

# The subgrouping of Karen

Ken Manson  
Payap University & SIL International  
ken.grammar@gmail.com

SEALS May 2011

*Several classifications of Karen languages have been published (e.g. Jones 1961; Burling 1969; Kauffman 1993; Bradley 1997; Manson 2002; Shintani 2003). However they have all lacked in comprehensiveness and/or have not been based on the comparative method. Based on a database of over 130 language varieties, Karen languages are divided into at least 20 low level clusters based on shared phonological developments.*

## Introduction

Karen languages are unusual among Tibeto-Burma as being a distinct branch with no members of uncertain status. Internal relationships and reconstruction has been limited to either a few well known groups (normally the three largest groups: Sgaw, Pwo, and Pa'O, e.g. Haudricourt 1946, 1953; Jones 1961; Burling 1969) or only one aspect is compared (Manson 2002; Shintani 2003). This presentation, building on the lexical and phonological comparison of Manson (2002), considers tonal development, reflexes of proto-initials and proto-rhymes to identify higher-order subgroupings.

Previous reconstructions of Karen include Haudricourt (1946, 1953), Jones (1961) and Burling (1969). The reconstruction by Haudricourt was based on the orthographies of two languages (Sgaw & Pwo). Jones & Burling's reconstructions are limited to four languages (Sgaw, Pwo, Pa'O & Palaychi) and are phonologically unmotivated with respect to tonal development.

## Overview of Karen languages

Speakers of Karen languages are located primarily in eastern Burma from the southernmost tip of Burma to southern Shan State. There are also populations of Sgaw and Pwo in Thailand in the provinces along the western border with Burma. Bradley (1997:46) suggests a total population of 3.9 million, but notes that this is "substantially under enumerated". The total population of ethnic Karen is somewhere between 6 and 10 million; however, not all ethnic Karen still speak Karen languages. Many now speak only Burmese, especially those living on the plains.

The actual number of Karen languages is unknown as there has never been a comprehensive survey of Karen. It would appear from the literature that there are between 20-30 Karen languages. Eighteen languages whose existence has been reasonably documented are shown in Figure 1, where they are listed in relative geographical position to each other. Karen languages found in the mountains of eastern Burma usually have numerous dialects, some often difficult to understand to other speakers of the same ethnicity (see Bennett 1991 for Kayah and Manson & Chou 2008 for Kayan).



Figure 1: Geographic distribution of Karen language clusters

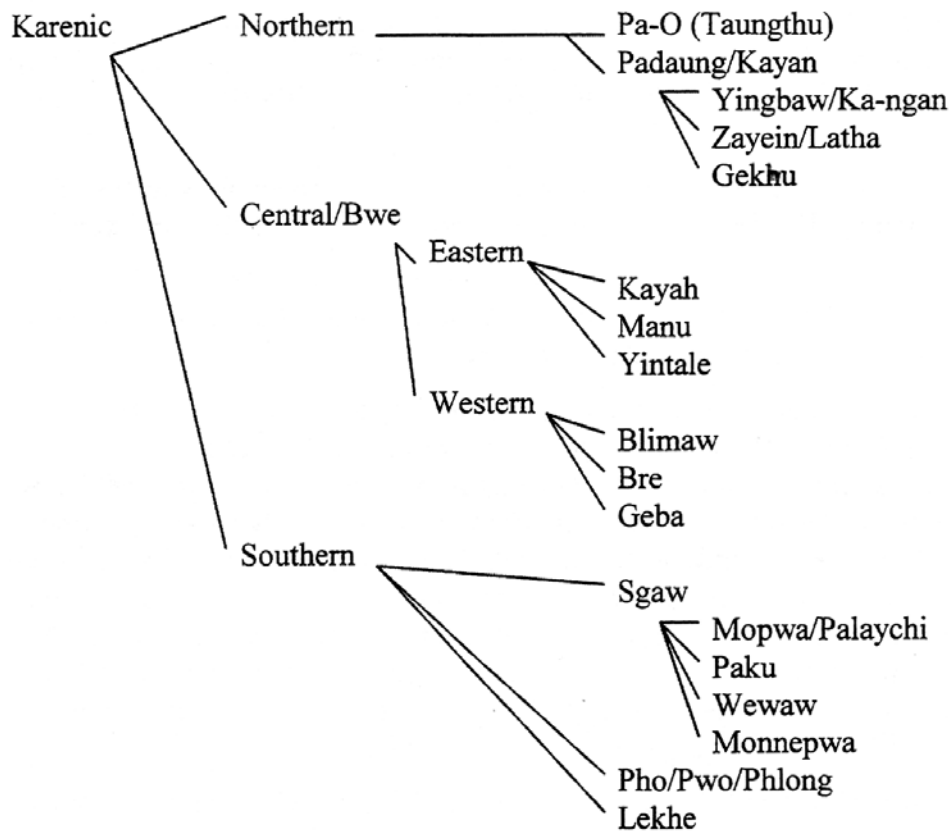


Figure 2: Karen language relationships (Bradley 1997)

## Tonal development

It is a well known fact that voiced initial consonants cause the syllable to be pronounced at a lower pitch than a voiceless initial. Most languages of Southeast Asia typically have a reduced first syllable, and where there have been phonological changes in the initial consonants, often pitch and/or phonation differences remain. From about the 10<sup>th</sup>-17<sup>th</sup>C there was a “Great Tone Split” that affected all the languages of the area (Weidert 1987). Karlgren (1915) was the first to deduce that the split in tones was conditioned by the initial consonant. Haudricourt (1961) (see Court (1972) for an English translation) expanded on Karlgren’s work and showed that for all the language families of South-east Asia there was a split in the tones of the language. Usually there was a 2-way split, but in some languages there was a 3-way split, based on the manner of articulation of the syllable initial consonant.

The development of tone in Karen can be traced back to a three-way distinction in open syllables (\*A, \*B, \*B’) plus closed syllables (\*C). There were at least six steps in the development of modern-day tonal systems in Karen. No all Karen languages have undergone all the steps.

1. Initial proto-voiced consonants caused the following vowel to be pronounced with breathy phonation
2. This breathiness caused a lowering of the pitch (Thurgood 2002, 2006)
3. Proto-voiced stops became voiceless unaspirated
4. Proto-voiceless became voiced (or no change)
5. (Breathy phonation caused the initial consonant to be pronounced aspirated)
6. Breathy phonation lost, leaving only a tonal difference

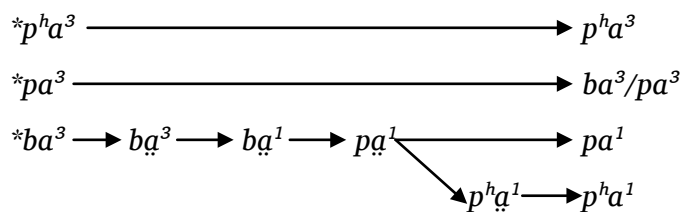


Figure 3: The development of tone and initial consonant

## Karen Tone Box

Manson (2009) proposed a Tone Box for Karen languages in a similar vein to the Gedney Tone Box for Tai languages (Gedney 1972):

	A	B	B'	C		
Proto-aspirated	<b>1 (III)</b> Water [ <i>*t<sup>hi</sup></i> ] Branch [ <i>*p<sup>h</sup>aŋ</i> ] Flower [ <i>*p<sup>h</sup>ɔ</i> ] Chicken [ <i>*s<sup>h</sup>an</i> ] Sleep [ <i>*mi</i> ] Die [ <i>*t<sup>hi</sup></i> ]	<b>4 (VI)</b> Star [ <i>*s<sup>h</sup>a</i> ] Leaf [ <i>*la</i> ] Fingernail [ <i>*mi</i> ] Fire [ <i>*me</i> ] Give [ <i>*p<sup>h</sup>e</i> ] Bitter [ <i>*k<sup>h</sup>a</i> ]	<b>7 (Va)</b> Bone [ <i>*k<sup>h</sup>ri</i> ] Child [ <i>*p<sup>h</sup>o</i> ] Right [ <i>*t<sup>h</sup>we</i> ] Spicy [ <i>*hɛ</i> ] Take [ <i>*p<sup>h</sup>i</i> ] Pus [ <i>*p<sup>h</sup>i/mi</i> ]	<b>10 (VIII)</b> Sky [ <i>*moʔ</i> ] Iron [ <i>*t<sup>h</sup>aʔ</i> ] Pig [ <i>*t<sup>h</sup>ɔʔ</i> ] Skin/bark [ <i>*p<sup>h</sup>eʔ</i> ] Shoot [v] [ <i>*k<sup>h</sup>aʔ</i> ] Dark [ <i>*k<sup>h</sup>eʔ/k<sup>h</sup>uʔ</i> ]		
	Proto-voiceless	<b>2 (II)</b> Silver [ <i>*ɽɔŋ</i> ] Ginger [ <i>*ʔeŋ</i> ] Rabbit [ <i>*tɛ</i> ] Navel [ <i>*te</i> ] Spear [ <i>*pan</i> ] White [ <i>*pwa</i> ]	<b>5 (VIa)</b> Egg [ <i>*ti</i> ] Cheek [ <i>*pu</i> ] Liver [ <i>*sin</i> ] Eat [ <i>*ʔam</i> ] Left [ <i>*se</i> ] Be at, exist [ <i>*ʔo</i> ]	<b>8 (V)</b> Paddy [ <i>*pi</i> ] Blow/howl [ <i>*ʔu</i> ] Head [ <i>*klo</i> ] Hand [ <i>*su</i> ] Breathe [ <i>*sa</i> ] Many [ <i>*ʔa</i> ]	<b>11 (VIIIa)</b> Alcohol [ <i>*siʔ</i> ] Wing [ <i>*teʔ</i> ] Heart [ <i>*saʔ</i> ] Call/shout [ <i>*kaʔ</i> ] Near [ <i>*pɔʔ</i> ]	
		Proto-voiced	<b>3 (I)</b> Nest [ <i>*bwe</i> ] Tongue [ <i>*ble</i> ] Person [ <i>*bra</i> ] Name [ <i>*min</i> ] Drunk [ <i>*mun</i> ] Red [ <i>*le</i> ]	<b>6 (IV)</b> Sun [ <i>*mɿ</i> ] Stone [ <i>*loŋ</i> ] Snake [ <i>*ru</i> ] Arrow [ <i>*bla</i> ] Old [humans] [ <i>*bra</i> ] Hot [ <i>*go</i> ]	<b>12 (VII)</b> Monkey [ <i>*zoʔ</i> ] Eye/face [ <i>*meʔ</i> ] Brain [ <i>*nɔʔ</i> ] Intestines [ <i>*breʔ</i> ] Rib [ <i>*rɿʔ</i> ] Deep [ <i>*jɔʔ</i> ]	

Table 1: Karen Tone Box (Manson 2009)

The words in each cell have been retained in all/most modern-day Karen languages. The phonological elements in square brackets in Table 1 are my reconstructed form for the lexical item; however there will be some variation in manner of articulation depending on the language variety under investigation, yet the position of articulation should not change. Luce's (1985) tone patterns (Roman numerals in brackets) are included.

