the element that is prefixed in *Ficus* and *Hibiscus* terms. MCD lists some of these as possible loans without providing a source. PMc+ *kin[i,a]:

CHUUKIC: ULI *kel*, *kil* '*T.* spp.' (F90); WOL *kela, kili* 'T. catappa' (ST76, D99); IFL *kil* '*T. samoensis*' (F90); STW *kkin* 'type of tree, *T. samoensis*' (D99), *kil* '*T. samoensis*' (F90); NMN *kon* '*T. samoensis*' (F90); PUL *kin* '*T. samoensis*' (D99); NML *kin* '*T. samoensis*' (F90); NMW *sin* '*T. samoensis*' (F90); ANT *kin* '*T. samoensis*' (F90); CHK *sin* '*T. samoensis*' (F90);

KIR *ukin* '*T.* spp. (T87)'; *kunikun* '*T. catappa*'; *ukina* '*T. samoensis*' (TG03).

Other nests:

PCK *kaata, *kaataata 'a tree (*T. catappa*)' (MCD): WOL *gaasaasa* 'a t. with edible nuts' (ST76); IFL *kasas* '*T. catappa*' (F90); IFL *kasas* (F90); PUL *ahaah* '*T. catappa*' (D99, MM89); CRL *asass*, *asaas* (MCD, JM91); ANT *uhsass* '*T. catappa*' (F90, B09); CHK *aas, aasaas, aasse*-(*n*) '*T.* tree' (MCD). RPO (3:326) link this nest with POc *qatV '*T.* sp. with edible nut', but WOL *gaasaase* and IFL *kasas* are incompatible with this and point to PCK *kaa[taa]ta, as reconstructed in MCD.

Other assorted nests: PON *dipwoapw* '*T. catappa*' (S22); PNG *tepop* '*T. catappa*' (F90, B09);

MOK *win* '*T. samoensis*' (F90), 'tree sp.' (D99); PNG *win* '*T. samoensis*' (F90);

NML *sif* '*T. catappa*' (Davis 1999); KSR *sarf*, *shufehf*, *srifaf*, *srofaf* '*T. catappa*' (F90), *srihfacf* 'kind of tree' (L76);

Finally, some isolated forms: PON *kehmah* '*T. carolinensis*' (S22); KSR *ka* '*T. carolinensis*' (F90), 'a kind of plant' (D99); NAU *eteto* (T94); MRS *kotōl, kōkōñ* '*T.* spp.' (A09).

Other terms with no MC cognates: *tapoRa 'a nut-bearing tree sp.', *qatV '*T.* sp. with edible nut'.

***Thespesia populnea* (L.) Sol. ex Corrêa (Malvaceae)**, milo tree
POC *(p,b)anaRo, PMC+ *panao

> CHUUKIC: PUL *pene* (MM89); CHK *pona*, *pono* (F90);
> POHNPEIC: PON *pone* (S22); MOK *pene* (B09), PNG *pene* (B09);
> KSR *pehneh* (F90), *pahnuh* 'a kind of tree' (L76).

See also *Hernandia*, with which this tree may have formed a taxon, cf. KIR *bingibing,* which covers both trees. WOL *panao* '*Guettarda speciosa*' (F90) is also a reflex. Other terms: KSR *pakeena* (F90), CHK *likokon*, *okuran* (F09), the latter appears the same as the CHK word for *Hernandia*.

***Vitex trifolia* L. (Lamiaceae)**
POC *drala, PMC+ *cala:

> CHUUKIC: PUL *rhaal* (MM89).

It is surprising that the sole reflex of POC *drala is found on Puluwat and nowhere else, but the reflex is regular.

Other terms: CHK *mengit* (F90); PON *kehamwise* (S22), KIR *kaitu* (T87); NAU *dagaidu* (T94, loan from KIR); MRS *utkanamnam* 'flower-to-cause-mosquito-mosquito' (VV03, listed as recent introduction on Majuro, but as indigenous by PWO in the Marshall Islands).

Although Thaman (1987:9) suggests that *V. trifolia* is a recent introduction on Kiribati from either Nauru or Banaba, the term for it is clearly borrowed from KIR into NAU, not the other way around, because the KIR determiner *te-* makes its way into the NAU word.

***Wollastonia biflora* (L.) DC. (Asteraceae)** (syn. *Wedelia biflora* (L.) DC.*, Melanthera biflora* (L.) Wild)
POC *(qate)-qate has no reflexes. PCK *adúadú and reflexes, while etymologically related, is a loan (3:133), because PCK †-t- would be expected from POC *-t-. Cf. Yapese *qadiid* 'type of plant'; *qaed* 'flowers of a type of plant' (J77). Other terms unrelated to this etymon: WOL *waliu* (ST76); PON *ikia*, *moaresed*, *ngkahu* (S22); MRS *markūbwebwe* (VV03, A09).

