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# EASTERN POLYNESIAN: THE LINGUISTIC EVIDENCE REVISITED

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For the past forty years, historical linguistics and archaeology have provided seemingly mutually corroboratory evidence for the settlement of east Polynesia. However, recent findings in archaeology have shifted this relationship out of balance, calling previous conclusions into question.<sup>1</sup> This paper first reviews the generally accepted archaeological and linguistic theories of east Polynesia's settlement, then describes the new archaeological findings, highlighting the areas where the evidence from the two disciplines is discordant. In sections four and five, I analyze the linguistic data from Eastern Polynesian languages that show lack of support for the Tahitic and Marquesic subgroups, and propose a new, contact-based model for the region. The new linguistic model, in conjunction with archaeology, ultimately demonstrates that the settlement of east Polynesia and the development of Eastern Polynesian languages occurred in one major dispersal and subsequent spheres of contact, producing the pattern of cultural and linguistic traits we see today.

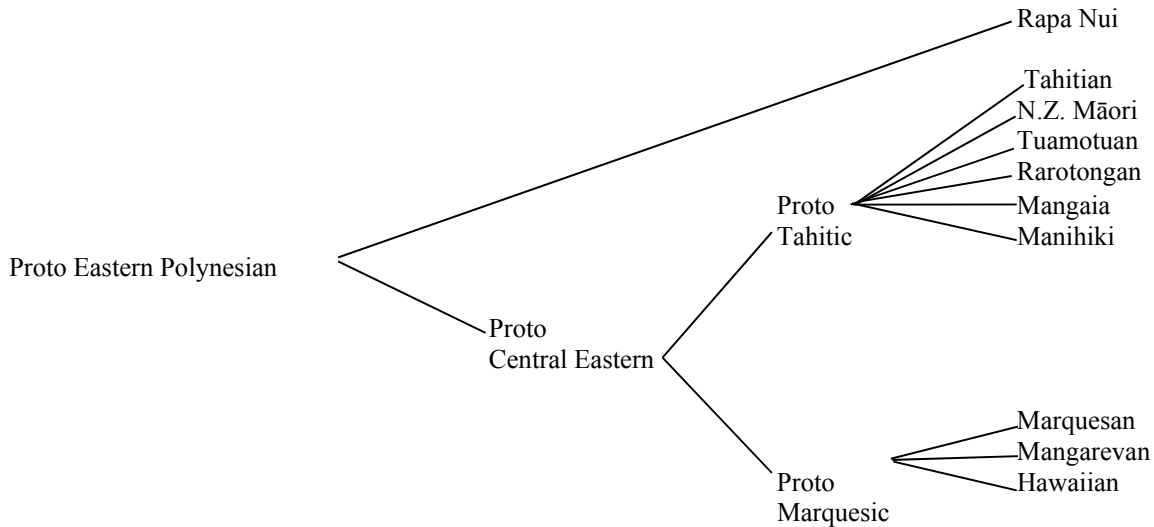
**1. INTRODUCTION.** Archaeological evidence for the settlement of east Polynesia, and the recognition of an Eastern Polynesian subgroup have for some time coincided, sharing a view that settlement of the east Polynesian islands occurred in stages, with separate homelands for each individual proto-culture. While the precise timing and sequence of the east Polynesian expansion have been intensely debated, the archaeological evidence was thought to show the following: (1) there was a movement from western Polynesia to somewhere in central-east Polynesia; (2) from central-east Polynesia, the group ancestral to Rapa Nui broke off first; (3) the group that remained in central-east Polynesia remained cohesive until (4) dispersing to the outer island chains, and (5) moving further to the more remote archipelagoes (Kirch 2000:230). No matter where the east Polynesian homeland was located, archaeologists have consistently theorized that there was a migration into central-east Polynesia followed by a pause of several hundred years and a gradual dispersal to all other islands from multiple centers within this region.

The linguistic subgrouping of the Eastern Polynesian branch played a central role in constructing this archaeological model. The subgrouping, first developed by Green in 1966, has been perpetuated by Polynesian historical linguists since, and remains the prevailing model. The linguistic tree in figure 1, taken from Marck 2000:3, demonstrates the current standard subgrouping of Eastern Polynesian languages.

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<sup>1</sup> This imbalance is rooted in many years of circular argumentation, where both archaeology and linguistics have based their ideas of the settlement of east Polynesia on the other discipline's findings. When the recent archaeological evidence from Wilmshurst et al. 2010 emerged, it immediately raised concern for me, as it did not support the long-standing theory that accounts for "pauses" between the settlement of the Society Islands, the Marquesas, and the farther reaching outer islands. This previous theory, upheld for many years in both fields, prompted me to investigate the linguistic subgrouping in greater depth, through analysis of primary-source data (dictionaries) of individual Eastern Polynesian (EP) languages in hopes of proving the linguistic evidence stronger and the new archaeological evidence flawed. However, my research proved quite the opposite, as this paper demonstrates.

FIGURE 1. EASTERN POLYNESIAN LANGUAGES



What this tree implies is that from Proto Eastern Polynesian, “there was a first division between Easter Island and a Central Eastern Polynesian subgroup; a division of Central Eastern Polynesian into Marquesic, consisting of Mangarevan, Hawaiian and Marquesan, and Tahitic. Tahitic includes NZ Māori, Cook Islands Māori, Tuamotuan, and Tahitian” (Biggs 1971:485). This branching structure would have required time and pause for each individual language group to develop in relative isolation (Marck 2000:235). Until recently, these pauses appeared to fit well with the radiocarbon dates that put the outer islands of east Polynesian settlement in chronological order.