## Tone patterns

Taking the Karen Tone Box and applying it to Karen language varieties shows a number of striking patterns (Table 2):

- the top two rows prototone \*B' merged with prototone \*C
- all languages except Pwo had a 2-way split<sup>1</sup>
- breathy phonation is associated with protovoiced initial consonants
- closed syllables with non-voiced initials are either high (5) or mid (3) tone

<sup>1</sup> Palaychi also had a 3-way split, but has yet to be included in the analysis.

5	1	3	3
5	1	3	3
4	1	2	
Kayaw			
5	1	3	3
5	1	3	3
2	3	5	
Kayan			
5	3	3	3
5	3	3	3
3	3	1	
Bwe-Geba			
3	1	5	5
3	1	5	5
1	4	3	
Kayah			
4	3	5	5
4	3	5	5
1	1	3	
Yintale			
5	1	5	5
5	1	5	5
1	3	5	
Yinbaw			
5	2	5	5
5	2	5	5
3	2	3	
Paku			
1	5	5	5
1	5	5	5
1	3	4	
Manu			
5	2	5	3
5	2	5	3
3	1	1	
Sgaw			
2	4	2	3
2	4	2	3
1	5	1	
Pa'O			
2	5	5	3
1	5	5	3
1	3	4	
Pwo			

Table 2: Tone Boxes for Karen languages

Taking Kauffman's (1993:45-55) proposal for the development of tone in "Central" Karen as a starting point I proposed a possible scenario for the development of tone in Karen languages (Manson 2009). This proposal has been revised and expanded (see Supplement 1: The development of tone in Karen languages). The development in tone cannot be separated from the development of consonants. The four high-level clusters (Peripheral; Northern; Central; Southern) each share significant consonant developments that align with tonal development.

## Proto-Karen initial consonants and clusters

Proto initial consonants are fairly well preserved throughout Karen languages. The main variation in reflexes is found in proto initial consonant clusters, especially for Cr clusters. Consider bilabial initials:

	*p <sup>h</sup>	*p	*b	*p <sup>h</sup> l	*pl	*bl	*p <sup>h</sup> r	*pr	*br
<b>Manu</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	pl	pl	?	p <sup>h</sup>	pj
<b>Kayaw</b>	p <sup>h</sup>	b	p	pl	pl	pl	?	pr	pr
<b>Yinbaw</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	bl	pl	p <sup>h</sup> r	pr	pr
<b>Pwo</b>	p <sup>h</sup>	ɓ	p <sup>h</sup>	p <sup>h</sup> l	bl	p <sup>h</sup> l	p <sup>h</sup> l	pj	pj
<b>Pa'O</b>	p <sup>h</sup>	b	p <sup>h</sup>	p <sup>h</sup> r	p <sup>h</sup> r	p <sup>h</sup> r/pl	p <sup>h</sup> r	p <sup>h</sup> r	p <sup>h</sup> r
<b>Kayan</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	pl	pl	p <sup>h</sup> r	pr	pr
<b>Lahta</b>	p <sup>h</sup>	b	p	pl	?	p(l)	?	pl	pl
<b>Paku (L)</b>	p <sup>h</sup>	ɓ	p	p <sup>h</sup> l	ɓl	pl	p <sup>h</sup> ɣ	ɓ	br
<b>Sgaw</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	bl	pl	p <sup>h</sup> ɣ	bɣ	pɣ
<b>Yintale</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	pl	pl	?	pw	pj
<b>Palaychi</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	bl	pl	?	p	ɣ
<b>Dermuha</b>	p <sup>h</sup>	ɓ	p	p <sup>h</sup> l	?	ɓl	p <sup>h</sup> l	p	p
<b>Geker</b>	p <sup>h</sup>	ɓ	p	?	ɓl	pl	p <sup>h</sup> r	pr	pr
<b>Gekho</b>	p <sup>h</sup>	b	b	?	bl	bl	pr	br	br
<b>E Kayah</b>	p <sup>h</sup>	b	p	pl	?	pl	p <sup>h</sup> r	p <sup>h</sup> r	p <sup>h</sup> r
<b>W Kayah</b>	p <sup>h</sup>	b	p	pl	pl	pl	pr	pr	pr
<b>Bwe</b>	p <sup>h</sup>	ɓ	b	p <sup>h</sup> l	pl	pl	pw	p	bj
<b>Geba</b>	p <sup>h</sup>	b	p	p <sup>h</sup> l	pl	pl	pl	p	pl
<b>Paku</b>	p <sup>h</sup>	ɓ	p	p <sup>h</sup> l	ɓl	pɣ	p <sup>h</sup> ɣ	p(ɣ)	bj

Table 3: Reflexes of proto-bilabial initial consonants

The pronunciation of consonant clusters in Karen languages ranges from co-articulation to the clear insertion of an epithetic schwa. For example the word for ‘sea, river’ is *pəle* in Pwo and *plɛ* in Kayan.

## Proto-rhymes

Vowels show the greatest variation in Karen languages and even within a language there can be divergent dialects which look more like another Karen language. In many Karen languages, especially from the southern region, the simple vowel rhymes have not changed.

Nasal final rhymes are key to identifying historical developments within Karen. For example, Sgaw, Palaychi and Paku have merged *\*am*, *\*an*<sup>2</sup>, and *\*aŋ* to ɔ. Geker and Gekho show this change only for *\*aŋ*, Geker and Gekho *\*am* is denasalised and fronted, a pattern seen also in Kayah, Bwe and Geba. *\*aŋ* in Manu and Kayaw has merged with *\*a?* and then denasalised and backed to ɔ.

	<i>*a</i>	<i>*a?</i>	<i>*aŋ</i>	<i>*am</i>
<b>Manu</b>	a	ɔ	ɔ	a
<b>Kayaw</b>	a	ɔ	ɔ	a
<b>Pwo</b>	a	a?	ã	ã
<b>Pa'O</b>	a	a?	aŋ	am
<b>Kayan</b>	a	a	aN	aN
<b>Yintale</b>	a	a	aN	aN
<b>Lahta</b>	a	a	aN/a	aN/e
<b>Yinbaw</b>	a	a	ã	ã
<b>Paku (L)</b>	a	a	ɔ	ɔ
<b>Sgaw</b>	a	a	ɔ	ɔ
<b>Palaychi</b>	a	a	ɔ	ɔ
<b>Dermuha</b>	a	a	o	o
<b>Geker</b>	a	a	ɔ	ɛ
<b>Gekho</b>	a	a	ɔ	ei
<b>E Kayah</b>	e	e	ɛ	e
<b>W Kayah</b>	ɛ	ɛ	ja	e
<b>Bwe</b>	ɛ	a	a	ɛ
<b>Geba</b>	ɛ	a	a	ɛ
<b>Paku</b>	i/e	a	a	a

Table 4: Reflexes of selected proto-rhymes

Proto-Karen had lost its distinction between syllable final stops /p, t, k/ at the time Proto-Karen speakers came into contact with Mon-Khmer. Only Pa'O has syllable final consonants, and they only occur in apparent loans from Mon-Khmer, see Luce (1985 Charts E-J, especially Chart E 'Austric connections'). Further Southern

<sup>2</sup> *\*an* is not a strongly supported reconstruction for Proto-Karen.

Pa’O and Northern Pa’O often show variable final consonants: ‘spicy’ S.Pa’O *hap*<sup>5</sup>, N.Pa’O *hat*<sup>5</sup>; ‘weather’ S.Pa’O *k<sup>h</sup>an*<sup>5</sup>, N.Pa’O *k<sup>h</sup>am*<sup>5</sup>; ‘slow’ S.Pa’O *ju*<sup>2</sup>, N.Pa’O *zik*<sup>5</sup>.

## Synthesis

Creating a classification of Karen based on shared innovations, rather than shared retentions has been done emphasising rhyme development over consonant changes or tonal splits.