***Xylocarpus granatum* J.Koenig (Meliaceae)**, puzzlenut tree
POC *tapi(l), no MC reflexes. CHK *pwunopwun* (GS80); PON *pwulok* (S22); KSR *tui* (F90), *tuhi* 'a kind of tree' (L76).

APPENDIX B: DATA BY PMC RECONSTRUCTION

PMC-level reconstructions with POC etymologies

LEVEL	Protoform	Gloss	Reflexes and POC
PMC	*toŋo	*Bruguiera* sp., mangrove	WOL *soŋo*; CRL *yooŋ*; PUL *eong*; CHK *woong* '*B. conjugata*'; NAU *etʌm*; MRS *joñ*; KIR *toŋo*. POC *toŋoR.
PMC	*upa	*Derris* sp.	STW *yúúp* 'fish poison'; PUL *wúúp*; CRL *úúp*; CHK *wúúp*; PON *uhp* '*Paraderris elliptica*'; MOK *ipoaip* 'use a repellent to force fish from hiding'; KSR *op* 'plant used as fish poison, to poison or kill with the sap of this plant'; MRS *wōp* '*Barringtonia asiatica*'; KIR *obu* ? '*D. trifoliata ?*'. PRO *vuba.
PMC+	*aramwai	*Pipturus argenteus*	ULI *iourama*; WOL *yaromaa*; IFL *aroma*; PUL *yoroma*; CHK *arome*; MOK *ormuh*; PNG *oroma*; KIR *aroma*; MRS *arm̧we.* POC *qaram^{w}aqi.
PMC+	*aro	*Premna* spp.	ULI *yaar*; WOL *yaro*; PUL *yóór*; CRL *óór*; MRT *óór*; CHK (*ni*)*yóór* '*P. obtusifolia*'; PON *oahr* '*P. serratifolia*'; MRS: (*k*)*aar* '*P. corymbosa*, *P. obtusifolia*'. [PCC *aro]. POC *qarop.
PMC+	*atita	*Atuna excelsa*	WOL *yaise* 'a tree with fragrant fruit'; PUL *yááyih* (?); NML *eis* '*P.* sp.'; CHK *ayis;* PON *ais*; MOK *aij* 'tree sp.'; KSR *aset.* [MCD PPC *ayita]. POC *(q,k)atita.
PMC+	*cala	*Vitex trifolia*	PUL *rhaal*. POC *drala.
PMC	*-fau	*Hibiscus tiliaceus*	PUA (*kini*)-*daú*; WOL (*gili-*)*feo;* STW (*kili*)-*fé*; CRL (*ghúlú*)-*fé*; PUL (*kili*)-*fé*; CHK (*sini*)-*fé*; MOK *pah*; KIR (*ki*)-*ai*-*ai*. POC *paRu.
PMC+	*fitau	*Calophyllum inophyllum*	ULI *fotoi*; IFL *vitou*; PON *isou*; MOK *ijoau*; KSR *ituh* 'kind of tree'; *itʌ* '*C. inophyllum'*; NAU *ijo*; MRS *jijo*; KIR *itai.* [MCD *itau]. POC *pitaquR.
PMC+	*kalaka	*Planchonella* sp.	PON *kalak* '*Palaquium karrak*'. POC *kalaka.
PMC	*kanawa	*Cordia subcordata*	SNS *harawa*; ULI *halau*; WOL *galiuwa*, *xarüw*; STW *anau*; CRL *alúw;* PUL *aluw*; CHK *anaw*, *alau*; MOK *kanaw*; NAU *eongo*; KIR *kanawa*; MRS *kōn̥o*. POC *kanawa(n).
PCK	*kulu	*Barringtonia asiatica*	SNS *xuːr*; ULI *hul*; STW *kuul*; WOL *gulu*; PUL *kuul*; MRT *kuul* 'large tree'; CRL *ghuul*; CHK *kuun*. POC *kuluR 'breadfruit'.
PMC	*lawa	*Hibiscus tiliaceus*	PON (*ke*)*leu*; MOK (*ke*)*leu;* KSR *lo*; MRS *l̥o*. POC *lawaq 'spider web'.
PMC+ ?	*masou	*Cinnamomum* sp.	PON *madeu* '*C. camphora*, *C. carolinense*'. POC *m$^{(w)}$aso(q)u.
PMC+	*wutu	*Barringtonia asiatica*	PON *wih*; MOK *wi*; PNG *wi*; NAU (*eijin*)*ut*; KIR *uti*. [MCD *futu]. POC *putun.
PMC+	*ayawa	*Ficus* strangler taxon	STW *aaw*; WOL (*gili-*)*yawa* 'a hardwood tree (*F. prolixa*); CRL *aaw*, (*ghili-*)*aw*; PUL *yaaw*; CHK *aaw* 'F. *carolinensis*'; PON *aiau* '*F. prolixa* and *F. virens*; MOK *au* 'tree sp., banyan'; NAU *e-aeo* '*F. prolixa*'; KIR *aiao* (3:304; T87), *aioo*. [MCD PPC *awa]. POC *qayawan.