**2. RAPID DISPERSAL: NEW FINDINGS IN ARCHAEOLOGY.** While archaeology and linguistics seem to have aligned quite well in the past, new dates have recently emerged in archaeology that disrupt this cohesion. In efforts to establish a more accurate time depth for the settlement of east Polynesia, Wilmshurst et al. assembled nearly 1,500 radiocarbon dates from over 45 islands in all of the major island groups. These dates were categorized into “reliability classes” to “derive the most precise estimate for the age of initial colonization on all [E]ast Polynesian island groups” (Wilmshurst et al. 2010:1817). This method differs from those previously used to provide the basis for much of the east Polynesian settlement arguments, because the data for the new dates are based on short-lived plants, which yield more reliably dated materials. Wilmshurst et al. wrote, “... widely accepted, longer chronologies for the region have been founded on materials that are inappropriate for precise radiocarbon dating of a relatively recent event ...” (2010:1819).<sup>2</sup>

The new findings are dramatically different from previous east Polynesian chronologies. In summary, east Polynesian islands were settled in one major pulse, with the Society Islands showing evidence for settlement approximately 150 years earlier than any other sampled site. Wilmshurst et. al wrote, “[u]sing our models, we can show a robust and securely dated two-phase sequence in colonization for east

<sup>2</sup> Further explanation of this is offered by Terry Hunt (per. comm.): “the “horizon” formed by the dates reveals an “event” that cannot be explained as an artifact of sampling or visibility. The fact that small and large islands show the same chronology argues against visibility—i.e., that it took centuries for people to be visible on islands as different in size (and complexity) as Rapa Nui and New Zealand”.

Polynesia: earliest in the Society Islands A.D. ~1025–1120, four centuries later than previously assumed, and significantly before all ... of the remote island groups ...” (2010:1817). Furthermore, all of the islands outside of the Societies appear to have been settled in a rapid migration, spanning only about 100 years between 1190 A.D. and 1293 A.D. This settlement period included even the more remote islands of Hawai‘i, New Zealand, and Rapa Nui.

These findings are compelling and clearly inconsistent with previous chronologies of east Polynesia. The implications of these findings for linguistics are equally monumental, primarily because they do not allow much by way of space or time for the development of Proto-Eastern Polynesian (PEP), Proto-Central-Eastern Polynesian (PCEP), or either Central Eastern Polynesian subgroup. In essence, the linguistics no longer aligns with the archaeology, and since the latter has seemed persuasive, this disagreement calls for the whole internal subgrouping of Eastern Polynesian to be reconsidered.

**3. RAPID DISPERSAL: NEW PROBLEMS IN LINGUISTICS.** Given this new chronology, two main problems arise for east Polynesian linguistics: (1) the location of the PEP homeland, and (2) the validity of the traditionally recognized Eastern Polynesian subgroups. We must now ask ourselves, can the PEP homeland still be in central-east Polynesia given the very short time period possible for development? Also, how could there have been isolated developments between different Eastern Polynesian speaker groups if all of the islands were settled around the same time?

**3.1 THE PEP HOMELAND.** The recent archaeological findings propose a first settlement of east Polynesia in the Societies, which would still allow for a PEP homeland in the central zone of east Polynesia. However, if the PEP homeland was in the Societies, the innovations that distinguish PEP from PNP must have taken place between arrival somewhere around 1025–1120 A.D, and dispersal to the outer east Polynesian islands between A.D. 1190 and 1293 (Wilmshurst et al. 2010:1816). This conflicts with the widely held notion that a long period of unity was needed for the development of PEP (Marck 2000:135–138). The changes from Proto Nuclear Polynesian (PNP) to PEP are morphologically and lexically significant, and would require an extensive “period of unified development after its divergence” (Marck 2000:135). Another option would be to place the homeland further west, allowing for more time or these differences to develop. However it becomes equally difficult to place the PEP homeland in western Polynesia because there is no modern remnant of PEP there.

If we place the homeland in the Societies, we can achieve at least some isolation, which may account for the substantial linguistic change in PEP. Rolett wrote of an “innovation in isolation” model for the PEP homeland where the PEP population developed in complete isolation from western Polynesia (1996:531). Marck suggested furthermore that if there was not a long period of unity, there must have been a “profound founder effect” (2000:138). If the ancestors to Proto Eastern Polynesian left west Polynesia and settled in the Societies, it would fit such a model of isolation and founder effect. Unfortunately, there is no definitive way to identify this through any linguistic evidence.

**3.2 THE VALIDITY OF THE EASTERN POLYNESIAN SUBGROUPS.** A more critical problem that arises from the new dates in archaeology is the evidence for a single wave of settlement in east Polynesia beyond the Societies, including the most remote islands. What this implies for the development of Eastern Polynesian languages is that all language groups settled on their respective islands at about the same time, which does not allow sufficient time for the primary EP subgroups to develop. This requires a critical look at EP subgrouping, to address how compelling the evidence for the current tree model is.

**4. REANALYSIS OF EASTERN POLYNESIAN SUBGROUPS.** This section will address the defining characteristics of PCEP, Proto Marquesic, and Proto Tahitic, as outlined by Green (1966, 1985) and later discussed by Marck (1996, 2000). I will first outline the shared features proposed for each group, focusing on shared innovations, then discuss the weight and validity of each group’s shared features. The following subsections will refer to regular sound changes thought to define these groups. For ease of reference, I have adapted table 1 from Marck (2000:23–24). The shaded areas are the subgroups that I have found to be in general question.

TABLE 1. REGULAR SOUND CHANGES IN POLYNESIAN LANGUAGES

PPN	*p	*t	*k	*m	*n	*ŋ	*ʔ	*f	*s	*h	*w	*l	*r
PNP	*p	*t	*k	*m	*n	*ŋ	*ʔ	*f	*s	*h	*w	*l	*l
PEP	*p	*t	*k	*m	*n	*ŋ	*ʔ	*f	*s	*h/ø	*w	*r	*r
PCEP	*p	*t	*k	*m	*n	*ŋ	ø	*f	*s	ø	*w	*r	ø
Eas	p	t	k	m	n	ŋ	ʔ/ø	h	h	ø	v	r	ø
PMqs	*p	*t	*k	*m	*n	*ŋ	ø	*f	*h	ø	*w	*r	ø
PTa	*p	*t	*k	*m	*n	*ŋ	ø	*f	*s	ø	*w	*r	ø

**4.1 PROTO CENTRAL EASTERN POLYNESIAN.** Green (1966) originally outlined two lexical innovations and one “major phonological” innovation defining PCEP (1966:17–18). The two lexical innovations were *\*tahito* ‘old, ancient’ and *\*kite* ‘to know, understand’. PCEP *\*kite* appears to be a solid innovation, not found in Rapa Nui, and attested in the following Eastern Polynesian languages.