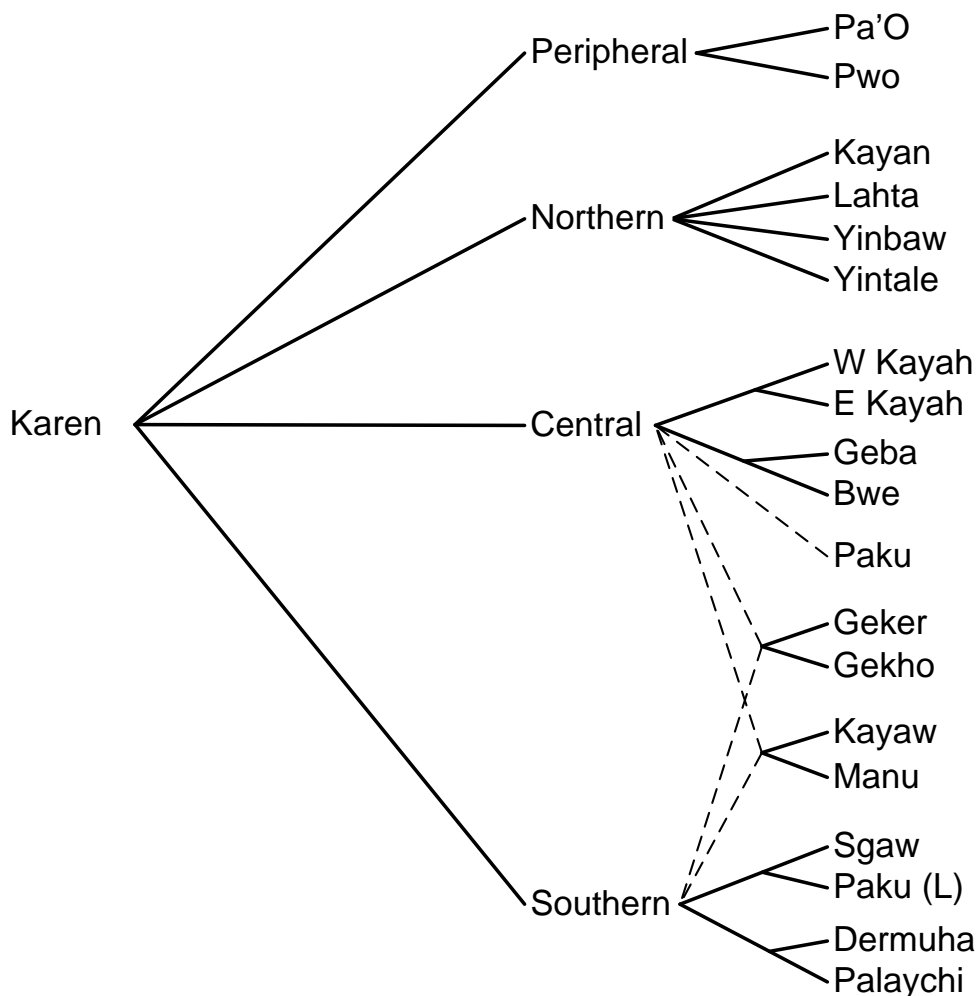


Figure 4: The Classification of Karen languages

Each branch has been labelled based on geographic location. The Peripheral branch (Pa’O and Pwo) are found to the north, east and south of the Karen languages. This branch is identified by proto voiced stop initials appearing as aspirated stops (e.g. *\*p* > *p<sup>h</sup>*). The Northern branch (Kayan, Lahta, Yinbaw and Yintale) are identified by the merging of nasal finals (e.g. *\*am*, *\*an* > *an*) and the merging of stop final rhymes with the open rhyme equivalent (e.g. *\*a?*, *\*a* > *a*). The Central Karen languages (Kayah, Bwe, Geba) are identified by vowel raising (e.g. *\*a* > *ε*). In the Southern branch (Sgaw, Luce’s Paku, Palaychi, Dermuha) nasal final rhymes have merged and the rhyme has then been raised (e.g. *\*am*, *\*aŋ* > *ɔ*).

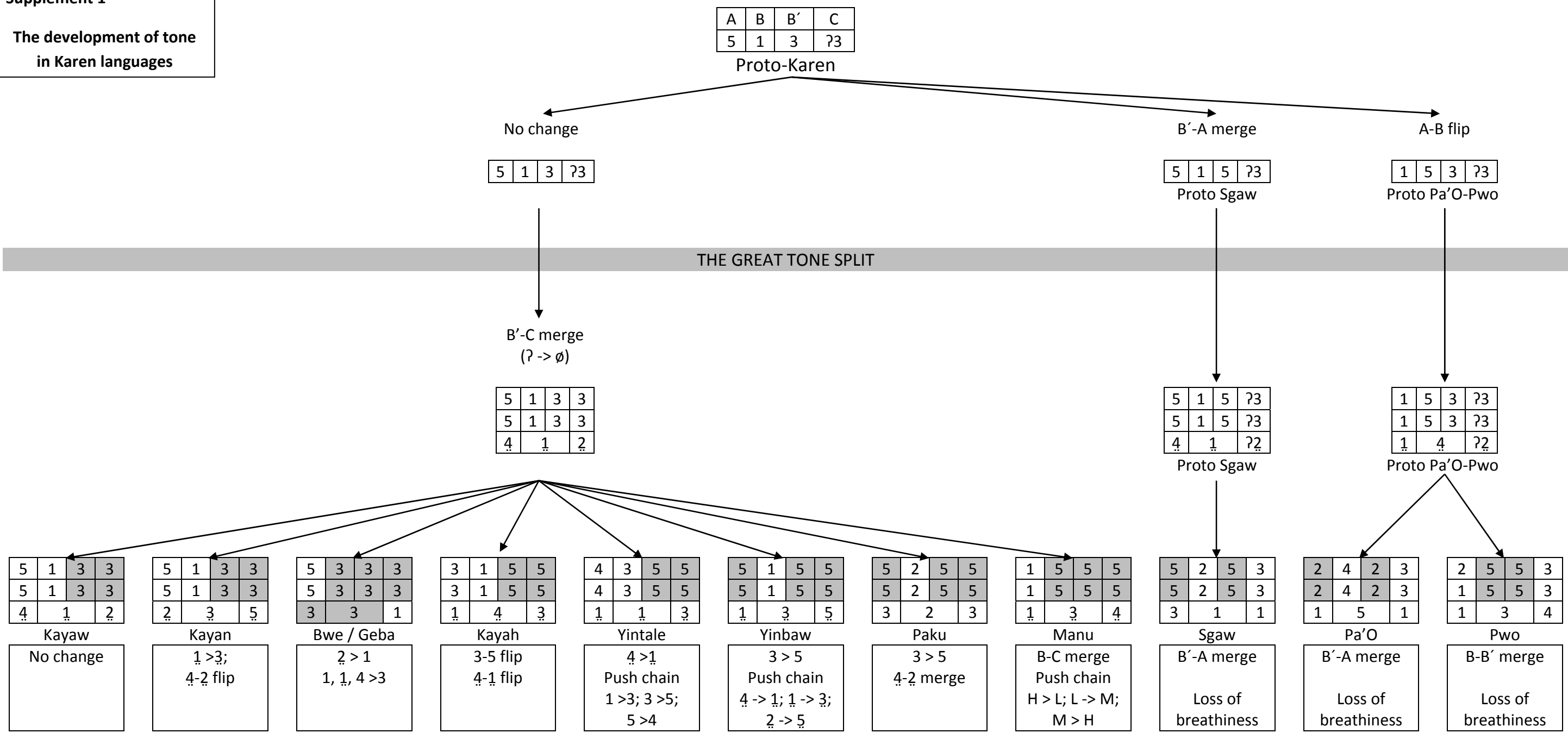
The final two clusters show developments found in both the Southern and Central branches and so are tentatively associated with both until more thorough research can be done. Geker and Gekho both show *\*aŋ* > *ɔ* and *\*am* > *ε*. Kayaw and Manu form a cluster based on the merging of velar consonant final rhymes (e.g. *\*a?*, *\*aŋ* > *ɔ*) and bilabial consonant final rhymes merging with the simple rhyme (e.g. *\*am* > *a*).



## Bibliography

- Bennett, J. Fraser. 1991. Two more Kayah Li dialects: A comparison of *do tà má* and *do shò píá* dialects with Western and Eastern Kayah. presented at 24<sup>th</sup> ICSTLL, Bangkok
- Bradley, David. 1997. Tibeto-Burman languages and classification. *Papers in Southeast Asian linguistics* 14. ed. David Bradley 1-71. Canberra: Pacific Linguistics
- Burling, Robbins. 1969. *Proto-Karen: A reanalysis*. Occasional Papers of the Wolfenden Society on Tibeto-Burman Linguistics 1
- Court, Christopher [trans]. 1972. Two-way and three-way splitting of tonal systems in some Far-Eastern languages. *Tai phonetics and phonology*, eds. Jimmy G. Harris and Richard B. Noss, 58-86. Bangkok: Mahidol University. [Translation and expansion of Haudricourt 1961]
- Gedney, William J. 1972. A checklist for determining tones in Tai dialects. In *Studies in linguistics in honor of George L. Trager*. ed. M. Estellie Smith, 423-437. The Hague: Mouton
- Haudricourt, André-Georges. 1946. Restitution du Karen commun. *Bulletin de la Societe de Linguistique de Paris* 42:103-111.
- Haudricourt, André-Georges. 1953. A propos de la restitution du Karen commun. *Bulletin de la Societe de Linguistique de Paris* 49:129-132.
- Haudricourt, André-Georges. 1961. Bipartition et tripartition des systemes de tons dans quelques langues d'extreme-orient. *Bulletin de la Societe de Linguistique de Paris* 56.1:163-180
- Haudricourt, André-Georges. 1975. Le systeme de tons du Karen commun. *Bulletin de la Societe de Linguistique de Paris* 70:339-343.
- Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of California Press.
- Karlgren, Bernhard. 1915. *Études sur la phonologie chinoise*. Archives d'Études Orientales.
- Kauffman, William. 1993. *The great tone split and Central Karen*, University of North Dakota: MA.
- Luce, Gordon H. 1959. Introduction to the comparative study of Karen languages. *Journal of the Burma Research Society* 42:32-51.
- Luce, Gordon H. 1985. *Phases of Pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press.
- Manson, Ken. 2002. *Karen language relationships: A lexical and phonological analysis*. Chiang Mai: Dept of Linguistics, Payap University.
- Manson, Ken. 2009. A prolegomena to reconstructing Proto-Karen. *La Trobe Working Papers in Linguistics* 12.
- Manson, Ken. 2011a. *Karen tone boxes*. Karen Linguistic Discussion Group, Research paper 1. Chiang Mai: Dept of Linguistics, Payap University
- Manson, Ken. 2011b. *Proto-Karen bilabials*. Karen Linguistic Discussion Group, Research paper 2. Chiang Mai: Dept of Linguistics, Payap University
- Manson, Ken. 2011c. *Proto-Karen velars*. Karen Linguistic Discussion Group, Research paper 3. Chiang Mai: Dept of Linguistics, Payap University
- Manson, Ken. 2011c. *Proto-Karen vowels*. Karen Linguistic Discussion Group, Research paper 9. Chiang Mai: Dept of Linguistics, Payap University
- Manson, Ken & Grace Chou. 2008. *A survey of Kayan*. ms.
- Shintani, Tadahiko. 2003. Classification of Brakaloungic (Karenic) languages, in relation to their tonal evolution. *Proceedings of the symposium Cross-linguistic studies of tonal phenomena: Historical development, phonetics of tone, and descriptive studies*, ed. Shigeki Kaji, 37-54. Tokyo: Tokyo University of Foreign Studies.
- Solnit, David. 2001. *Another look at Proto-Karen*. Presented at 34th ICSTLL, Kunming
- Thurgood, Graham. 2002. Vietnamese and tonogenesis: Revising the model and the analysis. *Diachronica* 19:333-363.
- Thurgood, Graham. 2006. *Tonogenesis revisited: Revising the model and the analysis*. Ms
- Weidert, Alfons K. 1987. *Tibeto-Burman tonology: A comparative account*. Amsterdam: John Benjamins