PMC+	*nanasu	*Scaevola taccada*	SNS *not*; ULI *luth*; WOL *natiu*; STW *nnat*; PUL *nnat*; CHK *nnét*; PON *enat*; MRS (*kō*)*n̪n̪at*. [MCD PWMC]. POC *na[su]-nasu.
PMC+ ?	*nunu	*Ficus*	PON *nihn* '*F. tinctoria*'. POC *nunuk.
PMC	*-ŋ(e,i)a	*Pemphis acidula*	WOL (*gai*)*ngiya*; CRL (*ee*)*ngi*; PUL (*e*)*ngiy*; CHK (*ee*)*ngi*; PON *ngih*; MOK (*kai*)*ngi*; PNG (*kai*)*nge*; KIR *ngea*; MRS (*kō*)*ñe*. POC *ŋiRac.
PMC+	*panao	*Thespesia populnea*	PUL *pene*; CHK *pona*, *pono*; PON *pone*; MOK *pene*; PNG *pene*; KSR *pehneh*, *pahnuh* 'a kind of tree'. POC *(p,b)anaRo.
PMC	*para	*Erythrina variegata*	WOL *para*; PUL *paar*; CHK *paar*; PON *pahr*. POC *[baR]baR.
PMC+	*paro	*Ochrosia oppositifolia*	MRS (*kōj*)*bar* . PRO *vaRo
PMC	*piŋipiŋi	*Hernandia nymphaeifolia*	PON *pingiping*; MOK *pingping* 'tree sp.'; KSR *pihngpihng* 'k. of tree'; KIR *bingibing* '*Thespesia, Hernandia*'; MRS *piñpiñ*. POC *biRi-biRi.
PMC+ ?	*p^{w}uka	*Pisonia* spp.	PON *puek* 'tulip tree species'; KSR: *fok* (*srohpoh*) 'kind of plant'; KIR *buka*. PRO *buka.
PMC+	*p^{w}ulu	*Garcinia* sp.	PON (*kehn*)*pwil* '*G. ponapensis*'. POC *bulu.
PMC+	*pwuRa; *pwure	*Fagraea berteroana*	CHK *pwuur* 'ilangilang tree (*Cananga odorata*)'; POHNPEIC: PON *pwuhr* '*F. berteroana*, *Cananga odorata*'; MOK *pwur* 'tree sp'; KSR ? *for* (*kuhlak*) 'a kind of bush with blue or white flowers'. [MCD PPC *p^{w}ure]. POC *buRat.

PMC reconstructions without POC etymologies

LEVEL	Protoform	Gloss	Reflexes and POC
PMC+	*kin[i,a]	*Terminalia catappa*	ULI *kel*, *kil* '*T*. spp.'; WOL *kela, kili*; IFL *kil*; STW *kkin*, *kil*; NMN *kon*; PUL *kin*; NML *kin*; NMW *sin*; ANT *kin*; CHK *sin*; KIR *ukin, kunikun, ukina.*
PMC	*uS(i,u)	*Guettarda speciosa*	STW *wuut* 'small tree with fragrant flowers'; WOL *uutu*; PON *ihd*; MOK *eet*; KSR *i* 'k. of tree'; KIR *uri*; MRS *wit*.
PMC+	*pikopiko	*Cordia subcordata*	PON *ikoik*; PNG *ikoh ik*; KSR *ikoak.*
PMC	*[ce]ceni	*Heliotropium arboreum*	WOL *chcheli*; ULI *chél*; CRL *tchel*; CHK *chchen*; PON *titin*; MOK *sisin*; PNG *sesen*; KSR *srʌsrʌn*; NAU *irin*; KIR *ren*; MRS (*ki*-)*den*.
PMC+	*p^{w}ulap^{w}ula	*Sonneratia alba*	PON *pwulaopwul*; KSR *folofol*; MRS *buḷaboḷ* '*S. caseolaris*'
PMC	*kiep^{w}u	*Crinum asiaticum*	CHK *siipw*; MRT *kiyopw*; PUL *kiyopw*; CRL *ghiyobw*; STW *kiyopwu*; WOL *giyebu*, *giyobu*; PON *kiɛpw*; KSR *kiyʌf*; KIR *kiebwu*; MRS *kiyébw.*

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