TABLE 2. REFLEXES OF PCEP \*KITE ‘TO KNOW, UNDERSTAND’

Marquesan (Dordillon)	Hawaiian (Pukui & Elbert)	Mangarevan (Braine le Comte)	Rarotongan (Buse)	Tahitian (FareVana‘a)	Tuamotuan (Stimson & Marshall)	Māori (Ryan)
ite	‘ike	kite	kite	‘ite	kite	kite

PCEP *\*tahito* is actually a semantic innovation, where meaning shifted from Proto Polynesian *\*tafito* ‘base of a tree; foundation, origin, beginning, root, basis’ (Greenhill 2010) to PCEP *\*tahito*, ‘old, ancient’. This innovation proves equally as strong as PCEP *\*kite*, as there are reflexes of PCEP *\*tahito* meaning ‘old, ancient’ found in all Eastern Polynesian languages other than Rapa Nui. Rapa Nui does show a form *tahito* (Fuentes 1960). However this is clearly a reflex of PPN *\*tafito*, as its meaning is ‘base of a tree’.

TABLE 3. REFLEXES OF PCEP \*TAHITO ‘OLD, ANCIENT’

Hawaiian (Pukui & Elbert)	Marquesan (Dordillon)	Mangarevan (Rensch)	Rarotongan (Buse)	Tahitian (FareVana‘a)	Tuamotuan (Stimson & Marshall)	Māori (Ryan)
kahiko	pakahio	ta‘ito	ta‘ito	tahito	tahito	tawhito

Green’s “major” phonological innovation is actually two, as was further described by Biggs (1978:711) and Marck (2000:25): (1) PEP *\*f* merges with *\*s* in medial position and before round vowels as PCEP *\*h*, and (2) PEP *\*f* merges with *\*w* word-initially before PCEP *\*ah*. The result of both changes is illustrated in table 4, adapted from Marck 2000:25.

TABLE 4. PEP \*FAF- TO PCEP \*WAH- CORRESPONDENCES

PEP	PCEP	Gloss
*fafa	*waha	‘carry on back’
*fafie	*wahie	‘firewood’
*fafine	*wahine	‘woman’
*fafo	*waho	‘outside’

Table 5 further demonstrates these phonological changes through the modern CEP reflexes of PCEP *\*waha*, *\*wahie*, *\*wahine*, and *\*waho*. To show contrast, forms with the same meaning in Rapa Nui have also been listed in table 6.

TABLE 5. REFLEXES OF PCEP \*WAH-

Gloss	Hawaiian (Pukui & Elbert)	Marquesan (Dordillon)	Mangarevan (Rensch)	Rarotongan (Buse)	Tahitian (FareVana'a)	Tuamotuan (Stimson & Marshall)	Māori (Ryan)
carry on back	waha	-	-	-	vaha	vaha	waha
firewood	wahie	Vehie	ve'ie	va'ie	vahie	-	wahie
woman	wahine	Vehine	ve'ine	va'ine	vahine	vahine	wahine
outside	waho	Vaho	va'o	va'o	vaho	vaho	waho

TABLE 6. FORMS IN RAPA NUI

Gloss	Rapa Nui (Fuentes)
carry on back	ha'a
woman	bahine
firewood	huka
outside	haho

Marck (1996:498; 2000:25) also described a third phonological innovation in PCEP, loss of PEP \*ʔ in all positions. This can be seen in table 1, where Rapa Nui shows some retention of PEP \*ʔ. However, the loss of PEP \*ʔ is not as compelling as the other two phonological changes in PCEP, for two reasons: (1) Marck (2000:24) explained that PEP \*ʔ was in fact lost between low back vowels in Rapa Nui; and more notably, (2) Marck also described at least one instance in which PEP \*ʔ is attested in modern

Marquesan, a daughter of PCEP (2000:70–71): PEP \*ʔ*utu* is retained in Marquesan *ʔutu*, 'fill with water'. This "residue" of PEP \*ʔ in Marquesan means that the loss of PEP \*ʔ is not completely shared by Central Eastern Polynesian languages and therefore is a weaker argument for subgrouping on its own.

Marck (2000:132) further argued for the validity of the Central Eastern Polynesian subgroup by demonstrating uniquely shared sporadic consonant and vowel changes in PCEP. Of his six changes, I find only five that provide strong evidence of sporadic change. These appear in table 7, adopted from Marck 2000:132. Table 8 shows the reflexes of these changes in EP languages.

TABLE 7. SPORADIC SOUND CHANGES IN PCEP

PEP	PCEP	Gloss
*nguu-feke	*muu-feke	'squid'
*ngau	*ngahu	'chew, bite'
*faahua	*paahua	'Tridacna (giant clam)'
*kai	*koi	'sharp'
*kau-natu	*kau-nati	'fire-plough'

TABLE 8. REFLEXES OF PCEP SPORADIC CHANGES

Gloss	Hawaiian (Pukui & Elbert)	Marquesan (Dordillon)	Mangarevan (Rensch)	Rarotongan (Buse)	Tahitian (FareVana‘a)	Tuamotuan (Stimson & Marshall)	Māori (Ryan)
squid	mūhe‘e	muheke	-	muu‘eke	-	muheke	ngūwheke
chew, bite	nahu	Nahu	nga‘u	-	Ahu	ngahu	ngau
large mollusk	pāpaua	pahua	pa‘ua	paa‘ua	Paahua	pahuua	-
sharp	‘oi	koi	koi	koi	‘oi	koi	koi, koikoi
firestick	‘aunaki	kounati	kounati	-	Aunati	kaunati	kaunati

Marck’s other “sporadic sound change” is not very convincing. He argued that PEP *\*kumi* ‘strangle’ changed to *\*kumu* in PCEP. Marck’s analysis is problematic because not a single CEP language demonstrates this change. To the contrary, I have found that nearly all of the CEP languages show some reflex of PEP *\*kumi*: Mangarevan *kukumi* (Rensch), Hawaiian *‘umi* (Pukui and Elbert), Marquesan *kukumi* (Dordillon), Rarotongan *kukumi* (Savage), Tuamotuan *kukumi* (Stimson and Marshall).

Finally, Green (1985:12) outlined nine syntactic innovations that Marck echoed in 1996. These are: *\*tei*, ‘present position’; *\*ina(a) fea*, ‘when?’; *\*le(‘)ila*, ‘there, aforementioned place’; *\*noo/naa*, ‘possessive particle’; *\*me*, ‘and, with, plus’; *\*taua*, ‘that aforementioned’; *\*aanei*, ‘interrogative’; *\*vai*, ‘who’; *\*vau*, ‘1<sup>st</sup> person singular’. Table 9 shows reflexes of these in CEP languages and indicates that they are all fairly well attested.