**Supplement 1**  
**The development of tone**  
**in Karen languages**



**Missing:**  
 Geker  
 Gekho  
 Palaychi  
 Dermuha  
 Bre

	Gloss	Proto Initial	Proto Rhyme	Tone Box	Kayan Pekon (M)	Padaung (S)	Padaung (K)	Padaung (B)	Yinbaw, N (Km)	Yeibaw (B)	Lahta, KW (M)	Latha (MD)	Geko (Km)	Geker (LB)	Pa'O, N (B)	Pa'O, S (B)	Pa'O (J)	Pa-O (L)	Yintale (B)	Yintale, WA (MD)	Kayaw (B)	Kayaw, S (MD)	Kayaw, H (MD)	
*a	moon work bitter leaf	*ʔl *m *k <sup>h</sup> *hl	a a a a	2 3 4 4	la <sup>5</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>53</sup> la <sup>53</sup>	la <sup>4</sup> ma <sup>31</sup> k <sup>h</sup> a <sup>31</sup> la <sup>ʔ31</sup>	la <sup>31</sup> ma <sup>31</sup> k <sup>h</sup> a <sup>ʔ1</sup> la <sup>ʔ1</sup>	la <sup>42</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	la <sup>4</sup> ma <sup>2</sup> k <sup>h</sup> a <sup>ʔ31</sup> la <sup>31</sup>	la <sup>4</sup> mɔ <sup>2</sup> k <sup>h</sup> a <sup>1</sup> la <sup>5</sup>	la mə hɔ lɔ	la <sup>4</sup> mɔ <sup>1</sup> - la <sup>1</sup>	la <sup>4</sup> ma <sup>31</sup> k <sup>h</sup> a <sup>31</sup> la <sup>45</sup>	la□ mi <sup>3</sup> k <sup>h</sup> a <sup>ʔ31</sup> la <sup>ʔ53</sup>	la <sup>21</sup> ma <sup>2</sup> k <sup>h</sup> a <sup>34</sup> la <sup>45</sup>	la <sup>21</sup> ma <sup>2</sup> k <sup>h</sup> a <sup>34</sup> la <sup>4</sup>	la <sup>1</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	la <sup>2</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	la <sup>3</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>3</sup> la <sup>3</sup>	la <sup>51</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>1</sup> la <sup>3</sup>	la <sup>5</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	la <sup>4</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	la <sup>4</sup> ma <sup>4</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	
*am	bear earth eat	*t <sup>h</sup> *hl *ʔ	am am am	1 4 5	t <sup>h</sup> an <sup>5</sup> han <sup>53</sup> an <sup>53</sup>	t <sup>h</sup> aŋ <sup>5</sup> haŋ <sup>31</sup> aŋ <sup>31</sup>	t <sup>h</sup> aũ <sup>31</sup> hã <sup>2</sup> aũ <sup>1</sup>	t <sup>h</sup> aũ <sup>4</sup> haũ <sup>1</sup> aũ <sup>1</sup>	tau <sup>3</sup> haŋ <sup>31</sup> aŋ <sup>3</sup>	t <sup>h</sup> ãu <sup>5</sup> hã <sup>1</sup> ã <sup>2</sup>	t <sup>h</sup> an - ɔ	t <sup>h</sup> an <sup>4</sup> han <sup>1</sup> an <sup>1</sup>	t <sup>h</sup> ei <sup>4</sup> - ei <sup>31</sup>	t <sup>h</sup> e□ he <sup>2</sup> eŋ <sup>53</sup>	t <sup>h</sup> am <sup>52</sup> ham <sup>45</sup> am <sup>34</sup>	t <sup>h</sup> ɔŋ <sup>5</sup> ham <sup>34</sup> am <sup>34</sup>	t <sup>h</sup> am <sup>1</sup> ham <sup>5</sup> ʔam <sup>5</sup>	t <sup>h</sup> am <sup>2</sup> ham <sup>5</sup> am <sup>5</sup>	t <sup>h</sup> ɔ <sup>5</sup> ha <sup>3</sup> a <sup>3</sup>	t <sup>h</sup> aŋ <sup>51</sup> haŋ <sup>3</sup> aŋ <sup>3</sup>	t <sup>h</sup> a <sup>5</sup> hã <sup>1</sup> ɛ <sup>1</sup>	t <sup>h</sup> a <sup>4</sup> ha <sup>4</sup> a <sup>1</sup>	t <sup>h</sup> a <sup>4</sup> ha <sup>3</sup> a <sup>1</sup>	
*aŋ	yellow spear leg dream	*p *p *k <sup>h</sup> *m	aŋ aŋ aŋ aŋ	2 2 4 6	ban <sup>5</sup> ban <sup>5</sup> k <sup>h</sup> an <sup>53</sup> man <sup>3</sup>	baŋ <sup>5</sup> baŋ <sup>5</sup> ka <sup>3</sup> -	baũ <sup>31</sup> baũ <sup>31</sup> ka <sup>5</sup> maũ <sup>5</sup>	bũu <sup>4</sup> bũu <sup>4</sup> ka <sup>3</sup> mãũ <sup>1</sup>	ba <sup>35</sup> - gəŋ <sup>2</sup> ma <sup>35</sup>	bã <sup>1</sup> bã <sup>2</sup> kã <sup>1</sup> ma <sup>5</sup>	baŋ pan - mɔn	- baŋ <sup>3</sup> k <sup>h</sup> an <sup>1</sup> man <sup>4</sup>	bə <sup>45</sup> bɔ <sup>4</sup> kə mau <sup>31</sup>	bɔ <sup>5</sup> bɔ <sup>4</sup> kə mɔŋ <sup>53</sup>	- baŋ <sup>52</sup> k <sup>h</sup> aŋ <sup>34</sup> maŋ <sup>52</sup>	- baŋ <sup>21</sup> k <sup>h</sup> aŋ <sup>34</sup> maŋ <sup>45</sup>	baŋ <sup>3</sup> baŋ <sup>1</sup> k <sup>h</sup> aŋ <sup>5</sup> man <sup>53</sup>	- baŋ <sup>2</sup> k <sup>h</sup> aŋ <sup>5</sup> maŋ <sup>53</sup>	ba <sup>3</sup> - k <sup>h</sup> a <sup>3</sup> ma <sup>1</sup>	baŋ <sup>15</sup> baŋ <sup>5</sup> k <sup>h</sup> a <sup>1</sup> ma <sup>1</sup>	bɔ <sup>5</sup> bɔ <sup>5</sup> k <sup>h</sup> ɔ <sup>1</sup> mɔ <sup>1</sup>	bɔ <sup>4</sup> bɔ <sup>4</sup> k <sup>h</sup> ɔ <sup>1</sup> mɔ <sup>1</sup>	bɔ <sup>4</sup> bɔ <sup>4</sup> k <sup>h</sup> ɔ <sup>1</sup> mɔ <sup>1</sup>	
*aʔ	son-in-law iron sew	m t <sup>h</sup> s	aʔ aʔ aʔ	12 10 10	ma <sup>5</sup> t <sup>h</sup> a <sup>1</sup> s <sup>h</sup> a <sup>1</sup>	- t <sup>h</sup> a <sup>5</sup> -	ma <sup>3</sup> t <sup>h</sup> a <sup>ʔ1</sup> c <sup>h</sup> a <sup>ʔ5</sup>	ma <sup>3</sup> t <sup>h</sup> a <sup>2</sup> s <sup>h</sup> a <sup>1</sup>	ma <sup>3</sup> t <sup>h</sup> a <sup>ʔ3</sup> s <sup>h</sup> a <sup>3</sup>	ma <sup>5</sup> t <sup>h</sup> a <sup>ʔ5</sup> ʃ <sup>h</sup> a <sup>5</sup>	ma t <sup>h</sup> ɔ s <sup>h</sup> ɔ	ma <sup>1</sup> t <sup>h</sup> a <sup>1</sup> s <sup>h</sup> a <sup>1</sup>	ma <sup>31</sup> t <sup>h</sup> a <sup>ʔ3</sup> s <sup>h</sup> a <sup>35</sup>	ma <sup>3</sup> t <sup>h</sup> a <sup>ʔ53</sup> s <sup>h</sup> a <sup>ʔ53</sup>	ma <sup>ʔ53</sup> - c <sup>h</sup> a <sup>ʔ1</sup>	ma <sup>ʔ45</sup> - s <sup>h</sup> a <sup>ʔ1</sup>	ma <sup>ʔ1</sup> t <sup>h</sup> a <sup>ʔ5</sup> c <sup>h</sup> a <sup>ʔ5</sup>	ma <sup>ʔ31</sup> - c <sup>h</sup> a <sup>ʔ35</sup>	- t <sup>h</sup> a <sup>5</sup> s <sup>h</sup> a <sup>3</sup>	ma <sup>1</sup> t <sup>h</sup> a <sup>5</sup> s <sup>h</sup> a <sup>5</sup>	mɔ <sup>3</sup> t <sup>h</sup> ɔ <sup>3</sup> ʃ <sup>h</sup> ɔ <sup>53</sup>	mɔ <sup>3</sup> t <sup>h</sup> ɔ <sup>3</sup> ʃɔ <sup>3</sup>	mɔ <sup>3</sup> t <sup>h</sup> ɔ <sup>3</sup> ʃɔ <sup>3</sup>	
LANGUAGE CLUSTER:					Kayan				Yinbaw		Lahta		Pa'O					Yintale		Kayaw				
*p <sup>h</sup>	flower	*p <sup>h</sup>	ɔ	1	p <sup>h</sup> au <sup>5</sup>	p <sup>h</sup> aw <sup>5</sup>	p <sup>h</sup> əu <sup>31</sup>	p <sup>h</sup> o <sup>4</sup>	p <sup>h</sup> u <sup>5</sup>	p <sup>h</sup> u <sup>5</sup>	fə	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> o <sup>5</sup>	p <sup>h</sup> o <sup>4</sup>	-	-	-	-	-	-	-	p <sup>h</sup> o <sup>5</sup>	p <sup>h</sup> o <sup>5</sup>	p <sup>h</sup> o <sup>5</sup>
*p	bamboo shoot	*p	aŋ	5	ban <sup>53</sup>	baŋ <sup>31</sup>	baũ <sup>ʔ1</sup>	baũ <sup>1</sup>	bo <sup>3</sup>	bã <sup>1</sup>	bɔŋ	baŋ <sup>4</sup>	bə <sup>31</sup>	bɔŋ <sup>53</sup>	baŋ <sup>3</sup>	ban <sup>34</sup>	-	baŋ <sup>5</sup>	ba <sup>3</sup>	baŋ <sup>3</sup>	bo <sup>1</sup>	bo <sup>1</sup>	bo <sup>1</sup>	
*b	pot	*b	əŋ	3	pəŋ <sup>1</sup>	pə <sup>31</sup>	pəu <sup>31</sup>	pɔu <sup>1</sup>	ba <sup>31</sup>	pɔ <sup>1</sup>	paŋ	pəu <sup>5</sup>	bə <sup>31</sup>	pɔu <sup>3</sup>	p <sup>h</sup> xŋ <sup>2</sup>	p <sup>h</sup> ɔŋ <sup>21</sup>	p <sup>h</sup> ɔŋ <sup>1</sup>	p <sup>h</sup> xŋ <sup>1</sup>	pɔ <sup>3</sup>	pɔ <sup>3</sup>	pɔ <sup>4</sup>	pɔ <sup>3</sup>	po <sup>3</sup>	
*pr	vomit	*pr	ɔʔ	11	prau <sup>1</sup>	prɔ <sup>4</sup>	prau <sup>31</sup>	prau <sup>2</sup>	prau <sup>3</sup>	prau <sup>45</sup>	pɔ	plɔ <sup>3</sup>	brau <sup>ʔ3</sup>	prɔɔ <sup>ʔ5</sup>	p <sup>h</sup> rɔŋ <sup>12</sup>	p <sup>h</sup> rɔŋ <sup>5</sup>	-	p <sup>h</sup> rɔŋ <sup>35</sup>	p <sup>h</sup> rɔ <sup>5</sup>	pɔ <sup>5</sup>	pro <sup>3</sup>	pro <sup>4</sup>	pro <sup>3</sup>	
*br	human	*br	a	3	pra <sup>1</sup>	pra <sup>1</sup>	pra <sup>31</sup>	pra <sup>1</sup>	p <sup>h</sup> ra <sup>3</sup>	pra <sup>5</sup>	-	pla <sup>1</sup>	bra <sup>434</sup>	pra <sup>3</sup>	-	-	p <sup>h</sup> ra <sup>3</sup>	p <sup>h</sup> ra <sup>1</sup>	p <sup>h</sup> ra <sup>1</sup>	pjaŋ <sup>1</sup>	-	pra <sup>3</sup>	pra <sup>3</sup>	
*bl	tongue arrow	*bl *bl	e a	3 6	plɛ <sup>1</sup> plã <sup>3</sup>	play <sup>1</sup> pla <sup>1</sup>	plei <sup>31</sup> pla <sup>531</sup>	plei <sup>1</sup> pla <sup>2</sup>	blei <sup>2</sup> bla <sup>3</sup>	plɛ <sup>1</sup> pla <sup>2</sup>	pi pɔ	pli <sup>3</sup> pla <sup>1</sup>	blei <sup>31</sup> bla <sup>45</sup>	plei <sup>3</sup> pla <sup>1</sup>	p <sup>h</sup> re <sup>2</sup> pla <sup>34</sup>	p <sup>h</sup> re <sup>2</sup> pla <sup>34</sup>	p <sup>h</sup> re <sup>3</sup> pla <sup>5</sup>	p <sup>h</sup> re <sup>1</sup> pla <sup>5</sup>	pli <sup>1</sup> plã <sup>3</sup>	pli <sup>3</sup> pla <sup>1</sup>	plei <sup>4</sup> plã <sup>1</sup>	pli <sup>3</sup> plã <sup>1</sup>	ple <sup>3</sup> pla <sup>1</sup>	