TABLE 9. PCEP SYNTACTIC INNOVATIONS

Gloss	Hawaiian (Pukui & Elbert)	Marquesan (Dordillon)	Mangarevan (Rensch)	Rarotongan (Buse)	Tahitian (FareVana‘a)	Tuamotuan (Stimson & Marshall)	Māori (Ryan)
present	-	tae	-	tei (Savage)	tei	tei	-
when	ināhea	ine hea	‘ea	ina‘ea	nahea	inaheea	āhea
there	Laila, leila	ei‘a	reira	reira	Reira	reira	reira
possessive	no, na	na	no, na	no, na	no, na	no, na	nō, nā
And, with, plus	me	me	me	-	-	me	me
That, afore.	ua	-	-	taua (Savage)	taua	taua, ua	taua
interrogative	anei	auanei	-	-	ānei	anei	-
Who	wai	Ai	ai	‘ai	vai	ai	wai
I, me	au, wau	Au	au	au (Savage)	vau, au	vau, au	au

Green (1985:15) and Green and Kirch (2001:270–71) furthermore provided three innovations for seasons or months: *\*pipiri* ‘June–July’, *\*serefu* ‘March–April’, *\*(f,s)ingaia* ‘December–January’. Unfortunately, the precise meanings of these “innovations” are not as easily defined as Kirch and Green claimed, and since the attestations in modern CEP languages are limited, these are not strong evidence for subgrouping. Only *\*pipiri* has multiple reflexes in CEP languages, and these vary in meaning: Mangareva *pipiri* ‘June’ (Braine le Comte), Māori *pipiri* ‘June’ (Ryan), Rarotongan *pipiri* ‘season September to



November’ (Savage), Tahitian *pipiri* ‘February to March’ (Oliver), Tuamotuan *pipiri* ‘a month, October to January’ (Stimson and Marshall). *\*(f,s)ingaia* is attested in Tahitian *hiai’a* ‘September–October’ (Fare Vana’a) and Hawaiian *hinaia* ‘July–August’ (Handy and Handy). *\*serefu* is attested only in Tahitian, *rehu* ‘third month of the year’ (Fare Vana’a).

Green also provided five PCEP innovations for phases of the moon: *\*tū*, ‘one night in the first period of moon’; *\*funa*, ‘middle period night’; *\*marangi*, ‘middle period night’; *\*turu*, ‘middle period night’; *\*tangaloa*, ‘third period night’. These also do not have any specific gloss in Green’s interpretation, but they are again, according to Green, unattested in Rapa Nui. These moon phase forms are questionable, since there are no attestations found in Rapa Nui, and infrequent attestations in other EP languages. Only *\*tū*, *\*turu*, *\*funa* and *\*tangaloa* demonstrate any reflexes, and of these, only *\*turu*, *\*funa* and *\*tangaloa* have reflexes in more than one modern CEP language. PCEP *\*tū*: Hawaiian *kū* ‘3rd, 4th, 5th and 6th days of the month’ (Pukui and Elbert); *\*turu*: Māori *turu* ‘moon on the 14<sup>th</sup> night’ (Ryan), Rarotongan *turu* ‘sixteenth night of the moon’ (Buse), Tahitian *turu* ‘seventeenth night of the moon’ (Henry); *\*funa*: Hawaiian *huna* ‘eleventh night of the month’ (Pukui and Elbert), Mangareva *una* ‘twelfth night of the moon’ (Rensch), Marquesas *huna* ‘phase of the moon’ (Dordillon), Māori *huna* ‘moon on eleventh night’ (Ryan), Rarotongan *uunaa* ‘tenth night of the moon’s age’ (Savage), Tuamotuan *huna* ‘thirtieth night of the lunar cycle’ (Stimson and Marshall); *\*tangaloa*: Mangarevan *tagarua* ‘twenty-seventh night of the moon’ (Rensch), Marquesan *takaoa* ‘phase of the moon’ (Dordillon), Māori *tangarua* ‘a night of the moon’ (Ryan), Rarotongan *tangarua* ‘series of moon nights, 22<sup>nd</sup> to 24<sup>th</sup>’ (Buse), Tahitian, *taʻarua-tahi* ‘twenty-fourth night of the moon’ (Henry).

Overall, the features that have been historically described to define the Central Eastern Polynesian subgroup are still compelling. In spite of some exceptions, there remain regular sound changes, semantic innovations, and morphological innovations that establish PCEP as a separate speech group from Rapa Nui. However, as will be shown in section 7, the shared features of CEP languages may be products of continuous contact and diffusion after the settlement of east Polynesia rather than innovations developed in isolation, which suggests that PCEP may have been a language community with a wide geographic dispersal.

**4.2 PROTO MARQUESIC AND PROTO TAHITIC.** The rationale for the Marquesic and Tahitic subgroups are generally viewed as weaker than CEP, and, as a result, in defining them there has been a history of wavering and extensive qualifications for anomalies or weaker pieces of evidence. Even Green, who originally proposed these subgroups, stated that the linguistic basis for them was “not particularly strong” (1966:18). This same sentiment was echoed by Marck (1996), who wrote that many of the innovations originally described for PMQ must now be rejected (p. 501). He furthermore wrote in 2000, “... what we reconstruct as Proto Marquesic and Proto Tahitic may only be dialect differences between varieties of Central East Polynesian” (p.138–39), noting that in general the language groups are not very different.

Despite these problems, Marck and Green maintained the existence of Tahitic and Marquesic subgroups and defined them based on regular sound changes, sporadic sound changes, and lexical innovations. In comparing their “evidence” with the primary source data, it becomes clear that their definition is limited to isolated sporadic changes. I will first address regular sound change, followed by sporadic sound change, and then finally lexical innovations.