	Gloss	Monu, D (MD)	Manu (B)	Kayah, W (B)	Kayah, E (B)	Kayah, E (S)	Kayah, W (Br)	Kayah, K (MD)	Pwo, T (L)	Pwo, D (L)	Pho, M (J)	Pho, B (J)	Pwo, O	Pwo, SP	Pwo, RM	Pwo, NR	Pwo, TA	Pwo, E (Kt)	Pwo, W (Kt)	
*a	moon work bitter leaf	la <sup>1</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	la <sup>1</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>4</sup> la <sup>1</sup>	le <sup>3</sup> me <sup>1</sup> k <sup>h</sup> e <sup>1</sup> le <sup>1</sup>	le <sup>3</sup> me <sup>1</sup> k <sup>h</sup> e <sup>1</sup> le <sup>1</sup>	le <sup>3</sup> me <sup>1</sup> k <sup>h</sup> e <sup>1</sup> le <sup>1</sup>	le <sup>3</sup> me <sup>1</sup> k <sup>h</sup> e <sup>1</sup> le <sup>1</sup>	le <sup>3</sup> - k <sup>h</sup> e <sup>1</sup> le <sup>1</sup>	la <sup>1</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	la <sup>53</sup> ma <sup>53</sup> k <sup>h</sup> a <sup>31</sup> la <sup>31</sup>	la <sup>3</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>ɔ</sup> <sup>5</sup> la <sup>ɔ</sup> <sup>5</sup>	la <sup>5</sup> ma <sup>5</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	la <sup>31</sup> ma <sup>31</sup> k <sup>h</sup> a <sup>45</sup> la <sup>45</sup>	la <sup>31</sup> ma <sup>31</sup> k <sup>h</sup> a <sup>45</sup> la <sup>45</sup>	le <sup>3</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	le <sup>3</sup> ma <sup>3</sup> k <sup>h</sup> e <sup>3</sup> le <sup>3</sup>	la <sup>1</sup> ma <sup>1</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	la <sup>5</sup> ma <sup>5</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>		
*am	bear earth eat	t <sup>h</sup> a <sup>1</sup> ha <sup>5</sup> a <sup>5</sup>	t <sup>h</sup> a <sup>1</sup> ha <sup>5</sup> a <sup>4</sup>	t <sup>h</sup> e <sup>3</sup> he <sup>1</sup> e <sup>1</sup>	t <sup>h</sup> e <sup>3</sup> he <sup>1</sup> e <sup>1</sup>	t <sup>h</sup> e <sup>3</sup> he <sup>1</sup> e <sup>1</sup>	t <sup>h</sup> e <sup>3</sup> he <sup>1</sup> e <sup>1</sup>	t <sup>h</sup> e <sup>3</sup> he <sup>1</sup> e <sup>1</sup>	t <sup>h</sup> a <sup>2</sup> Rã <sup>5</sup> ã <sup>5</sup>	t <sup>h</sup> a <sup>31</sup> Rã <sup>31</sup> ã <sup>31</sup>	t <sup>h</sup> an <sup>1</sup> yan <sup>ɔ</sup> <sup>5</sup> ʔan <sup>ɔ</sup> <sup>5</sup>	t <sup>h</sup> an <sup>1</sup> yan <sup>1</sup> ʔan <sup>1</sup>	t <sup>h</sup> ɔ <sup>51</sup> ʔɔ <sup>3</sup> ʔɔ <sup>45</sup>	t <sup>h</sup> əŋ <sup>51</sup> yan <sup>31</sup> ʔəŋ <sup>45</sup>	- yo <sup>3</sup> ʔɔ <sup>3</sup>	- ha <sup>1</sup> ʔã <sup>3</sup>	- yã <sup>3</sup> ʔã <sup>3</sup>	- yan <sup>5</sup> ʔan <sup>5</sup>	- yan <sup>1</sup> ʔan <sup>1</sup>	
*aŋ	yellow spear leg dream	bo <sup>ɔ</sup> bɔ <sup>1</sup> k <sup>h</sup> a <sup>5</sup> -	bɔ <sup>1</sup> bɔ <sup>1</sup> k <sup>h</sup> ɔ <sup>4</sup> mɔ <sup>3</sup>	bja <sup>3</sup> bja <sup>3</sup> k <sup>h</sup> a <sup>3</sup> mja <sup>45</sup>	bɛ <sup>3</sup> bɛ <sup>3</sup> k <sup>h</sup> e <sup>5</sup> mɛ <sup>1</sup>	bɛ <sup>3</sup> - k <sup>h</sup> e <sup>1</sup> mɛ <sup>ɔ</sup> <sup>2</sup>	bja <sup>3</sup> bja <sup>3</sup> k <sup>h</sup> a <sup>3</sup> mja <sup>4</sup>	bja <sup>3</sup> bja <sup>3</sup> k <sup>h</sup> ɔ <sup>1</sup> mja <sup>5</sup>	- p <sup>h</sup> a <sup>1</sup> k <sup>h</sup> a <sup>5</sup> mã <sup>31</sup>	- p <sup>h</sup> a <sup>53</sup> k <sup>h</sup> a <sup>31</sup> mã <sup>5</sup>	ban <sup>3</sup> p <sup>h</sup> an <sup>3</sup> k <sup>h</sup> an <sup>ɔ</sup> <sup>5</sup> man <sup>5</sup>	ban <sup>5</sup> p <sup>h</sup> an <sup>5</sup> k <sup>h</sup> an <sup>1</sup> man <sup>ɔ</sup> <sup>5</sup>	bo <sup>31</sup> p <sup>h</sup> ɔ <sup>31</sup> k <sup>h</sup> ɔ <sup>45</sup> nɔ <sup>3</sup>	bo <sup>31</sup> p <sup>h</sup> əŋ <sup>31</sup> k <sup>h</sup> əŋ <sup>45</sup> məŋ <sup>31</sup>	bɔ <sup>3</sup> bɔ <sup>3</sup> k <sup>h</sup> ɔ <sup>3</sup> mo <sup>3</sup>	bɔ <sup>3</sup> p <sup>h</sup> ən k <sup>h</sup> ə <sup>3</sup> mo <sup>1</sup>	bã <sup>3</sup> p <sup>h</sup> ən <sup>3</sup> k <sup>h</sup> a <sup>3</sup> mɔ <sup>3</sup>	ban <sup>1</sup> phan <sup>1</sup> k <sup>h</sup> an <sup>5</sup> mɔ <sup>3</sup>	bo <sup>5</sup> phan <sup>5</sup> k <sup>h</sup> an <sup>1</sup> man <sup>51</sup>	
*aʔ	son-in-law iron sew	mɔ <sup>1</sup> t <sup>h</sup> ɔ <sup>5</sup> sɔ <sup>5</sup>	mɔ <sup>3</sup> t <sup>h</sup> ɔ <sup>3</sup> ʃɔ <sup>3</sup>	ma <sup>3</sup> t <sup>h</sup> e <sup>5</sup> s <sup>h</sup> e <sup>3</sup>	ma <sup>ɔ</sup> <sup>5</sup> t <sup>h</sup> e <sup>5</sup> tɛ <sup>h</sup> e <sup>5</sup>	- t <sup>h</sup> e <sup>5</sup> c <sup>h</sup> e <sup>5</sup>	mɛ <sup>3</sup> t <sup>h</sup> e <sup>4</sup> s <sup>h</sup> e <sup>4</sup>	mɛ <sup>3</sup> t <sup>h</sup> e <sup>5</sup> s <sup>h</sup> e <sup>5</sup>	ma <sup>ɔ</sup> <sup>53</sup> - s <sup>h</sup> a <sup>ɔ</sup> <sup>35</sup>	ma <sup>ɔ</sup> <sup>5</sup> - s <sup>h</sup> a <sup>ɔ</sup> <sup>5</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>1</sup> s <sup>h</sup> a <sup>ɔ</sup> <sup>1</sup>	ma <sup>ɔ</sup> <sup>1</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>1</sup> s <sup>h</sup> a <sup>ɔ</sup> <sup>1</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>31</sup> tʃ <sup>h</sup> a <sup>ɔ</sup> <sup>31</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>31</sup> tʃ <sup>h</sup> a <sup>ɔ</sup> <sup>31</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>3</sup> ç <sup>h</sup> a <sup>3</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>3</sup> ç <sup>h</sup> a <sup>3</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>3</sup> ç <sup>h</sup> a <sup>3</sup>	ma <sup>5</sup> t <sup>h</sup> a <sup>1</sup> c <sup>h</sup> a <sup>1</sup>	ma <sup>ɔ</sup> <sup>3</sup> t <sup>h</sup> a <sup>ɔ</sup> <sup>3</sup> s <sup>h</sup> a <sup>ɔ</sup> <sup>3</sup>	
LANGUAGE CLUSTER:		Monu		Kayah					Pwo											
*p <sup>h</sup>	flower	p <sup>h</sup> o <sup>1</sup>	p <sup>h</sup> ə <sup>1</sup>	p <sup>h</sup> o <sup>3</sup>	p <sup>h</sup> o <sup>3</sup>	-	p <sup>h</sup> o <sup>3</sup>	p <sup>h</sup> o <sup>3</sup>	p <sup>h</sup> ɔ <sup>2</sup>	p <sup>h</sup> au <sup>31</sup>	p <sup>h</sup> on <sup>1</sup>	p <sup>h</sup> on <sup>1</sup>	p <sup>h</sup> o <sup>51</sup>	p <sup>h</sup> o <sup>51</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> o <sup>5</sup>	p <sup>h</sup> ɔ <sup>51</sup>	p <sup>h</sup> au <sup>1</sup>	
*p	bamboo shoot	bɔ <sup>5</sup>	bɔ <sup>3</sup>	bja <sup>1</sup>	bɛ <sup>1</sup>	bɛ <sup>1</sup>	bja <sup>1</sup>	bja <sup>1</sup>	6ã <sup>5</sup>	6ã <sup>31</sup>	-	-	bo <sup>3</sup>	bo <sup>3</sup>	bɔ <sup>3</sup>	bɔ <sup>3</sup>	bã <sup>3</sup>	-	-	
*b	pot	po <sup>1</sup>	po <sup>1</sup>	pɔ <sup>1</sup>	pɔ <sup>1</sup>	-	pɔ <sup>1</sup>	pɔ <sup>1</sup>	p <sup>h</sup> ə <sup>1</sup>	p <sup>h</sup> ə <sup>53</sup>	p <sup>h</sup> ən <sup>3</sup>	p <sup>h</sup> ən <sup>5</sup>	p <sup>h</sup> ə <sup>31</sup>	p <sup>h</sup> əŋ <sup>31</sup>	pɪ <sup>3</sup>	p <sup>h</sup> ã <sup>3</sup>	p <sup>h</sup> ã <sup>3</sup>	p <sup>h</sup> ən <sup>1</sup>	p <sup>h</sup> ə <sup>5</sup>	
*pr	vomit	po <sup>5</sup>	p <sup>h</sup> uə <sup>3</sup>	prja <sup>5</sup>	p <sup>h</sup> re <sup>5</sup>	p <sup>h</sup> re <sup>5</sup>	prja	prja <sup>4</sup>	pju <sup>ɔ</sup> <sup>35</sup>	pju <sup>ɔ</sup> <sup>5</sup>	-	-	pju <sup>ɔ</sup> <sup>31</sup>	pju <sup>ɔ</sup> <sup>31</sup>	pjo <sup>3</sup>	pju <sup>1</sup>	pju <sup>3</sup>	pjo <sup>1</sup>	pjo <sup>ɔ</sup>	
*br	human	-	pɔ <sup>3</sup> ɔ <sup>1</sup>	pre <sup>1</sup>	p <sup>h</sup> re <sup>1</sup>	p <sup>h</sup> re <sup>1</sup>	pre <sup>3</sup>	pre <sup>1</sup>	hə <sup>1</sup>	pə <sup>35</sup>	ya <sup>3</sup>	ya <sup>5</sup>	-	-	pje <sup>3</sup>	-	-	ya <sup>1</sup>	ya <sup>5</sup>	
*bl	tongue arrow	plɛ <sup>1</sup> pla <sup>1</sup>	plɛ <sup>1</sup> pla <sup>3</sup>	pli <sup>1</sup> plɛ <sup>45</sup>	pli <sup>1</sup> plɛ <sup>1</sup>	pli <sup>1</sup> plɛ <sup>ɔ</sup> <sup>2</sup>	pli <sup>1</sup> plɛ <sup>3</sup>	pli <sup>1</sup> plɛ <sup>4</sup>	p <sup>h</sup> lɛ <sup>1</sup> p <sup>h</sup> la <sup>31</sup>	p <sup>h</sup> lɛ <sup>53</sup> p <sup>h</sup> la <sup>5</sup>	p <sup>h</sup> lɛ <sup>3</sup> p <sup>h</sup> la <sup>5</sup>	p <sup>h</sup> lɛ <sup>5</sup> p <sup>h</sup> la <sup>ɔ</sup> <sup>5</sup>	p <sup>h</sup> li <sup>31</sup> -	p <sup>h</sup> li <sup>31</sup> -	plɛ <sup>3</sup> plɛ <sup>1</sup>	p <sup>h</sup> li <sup>5</sup> p <sup>h</sup> la <sup>3</sup>	p <sup>h</sup> li <sup>3</sup> -	p <sup>h</sup> li <sup>1</sup> p <sup>h</sup> la <sup>3</sup>	p <sup>h</sup> lɛ <sup>5</sup> p <sup>h</sup> la <sup>51</sup>	