**4.2.1 REGULAR SOUND CHANGE.** While Biggs (1978:711) remarked that neither subgroup is marked by any regular consonant changes, Marck (2000:24–25) showed that PTA retained PCEP *\*s*, while PMQ reduced it to *\*h*. This change is not convincing for one main reason: the only retention of PTA *\*s* is found in Penrhyn, in the Northern Cook Islands (Marck 2000:45); Greenhill, Clark, and Biggs 2010). All other “Tahitic” languages reduced *\*s* to *h* (Marck 2000:45), and in one case, Rarotongan, PCEP *\*s* reduced to glottal stop though this was likely the result of an intermediate reduction from *\*s* to *h*, then to glottal stop. In “MQS” languages, all but Mangarevan reduced PCEP *\*s* to *h*, as well. Mangarevan demonstrated a similar change of PCEP *\*s* to glottal stop which, like Rarotongan, likely was the result of an intermediate reduction from *\*s* to *h*, then to glottal stop. Because of the general regularity of PCEP *\*s*

reducing to *h* in CEP languages, the retention of \*s in Penrhyn cannot be evidence of a group-wide phonological retention for “Tahitic” languages, but rather a retention of PCEP \*s in one PCEP daughter language. My data therefore agree with those of Biggs, and I argue that no regular sound change can be found to define either of these subgroups. Table 10, taken from Marck 2000:45,<sup>3</sup> shows examples of this change throughout CEP languages.

TABLE 10. PCEP \*S REFLEXES

	‘tear, torn’	‘err’	‘fish with line’	‘smell, rub noses’	‘turn over, lever up, weed, root’
PCEP	*sae	*see	*sii	*songi	*suaki
Hawaiian	hae	-	hii	honi	hua‘i
Marquesan	(ka)hae	hee	(ika)hii	hoki	huai
Mangarevan	(‘ae)‘ae	-	‘ii	‘ogi	-
Māori	hae	hee	hii	hongi	hua
Penrhyn	sae-sae	-	sii-sii	-	-
Rarotongan	(‘ae)‘ae	‘ee	‘ii	‘ongi	‘uaki
Tahitian	(hae)hae	hee	hii	ho‘o	hua‘i
Tuamotuan	hae	hee	-	hongi	huaki

**4.2.2 SPORADIC SOUND CHANGES.** Marck, in 2000, argued for six sporadic changes in PMQ and nine sporadic vowel changes in PTA. These are outlined below in Tables 11 and 12, taken from Marck 2000:133–34.

TABLE 11. SPORADIC SOUND CHANGES IN PROTO MARQUESIC

PCEP	PMQ	Gloss
*haere	*here	‘go, walk’
*muka	*muko	‘growing tip’
*taiti	*teiti	‘child’
*tao-kete	*to-kete	‘ego’s same-sex sibling-in-law’
*Tokelau	*tokolau	‘north’
*tua-ngaane	*tu-ngaane	‘woman’s brother’

TABLE 12. SPORADIC SOUND CHANGES IN PROTO TAHITIC

PCEP	PTA	Gloss
*kumi	*kimi	‘seek’
*urufe	*aruhe	‘fern species’
*katafa	*kootaha	‘bird’s nest fern’
*rimu	*remu	‘moss, seaweed’
*mutie	*matie	‘grass’
*nonu	*nono	‘plant species’
*tanga-amimi	*tongaamimi	‘bladder’
*toko-mauru	*tokomauri	‘hiccough’
*tuhunga	*tahunga	‘priest’

<sup>3</sup>In Marck’s table, double vowels represent long vowels. I have followed this practice in tables with data taken directly from his 2000 book (tables 10,11, and 12) in order to be consistent with his conventions.

In PMQS, there is one change that is especially problematic, the proto-form for ‘woman's brother’ *\*tu-ngaane*. Use of this as evidence is debatable because reflexes show up in two “Tahitic” languages: Māori *tungane* (Ryan) and Tuamotuan *tungane* (Stimson and Marshall). In PTA, I find two questionable changes: *\*kimi* and *\*tahunga*. PTA *\*kimi* is disputable because nearly all EP languages appear have reflexes of this; however they are more likely reflexes of PPN *\*kimi* (table 13). In fact, there is no evidence in any forms for ‘seek’ that support a reconstructed form, *\*kumi*, for PCEP.

TABLE 13. EP REFLEXES OF PPN *\*KIMI*, ‘SEEK’

	EAS (Fuentes)	HWN (Pukui & Elbert)	MQS (Dordillon)	MAO (Ryan)	RAR (Buse)	TAH (FareVana‘a)	TUA (Stimson &Marshall)
to seek	kimi	‘imi	imi	kimi	kimi	‘imi	kimi

PTA *\*tahunga* is also problematic because Hawaiian, one of the three modern “Marquesic” languages, also shows this change: *kahuna* (Pukui and Elbert). Marck claimed this is due to a borrowing from Tahitian (2000:134); however there is no way to be certain if it was borrowed or not. Marck himself even stated that confirming borrowing of this kind is impossible (2000:117).

Marck also noted two other sporadic sound changes for PTA in his 1996 discussion: *\*ngahuru* ‘base ten’ and *\*ki*: ‘full’. Marck wrote that there is a reduction of PCEP *\*angafulu* to *\*ngahuru* in PTA (1996:505). An exception to this is found in the “Tahitic” language of Tuamotuan where ‘ten’ is *angahuru* (Stimson and Marshall). The form *\*ki*: is reported as a PTA innovation for ‘full’, contrasting with reflexes of *\*pi*: attested in “Marquesic” languages, and marking a change from PCEP *\*pi*: ‘full’ (Greenhill, Clark, and Biggs 2010): Tahitian *i*: (Fare Vana‘a), Rarotongan *ki*: (Savage), Tuamotuan *ki*: (Stimson and Marshall), Māori *ki*: (Ryan), Mangarevan *pi*: (Rensch), Marquesan *pi*: (Dordillon), Hawaiian *piha* (Pukui and Elbert). This list appears to support Marck’s claim; however, Marquesan also has a potentially cognate *ki*: form with the “Tahitic” languages, meaning ‘very much’ (Dordillon). The fact that there is a cognate form with a close semantic relationship in a Marquesic language does not make the sporadic change from PCEP *\*pī* to PTA *\*kī* strong evidence in and of itself.

**4.2.3 SEMANTIC INNOVATION.** Marck (1996:503) listed three semantic innovations for PMQ: *\*pana*, *\*paki-uma*, and *\*mano*, claiming that *\*pana* is a semantic innovation for ‘bow’ from PCEP *\*pana* ‘under tension’. However, the meaning of ‘bow’ can be reconstructed for Proto-Polynesian *\*pana* (Greenhill, Clark, and Biggs 2010), and a meaning related to ‘bow’ can be reconstructed as far back as Proto-Austronesian: PAN *\*panaq* (Blust 2012). As is demonstrated by Blust in the ACD, PAN *\*panaq* has ‘bow’ reflexes in many languages well outside of east Polynesia. It follows that Marck's claim for a PMQ innovated *\*pana* is better viewed as a reflex of PAN *\*panaq*, and therefore provides no evidence for subgrouping.