	Gloss	Sgaw (L)	Sgaw, M (J)	Sgaw, B (J)	Paku (L)	Paku (Km)	Paku, K	Paku, S	Dermuha (V)	Palachi (LB)	Palaychi (J)	Bwe, W (L)	Bwe (B)	Bwe, B (H)	Bwe, DE (LB)	Bwe, DW (LB)	Geba (L)	Geba 1 (B)	Geba 2 (B)	Geba, KP (Km)
*a	moon work bitter leaf	la <sup>5</sup> ma <sup>35</sup> k <sup>h</sup> a <sup>31</sup> la <sup>31</sup>	la <sup>5</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>1</sup> la <sup>7</sup> <sup>5</sup>	la <sup>5</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>1</sup> la <sup>1</sup>	la <sup>5</sup> ma <sup>53</sup> k <sup>h</sup> a <sup>35</sup> la <sup>35</sup>	la <sup>7</sup> <sup>3</sup> ma <sup>35</sup> ka <sup>7</sup> <sup>35</sup> la <sup>45</sup>	li <sup>3</sup> mi <sup>2</sup> k <sup>h</sup> ε <sup>7</sup> <sup>53</sup> li <sup>7</sup> <sup>53</sup>	le <sup>7</sup> <sup>53</sup> me <sup>2</sup> k <sup>h</sup> ε <sup>2</sup> le <sup>7</sup> <sup>53</sup>	la <sup>1</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	la <sup>4</sup> ma <sup>3</sup> k <sup>h</sup> a <sup>1</sup> <sup>53</sup> la <sup>4</sup>	la <sup>1</sup> ma <sup>5</sup> k <sup>h</sup> a <sup>5</sup> la <sup>5</sup>	le <sup>5</sup> me <sup>53</sup> k <sup>h</sup> ε <sup>53</sup> le <sup>53</sup>	ɬe <sup>5</sup> mɛ <sup>3</sup> k <sup>h</sup> ε <sup>3</sup> le <sup>3</sup>	le <sup>5</sup> me <sup>3</sup> k <sup>h</sup> ε <sup>3</sup> le <sup>3</sup>	ɬe <sup>4</sup> me <sup>3</sup> k <sup>h</sup> ε <sup>7</sup> <sup>53</sup> ɬe <sup>7</sup> <sup>53</sup>	le <sup>4</sup> me <sup>7</sup> <sup>53</sup> k <sup>h</sup> ε <sup>2</sup> le <sup>3</sup>	hle <sup>5</sup> me <sup>53</sup> k <sup>h</sup> ε <sup>53</sup> hle <sup>53</sup>	hle <sup>5</sup> mɛ <sup>3</sup> k <sup>h</sup> ε <sup>43</sup> ɬe <sup>3</sup>	le <sup>5</sup> mɛ <sup>3</sup> k <sup>h</sup> ε <sup>3</sup> le <sup>4</sup>	hle <sup>7</sup> me <sup>3</sup> k <sup>h</sup> e hle <sup>7</sup>
*am	bear earth eat	t <sup>h</sup> ɔ <sup>5</sup> ho <sup>31</sup> ɔ <sup>31</sup>	t <sup>h</sup> ɔ <sup>5</sup> ɣɔ <sup>7</sup> <sup>5</sup> ɔ <sup>7</sup> <sup>5</sup>	t <sup>h</sup> ɔ <sup>5</sup> ho <sup>1</sup> ɔ <sup>1</sup>	- ho <sup>35</sup> ɔ <sup>35</sup>	t <sup>h</sup> a <sup>35</sup> hau <sup>3</sup> ɔ <sup>7</sup> <sup>3</sup>	t <sup>h</sup> a <sup>7</sup> <sup>53</sup> ha <sup>7</sup> <sup>53</sup> a <sup>7</sup> <sup>53</sup>	- ha <sup>7</sup> <sup>53</sup> a <sup>7</sup> <sup>53</sup>	t <sup>h</sup> o <sup>5</sup> ho <sup>5</sup> o <sup>5</sup>	t <sup>h</sup> ɔ <sup>7</sup> <sup>53</sup> xo <sup>2</sup> ɔ <sup>2</sup>	t <sup>h</sup> ɔ <sup>1</sup> ho <sup>5</sup> ɔ <sup>1</sup>	t <sup>h</sup> ε <sup>5</sup> ha <sup>53</sup> a <sup>53</sup>	t <sup>h</sup> ε <sup>5</sup> ha <sup>3</sup> a <sup>3</sup>	t <sup>h</sup> ε <sup>5</sup> ha <sup>3</sup> a <sup>3</sup>	t <sup>h</sup> ε <sup>31</sup> ha <sup>1</sup> a <sup>7</sup> <sup>53</sup>	t <sup>h</sup> ε <sup>□</sup> ho <sup>1</sup> a <sup>7</sup> <sup>53</sup>	t <sup>h</sup> ε <sup>5</sup> ha <sup>53</sup> a <sup>53</sup>	t <sup>h</sup> ε <sup>45</sup> ha <sup>3</sup> a <sup>3</sup>	t <sup>h</sup> ε <sup>5</sup> ha <sup>3</sup> a <sup>3</sup>	t <sup>h</sup> e ha a <sup>7</sup>
*aŋ	yellow spear leg dream	- ɔ <sup>5</sup> k <sup>h</sup> ɔ <sup>31</sup> mo <sup>2</sup>	bo <sup>5</sup> bo <sup>5</sup> k <sup>h</sup> ɔ <sup>7</sup> <sup>5</sup> mɔ <sup>3</sup>	bo <sup>5</sup> bo <sup>5</sup> k <sup>h</sup> ɔ <sup>□</sup> mɔ <sup>5</sup>	- ɔ <sup>5</sup> k <sup>h</sup> ɔ <sup>35</sup> mo <sup>35</sup>	bo <sup>3</sup> - k <sup>h</sup> a <sup>3</sup> mo <sup>35</sup>	- ɔ <sup>5</sup> k <sup>h</sup> a <sup>7</sup> <sup>53</sup> ma <sup>3</sup>	- ɔ <sup>5</sup> k <sup>h</sup> a <sup>7</sup> <sup>53</sup> ma <sup>4</sup>	bo <sup>3</sup> - k <sup>h</sup> o <sup>5</sup> mo <sup>5</sup>	bo <sup>7</sup> <sup>53</sup> bo <sup>7</sup> <sup>53</sup> k <sup>h</sup> ɔ <sup>7</sup> <sup>53</sup> mo <sup>4</sup>	bo <sup>1</sup> bo <sup>1</sup> k <sup>h</sup> ɔ <sup>5</sup> mɔ <sup>5</sup>	- ɔ <sup>5</sup> k <sup>h</sup> a <sup>53</sup> ma <sup>53</sup>	ba <sup>5</sup> ba <sup>5</sup> k <sup>h</sup> a <sup>3</sup> ma <sup>3</sup>	ba <sup>3</sup> ba <sup>5</sup> k <sup>h</sup> a <sup>3</sup> ma <sup>3</sup>	ba <sup>5</sup> ba <sup>5</sup> k <sup>h</sup> a <sup>2</sup> ma <sup>1</sup>	ba <sup>5</sup> ba <sup>5</sup> k <sup>h</sup> a <sup>7</sup> <sup>53</sup> ma <sup>7</sup> <sup>53</sup>	- ba <sup>5</sup> k <sup>h</sup> a <sup>53</sup> hma <sup>53</sup>	ba <sup>5</sup> ba <sup>45</sup> k <sup>h</sup> a <sup>3</sup> hma <sup>3</sup>	ba <sup>5</sup> ba <sup>5</sup> k <sup>h</sup> a <sup>3</sup> ma <sup>3</sup>	ba ba <sup>7</sup> k <sup>h</sup> a me