PMQ *\*paki-uma* is attested in Hawaiian as ‘chest-slapping hula’ (Pukui and Elbert) and in Marquesan as ‘type of game that involves slapping the chest’ (Dordillon). However, I fail to see the isolated PMQ innovation here, as Marck (1999:502) also reported a possible reflex in Māori meaning ‘chest slapping’. Furthermore, while the compound meaning may be isolated to Marquesan and Hawaiian, the two individual components, *paki* and *uma*, can be reconstructed much further back than PMQS. *\*paki*, meaning ‘to slap or clap’ can be reconstructed for Proto-Oceanic (Greenhill, Clark, and Biggs 2010) and as far back as PAN *\*papak* (Blust 2012). Additionally, nearly all EP languages have similar forms for ‘chest’ that appear to be directly cognate: Rapa Nui *uma* ‘breast, breast of fowl’ (Fuentes), Hawaiian *uma* ‘muscles of the upper chest’ (Pukui and Elbert), Mangarevan *uma-vakavaka* ‘center of chest’ (Rensch), Marquesan *uma* ‘chest’ (Dordillon), Māori *uma* ‘chest’ (Ryan), Rarotongan *uma* ‘breast, chest, bosom’ (Buse), Tuamotuan *uma* ‘chest of turtle’ (Stimson and Marshall). These widespread cognates support PEP *\*uma* ‘chest’. It would not be particularly unusual for people to have combined these words already in use

by the time of the Hawaiians and Marquesans, and this is therefore not convincing evidence for a Marquesic subgroup.

Finally, PMQ *\*mano* was reported by Marck to be a semantic innovation for ‘four thousand’, attested in Marquesan and Hawaiian (1996:502). According to Greenhill, Clark, and Biggs 2010, however, ‘four thousand’ is found only in the Northwest Marquesan dialect. In the Southeast dialect of Marquesan, *mano* means ‘two thousand’. *Mano* also means ‘two thousand’ in another “Marquesic” language, Mangarevan (Rensch). Furthermore, Tuamotuan, a “Tahitic” language also shares the ‘two thousand’ meaning.

With regard to semantic innovation in PTA, Marck (1996:505) listed *\*koura* ‘crayfish’ and *\*tufa* ‘spit’, neither of which can be demonstrated in the source data. In a comparison of all EP terms meaning ‘crayfish, prawns, shrimps’, it is clear that *\*koura* is more likely a PEP innovation, not a PTA innovation, and can therefore be ruled out as evidence for the proposed subgroup: Māori *kōura* (Ryan), Rapa Nui *kōura* ‘flea’; ‘small insects in general’<sup>4</sup> (Fuentes), Mangarevan *ōura* ‘crayfish’ (Rensch), Marquesan *koua* ‘lobster’ (Dordillon), Māori *kōura* ‘crayfish’ (Ryan), Rarotongan *koura* ‘crayfish’ (Savage), Tahitian *ōura* ‘shrimp or lobster’ (Fare Vana‘a), Tuamotuan *kooura* ‘crayfish, rock lobster’ (Stimson and Marshall). *\*tufa* ‘to spit’ actually has reflexes in Hawaiian *kuha* and Marquesan *tufa* (Dordillon). These attestations in “Marquesic” languages thus rule it out as evidence for a Proto-Tahitic innovation.

**5. DISCUSSION OF SUBGROUPING ANALYSIS.** As was detailed in section 5, the shared features of CEP languages show that these languages shared a period of common development, but not for PMQ and PTA. According to this reanalysis, phonological evidence is not satisfactory for either PMQ or PTA, and lexical evidence is equally unconvincing. This analysis shows then that PMQ is defined by only five sporadic sound changes, and PTA is defined by only seven sporadic sound changes. This raises the question: are these features strong enough to clearly define a subgroup? These shared features are not only minimal, but of weak quality, as they are limited to single vowel changes. Furthermore, these innovations are not attested in all “Marquesic” or “Tahitic” languages, raising questions about the discreteness of these proposed subgroups.

Strong evidence against the Tahitic and Marquesic subgroups arises in the “Tahitic” forms that emerge in “Marquesic” languages, and vice versa (c.f. section 5.2). These cross-subgroup similarities have been explained away by linguists as “borrowings.” However, the grounds on which they have been classified as loans seem uncertain. The most notable of these “borrowings” are from Tahitian into Hawaiian. Marck wrote that there are 219 shared PCEP lexical items between PTA and Hawaiian that are not shared with other “Marquesic” languages. He admits that due to the “limited membership” (2000:117) of the Marquesic group, there is no adequate way to identify these as borrowings. This represents a major indeterminacy in the subgrouping, as a large number of shared lexical items have been arbitrarily disregarded loans.

Further evidence against the classification of “Marquesic” and “Tahitic” languages comes from Ray Harlow, who noted some dialects of Māori that contain features “peculiar to Marquesic languages” (1994:117), though Māori is considered a “Tahitic” language. Marck echoed this opinion, stating that there could be support for “linguistic inputs from Marquesic as well as Tahitic.” These inputs appear to be both phonological and lexical,<sup>5</sup> and provide strong evidence against Māori as a “Tahitic” language.