*aʔ	son-in-law iron sew	ma <sup>7</sup> <sup>1</sup> - s <sup>h</sup> a <sup>7</sup> <sup>53</sup>	ma <sup>7</sup> <sup>1</sup> t <sup>h</sup> a <sup>7</sup> <sup>3</sup> s <sup>h</sup> a <sup>7</sup> <sup>3</sup>	ma <sup>7</sup> <sup>1</sup> t <sup>h</sup> a <sup>7</sup> <sup>3</sup> s <sup>h</sup> a <sup>7</sup> <sup>3</sup>	ma <sup>53</sup> - s <sup>h</sup> a <sup>5</sup>	ma <sup>35</sup> t <sup>h</sup> a <sup>35</sup> s <sup>h</sup> a <sup>31</sup>	ma <sup>31</sup> t <sup>h</sup> a <sup>4</sup> tʃe <sup>4</sup>	ma <sup>7</sup> <sup>53</sup> t <sup>h</sup> i <sup>7</sup> <sup>53</sup> tʃe <sup>4</sup>	ma <sup>1</sup> t <sup>h</sup> a <sup>5</sup> s <sup>h</sup> a <sup>1</sup>	- t <sup>h</sup> a <sup>7</sup> <sup>53</sup> s <sup>h</sup> a <sup>2</sup>	ma <sup>5</sup> t <sup>h</sup> a <sup>1</sup> s <sup>h</sup> a <sup>1</sup>	ma <sup>35</sup> - ʃa <sup>53</sup>	ma <sup>3</sup> - ʃ <sup>h</sup> a <sup>3</sup>	ma <sup>1</sup> t <sup>h</sup> a <sup>3</sup> ʃa <sup>3</sup>	ma <sup>7</sup> <sup>53</sup> t <sup>h</sup> a <sup>7</sup> <sup>53</sup> s <sup>h</sup> a <sup>7</sup> <sup>53</sup>	ma <sup>51</sup> t <sup>h</sup> a <sup>7</sup> <sup>53</sup> s <sup>h</sup> a <sup>7</sup> <sup>53</sup>	ma <sup>35</sup> - s <sup>h</sup> a <sup>35</sup>	ma <sup>3</sup> t <sup>h</sup> a <sup>3</sup> ʃ <sup>h</sup> a <sup>3</sup>	ma <sup>3</sup> t <sup>h</sup> a <sup>3</sup> s <sup>h</sup> a <sup>3</sup>	ma t <sup>h</sup> a s <sup>h</sup> a
LANGUAGE CLUSTER:		Sgaw			Paku			Mopwa			Bwe					Geba				
*p <sup>h</sup>	flower	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	t <sup>h</sup> ɔ <sup>21</sup>	p <sup>h</sup> o <sup>2</sup>	p <sup>h</sup> ɔ <sup>2</sup>	p <sup>h</sup> u <sup>3</sup>	p <sup>h</sup> o <sup>4</sup>	p <sup>h</sup> o <sup>1</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>1</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> ɔ <sup>3</sup>	p <sup>h</sup> ɔ <sup>5</sup>	p <sup>h</sup> o
*p	bamboo shoot	ɔ <sup>31</sup>	-	-	ɔ <sup>35</sup>	bo <sup>31</sup>	ɔ <sup>7</sup> <sup>53</sup>	ɔ <sup>7</sup> <sup>53</sup>	bo <sup>5</sup>	ɔ <sup>7</sup> <sup>53</sup>	-	ɔ <sup>53</sup>	ba <sup>3</sup>	ba <sup>3</sup>	ɔ <sup>7</sup> <sup>53</sup>	ɔ <sup>7</sup> <sup>53</sup>	ba <sup>53</sup>	ba <sup>3</sup>	ba <sup>3</sup>	ba <sup>7</sup>
*b	pot	pɔ <sup>35</sup>	pɔ <sup>5</sup>	pɔ <sup>5</sup>	pɔ <sup>53</sup>	p <sup>h</sup> ɔ <sup>45</sup>	pɔ <sup>31</sup>	pɔ <sup>3</sup>	p <sup>h</sup> ɔ <sup>1</sup>	pɔ <sup>7</sup> <sup>53</sup>	pɔ <sup>5</sup>	bo <sup>5</sup>	pɔ <sup>3</sup>	bo <sup>5</sup>	bo <sup>7</sup> <sup>53</sup>	bo <sup>7</sup> <sup>53</sup>	bo <sup>53</sup>	pɔ <sup>3</sup>	p <sup>h</sup> ɔ <sup>3</sup>	po
*pr	vomit	ɔ <sup>7</sup> <sup>53</sup>	-	-	ɔ <sup>5</sup>	bo <sup>31</sup>	pɔ <sup>4</sup>	pɔ <sup>7</sup> <sup>53</sup>	pu <sup>3</sup>	pɔ <sup>7</sup> <sup>53</sup>	-	pɔ <sup>53</sup>	pɔ <sup>3</sup>	pɔ <sup>3</sup>	pɔ <sup>5</sup>	pɔ <sup>7</sup> <sup>53</sup>	pɔ <sup>53</sup>	pɔ <sup>3</sup>	pɔ <sup>5</sup>	po
*br	human	p <sup>ra</sup> <sup>35</sup>	p <sup>ya</sup> <sup>3</sup>	p <sup>ya</sup> <sup>3</sup>	p <sup>ra</sup> <sup>53</sup>	-	p <sup>ja</sup> <sup>3</sup>	p <sup>ja</sup> <sup>3</sup>	pɔ <sup>3</sup>	p <sup>lɔ</sup> <sup>7</sup> <sup>53</sup>	p <sup>ya</sup> <sup>5</sup>	p <sup>wɛ</sup> <sup>53</sup>	p <sup>wɛ</sup> <sup>3</sup>	pɔ <sup>ya</sup> <sup>3</sup>	p <sup>i</sup> <sup>3</sup> ja <sup>1</sup>	p <sup>ja</sup> <sup>1</sup>	p <sup>wɛ</sup> <sup>53</sup>	p <sup>wɛ</sup> <sup>1</sup>	p <sup>ja</sup> <sup>1</sup>	p <sup>ja</sup> <sup>1</sup>
*bl	tongue arrow	p <sup>le</sup> <sup>35</sup> pla <sup>2</sup>	p <sup>le</sup> <sup>3</sup> pla <sup>1</sup>	p <sup>le</sup> <sup>3</sup> pla <sup>1</sup>	p <sup>le</sup> <sup>53</sup> pla <sup>35</sup>	p <sup>li</sup> <sup>3</sup> bla <sup>3</sup>	p <sup>ye</sup> <sup>7</sup> <sup>53</sup> p <sup>la</sup> <sup>1</sup>	p <sup>ye</sup> <sup>3</sup> p <sup>ye</sup> <sup>3</sup>	p <sup>h</sup> li <sup>3</sup> p <sup>h</sup> la <sup>7</sup> <sup>5</sup>	p <sup>li</sup> <sup>3</sup> p <sup>la</sup> <sup>7</sup> <sup>53</sup>	p <sup>le</sup> <sup>5</sup> p <sup>la</sup> <sup>1</sup>	p <sup>lr</sup> <sup>35</sup> p <sup>le</sup> <sup>53</sup>	p <sup>le</sup> <sup>3</sup> p <sup>le</sup> <sup>1</sup>	p <sup>lr</sup> <sup>1</sup> p <sup>le</sup> <sup>3</sup>	p <sup>li</sup> <sup>7</sup> <sup>31</sup> p <sup>le</sup> <sup>7</sup> <sup>53</sup>	p <sup>le</sup> <sup>7</sup> <sup>53</sup> p <sup>le</sup> <sup>7</sup> <sup>53</sup>	p <sup>li</sup> <sup>53</sup> p <sup>le</sup> <sup>53</sup>	p <sup>le</sup> <sup>3</sup> p <sup>le</sup> <sup>3</sup>	p <sup>le</sup> <sup>3</sup> p <sup>li</sup> <sup>3</sup>	ble -