In reality, all of these qualifications may come from assumptions about the historical validity of the “Tahitic” and “Marquesic” subgroups, in order to accommodate the long-held conclusions concerning east Polynesian settlement. Given the weakness of the evidence, I suggest that there was neither a Proto-

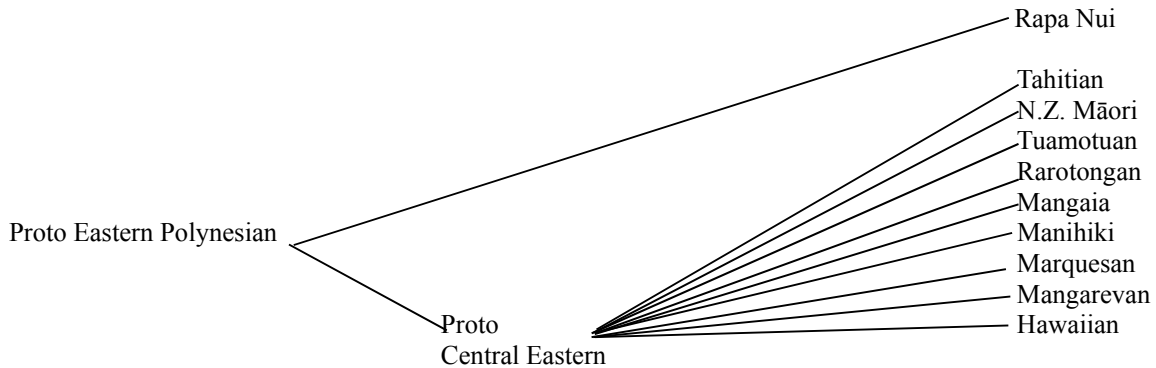
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<sup>4</sup> Likely a semantic change isolated to Rapa Nui after separation from PEP.

<sup>5</sup> Some example of Harlow's evidence include: (1) Māori *taumaha* ‘heavy’ is cognate with Hawaiian *kaumaha*; (2) a form in South Island Māori for ‘bite’, *kakahu*, is cognate with Northern Marquesan *kakahu*, Southern Marquesan *nanahu*, and Mangarevan *ŋaŋa‘u*; (3) South Island Māori term for ‘fish sort’, *rewa*, is cognate with Marquesan *eva*; (4) Northern Māori term for ‘twist into string’, *firo*, is cognate with Mangarevan *hiro*, Marquesan *hi‘o*, and Hawaiian *hilo* (1994:115–16).

Marquesic nor a Proto-Tahitic language, and that the branches of PCEP developed via spheres of contact. I propose a new EP language tree that retains the CEP subgroup based on some compelling shared features, but eliminates the Tahitic and Marquesic subgroups. This new tree, as shown in Image 2, separates Rapa Nui from all other Eastern Polynesian languages and allows it to have developed in isolation, while the CE languages developed out of continued waves of contact due to high mobility among island groups, that diffused features based on spheres of interaction that stretched as far as New Zealand and Hawai‘i.

IMAGE 2. PROPOSED NEW TREE FOR EASTERN POLYNESIAN LANGUAGES



**6. SPHERES OF CONTACT.** What this simplified linguistic tree implies is that after initial settlement, for several generations there was regular contact among all of the islands of east Polynesia except Rapa Nui. This would account for how the shared innovations of PCEP are distributed. This type of contact is also well supported in the archaeological record. Kirch (2000:244) wrote that “[the archaeological findings] suggest that the central-east archipelagoes were in regular communication during the earlier prehistoric period.” Archaeological evidence of broad contact spheres connecting all parts of east Polynesia except for Rapa Nui is extensive (Barnes et al. 2006; Rolett 2003, Weisler 1994, 1998; Weisler and Kirch 1996). According to Kirch and Green (2001:80) “It is doubtful that Rapa Nui was ever connected with the central-east Polynesian core area by regular two-way voyages.” This supports the theory that PCEP developed as a wide-ranging interaction sphere, with Rapa Nui developing in isolation.

The archaeological record also shows evidence that following settlement, inter-archipelago voyaging continued, “resulting in the establishment of an interaction sphere linking inhabited islands” (Walter 1996:524). This is indicated by evidence of raw materials that were passed between both local and distant communities. Collerson and Weisler (2007) provided evidence suggesting contact between Hawai‘i and the Tuamotus, through tracing unique stone material in Tuamotuan tools to a distinctly Hawaiian origin. They wrote furthermore that Tuamotuan tools indicate contact with the Societies, Marquesas, Pitcairn, and the Australs, demonstrating a large interaction sphere that connected many east Polynesian language and culture groups. Weisler (1998) also provided evidence for long-distance interaction between the greater island groups of east Polynesia, again based on the movement of stone tools that can be sourced to a specific location. “The radio carbon dates clearly associated with two Eiao artifacts exported to the Societies and Mangareva and inter-archipelago interaction models based on detailed sourcing studies from the Cooks and the Mangareva-Pitcairn interaction sphere clearly demonstrate that long-distance inter-archipelago interaction continued long after colonization” (Weisler 1998:529).

The continuation of voyaging after initial settlement demonstrates high mobility like that facilitating rapid colonization (Wilmshurst et al. 2010) and significant local and long-distance interaction. This not only supports the hypothesis that the languages descended from PCEP were developed in contact, but it also allows for a clearer picture of what east Polynesian settlement may have looked like, in light of the recent findings by Wilmshurst and her colleagues.

**7. CONCLUSION.** Through reanalysis of the major branches proposed for EP, it is evident that a new approach to EP linguistic relationships needs to be adopted that eliminates the Tahitic and Marquesic subgroups, but still allows for the formation of PCEP, as a result of waves of contact. The Tahitic and Marquesic subgroups were based on weak evidence in an attempt to accommodate a long-standing model of settlement derived from both linguistics and archaeology, which involved substantial pauses of proto-language communities and multiple centers of dispersal. The linguistic tree offered here independently suggests that the majority of the Eastern Polynesian languages were developed in contact, with Rapa Nui developing in isolation. In this way, both long-ranging and local spheres of interaction allowed the languages descended from PCEP to form shared characteristics separate from Rapa Nui. Moreover, the conclusions offered here agree with the new chronologies and rapid dispersal documented by Wilmschurst et al. (2010).

This revised linguistic tree, while it does not allow for internal grouping of CEP languages, does mirror the chronology, colonization, and patterns of exchange outlined in the east Polynesian archaeological evidence. Where the previous approaches to Polynesian subgrouping may have provided neat boxes in which to put the Eastern Polynesian languages, in light of the new archaeological evidence the older account was found to be neither convincing nor realistic. Finally, the revised subgrouping proposed here demonstrates the value of interdisciplinary cooperation for archaeology, linguistics, and other historical sciences.

#### REFERENCES

- BARNES, S. S.; E. MATISOO-SMITH; and TERRY L. HUNT. 2006. Ancient DNA of the Pacific rat (*rattus exulans*) from Rapa Nui (Easter Island). *Journal of Archaeological Science* 33:1536–40.
- BIGGS, BRUCE. 1971. The languages of Polynesia. In *Current trends in linguistics: Linguistics in Oceania*, ed. by Thomas A. Sebeok, 466–505. The Hague: Mouton.
- BIGGS, BRUCE. 1978. The history of Polynesian phonology. In *Proceedings of the Second International Conference on Austronesian Linguistics*, ed. by S. A. Wurm and Lois Carrington, 691–716. Canberra: Pacific Linguistics.
- BLUST, ROBERT. 2012. *Austronesian comparative dictionary*. [www.trussel2.com/ACD](http://www.trussel2.com/ACD).
- BUSE, JASPER. 1996. *Cook Islands Māori dictionary*. Auckland: University of Auckland.
- COLLERSON, KENNETH D., and MARSHALL I. WEISLER. 2007. Stone adze compositions and the extent of ancient Polynesian voyaging and trade. *Science* 317:1907–11.
- DORDILLON, ILDEFONSE RENÉ. 1904. *Grammaire et dictionnaire de la langue des Iles Marquises*. Paris: Imprimerie Belin Freres.
- FARE VANA‘A. 2012. *Dictionnaire Tahitien*. <http://www.farevanaa.pf/dictionnaire.php>.
- FUENTES, JORDI. 1960. *Diccionario y gramática de la lengua de la Isla de Pascua*. Santiago: Editorial Andrés Bello.
- GREEN, ROGER C. 1966. Linguistic subgrouping within Polynesia: The implications for prehistoric settlement. *The Journal of the Polynesian Society* 75(1):6–38.
- GREEN, ROGER C. 1985. Subgrouping of the Rapanui language of Easter Island in Polynesia and its implications for East Polynesian prehistory. *Working Papers in Anthropology, Archaeology, Linguistics, Māori Studies* 68.
- GREENHILL, SIMON J.; ROSS CLARK; and BRUCE BIGGS. 2010. *POLLEX-online*. <http://pollex.org.nz/>.
- HARLOW, RAY. 1994. Māori dialectology and the settlement of New Zealand. In *The origins of the first New Zealanders*, ed. by Douglas G. Sutton, 106–22. Auckland: Auckland University Press.
- HANDY, E. S. C., and E. G. HANDY. 1972. *Native planters in Hawai‘i: Their life, love, and environment*. Bernice P. Bishop Museum Bulletin 233. Honolulu: Bernice P. Bishop Museum.
- HENRY, TEUIRA. 1928. *Ancient Tahiti*. Honolulu: Bernice P. Bishop Museum.

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- JANEAU, VINCENT. 1908. *Grammaire et dictionnaire Mangaréviens*. BRAINE-LE-COMTE: Imprimerie Zech et Fils.
- KIRCH, PATRICK VINTON. 2000. *On the road of the winds*. Berkeley: University of California Press.
- KIRCH, PATRICK VINTON, and ROGER C. GREEN. 2001. *Hawaiki, ancestral Polynesia: An essay in historical anthropology*. Cambridge: Cambridge University Press.
- MARCK, JEFF. 1996. Eastern Polynesian subgrouping today. In *Oceanic culture history: Essays in honour of Roger Green*, ed. by Janet Davidson, Geoffrey Irwin, Foss Leach, Andrew Pawley and Dorothy Brown, 491–511. Wellington: New Zealand Journal of Archaeology.
- MARCK, JEFF. 2000. *Topics in Polynesian language and culture history*. Pacific Linguistics 504. Canberra: Pacific Linguistics.
- OTSUKA, YUKO. 2006. Niuean and Eastern Polynesian: A view from syntax. *Oceanic Linguistics* 45(2):429–56.
- PAWLEY, ANDREW. 1966. Polynesian languages: A subgrouping based on shared innovations. *The Journal of the Polynesian Society* 75(1):39–64.
- PUKUI, MARY KAWENA, and SAMUEL H. ELBERT. 1986. *Hawaiian dictionary*. Honolulu: University of Hawai'i Press.
- RENSCH, KARL. 1991. *Tikitionario Mangareva-'Arani/Dictionnaire Mangarévien-Français*. Canberra: Archipelago Press.
- ROLETT, BARRY V. 1996. Colonisation and cultural change in the Marquesas. In *Oceanic culture history: Essays in honour of Roger Green*, ed. by Janet Davidson, Geoffrey Irwin, Foss Leach, Andrew Pawley, and Dorothy Brown, 531–40. Wellington: New Zealand Journal of Archaeology.
- ROLETT, BARRY V. 2003. Voyaging and interaction in ancient East Polynesia. *Asian Perspectives* 41(2):82–194.
- RYAN, PETER M. 2008. *The Raupo dictionary of modern Māori*. Auckland: Raupo Publishing.
- SAVAGE, STEPHEN. 1962. *A dictionary of the Māori language of Rarotonga*. Wellington: The Department of Island Territories.
- STIMSON, J. FRANK, and DONALD STANLEY MARSHALL. 1964. *A dictionary of some Tuamotuan dialects of the Polynesian language*. Salem, Massachusetts: The Peabody Museum of Salem.
- TERRELL, JOHN EDWARD. 2011. Recalibrating Polynesian prehistory. *Proceedings of the National Academy of Sciences* 108(5):1753–54.
- WALTER, RICHARD. 1996. What is the East Polynesian “Archaic”? A view from the Cook Islands. In *Oceanic culture history: Essays in honour of Roger Green*, ed. by Janet Davidson, Geoffrey Irwin, Foss Leach, Andrew Pawley, and Dorothy Brown, 513–29. Wellington: New Zealand Journal of Archaeology.
- WEISLER, MARSHALL I. 1994. The settlement of marginal Polynesia: New evidence from Henderson Island. *Journal of Field Archaeology* 21(1):83–102.
- WEISLER, MARSHALL I. 1998. Hard evidence for prehistoric interaction in Polynesia. *Current Anthropology* 39(4):521–32.
- WEISLER, MARSHALL I., and PATRICK VINTON KIRCH. 1996. Interisland and interarchipelago transfer of stone tools in prehistoric Polynesia. *Proceedings of the National Academy of Sciences* 93:1381–85.
- WILMSHURST, JANET M; TERRY L. HUNT; CARL P. LIPO; and ATHOLL J. ANDERSON. 2010. High precision radiocarbon dating shows recent and rapid initial human colonization of East Polynesia. *Proceedings of the National Academy of Sciences* 108(5):1815–20.

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