## Karen language sources

Bwe (B): Bennett, J. Fraser. 1991. Field notes

Bwe, B (H): Henderson, Eugénie J. A. 1997. *Bwe Karen dictionary: with texts and English-Karen word list*. London: School of Oriental and African Studies

Bwe, DE (LB): Saw Lar Baa. 2001. *The phonological basis of a Northwest Karenic orthography*. Payap University: MA Thesis

Bwe, DW (LB): Saw Lar Baa. 2001. *The phonological basis of a Northwest Karenic orthography*. Payap University: MA Thesis

Bwe, W (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

Dermuha (V): Naw Veronica. 2011. *The phonology of Derhuma and a phonological and lexical comparison between Dermuha, Sgaw Karen and Pwo Karen*. Payap University: MA thesis

Geba (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

Geba 1 (B): Bennett, J. Fraser. 1991. Field notes

Geba 2 (B): Bennett, J. Fraser. 1991. Field notes

Geba, KP (Km): Kim, Seung. Field notes

Geker (LB): Saw Lar Baa. 2001. *The phonological basis of a Northwest Karenic orthography*. Payap University: MA Thesis

Geko (Km): Kim, Seung. Field notes

Kayah, E (B): Bennett, J. Fraser. 1991. Field notes

Kayah, E (S): Solnit, David B. 1997. *Eastern Kayah Li: Grammar, texts, glossary*. Hawaii: U Hawaii Press

Kayah, K (MD): Myar Doo Myar Reh. 2004. *A phonological comparison of selected Karenic language varieties of Kayah State*. Payap University: MA Thesis

Kayah, W (B): Bennett, J. Fraser. 1991. Field notes

Kayah, W (Br): Bryant, John R. 1996. Notes on Western Kayah Li (Western Red Karen) phonology. *Payap University Working Papers in Linguistics* 1:66-104

Kayan Pekon (M): Manson, Ken. 2011. *A Kayan-English dictionary*. ms

Kayaw (B): Bennett, J. Fraser. 1991. Field notes

Kayaw, H (MD): Myar Doo Myar Reh. 2004. *A phonological comparison of selected Karenic language varieties of Kayah State*. Payap University: MA Thesis

Kayaw, S (MD): Myar Doo Myar Reh. 2004. *A phonological comparison of selected Karenic language varieties of Kayah State*. Payap University: MA Thesis

Lahta, KW (M): Manson, Ken. 2010. Field notes

Latha (Lim): Lim, Mija. 2003. Field notes

Latha (MD): Myar Doo Myar Reh. 2004. *A phonological comparison of selected Karenic language varieties of Kayah State*. Payap University: MA Thesis

Manu (B): Bennett, J. Fraser. 1991. Field notes

Monu, D (MD): Myar Doo Myar Reh. 2004. *A phonological comparison of selected Karenic language varieties of Kayah State*. Payap University: MA Thesis

Padaung (B): Bennett, J. Fraser. 1991. Field notes

Padaung (K): Kauffman, William G. 1993. *The great tone split and Central Karen*. University of North Dakota: MA Thesis

Padaung (S): Sarinya Khammuang. 1998. *The phonological study of Padaung (Long-Necked Karen) at Ban Naisoi, Tambol Pang Mu, Muang district, Mae Hong Son province*. Mahidol: MA Thesis

Paku (Km): Kim, Seung. Field notes

Paku (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

Paku, K: Saw Lar Baa. 2001. *The phonological basis of a Northwest Karenic orthography*. Payap University: MA Thesis

Paku, S: Saw Lar Baa. 2001. *The phonological basis of a Northwest Karenic orthography*. Payap University: MA Thesis

Palachi (LB): Saw Lar Baa. 2001. *The phonological basis of a Northwest Karenic orthography*. Payap University: MA Thesis

Palaychi (J): Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of

California Press

PaO (J): Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of California Press

Pa-O (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

PaO, N (B): Bennett, J. Fraser. 1991. Field notes

PaO, S (B): Bennett, J. Fraser. 1991. Field notes

Pho, B (J): Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of California Press

Pho, M (J): Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of California Press

Pwo, D (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

Pwo, E (Kt): Kato, Atsuhiko. 2009 A basic vocabulary of Htoklibang Pwo Karen with Hpa-an, Kyonbyaw, and Proto-Pwo Karen forms. *Asian and African Languages and Linguistics* 4:169-218

Pwo, NR: Culy, Martin M. 1993. *A preliminary investigation of the Pwo Karen dialects of Northern Thailand*. Chiang Mai: Payap University, PRDI Report 118

Pwo, O: Phillips, Audra. 1996. *Dialect comparison among the Pwo Karen of Central Thailand, Report II*. Bangkok: TU-SIL-LRDP

Pwo, RM: Culy, Martin M. 1993. *A preliminary investigation of the Pwo Karen dialects of Northern Thailand*. Chiang Mai: Payap University, PRDI Report 118

Pwo, SP: Phillips, Audra. 1996. *Dialect comparison among the Pwo Karen of Central Thailand, Report II*. Bangkok: TU-SIL-LRDP

Pwo, T (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

Pwo, TA: Culy, Martin M. 1993. *A preliminary investigation of the Pwo Karen dialects of Northern Thailand*. Chiang Mai: Payap University, PRDI Report 118

Pwo, W (Kt): Kato, Atsuhiko. 2009 A basic vocabulary of Htoklibang Pwo Karen with Hpa-an, Kyonbyaw, and Proto-Pwo Karen forms. *Asian and African Languages and Linguistics* 4:169-218

Sgaw (L): Luce, Gordon H. 1985. *Phases of pre-Pagan Burma: Languages and history*. Oxford: Oxford University Press

Sgaw, B (J): Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of California Press

Sgaw, M (J): Jones, Robert B. 1961. *Karen linguistic studies: Description, comparison and texts*. Berkeley: University of California Press

Yeinbaw (B): Bennett, J. Fraser. 1991. Field notes

Yinbaw, N (Km): Kim, Seung. Field notes

Yintale (B): Bennett, J. Fraser. 1991. Field notes

Yintale, WA (MD): Myar Doo Myar Reh. 2004. *A phonological comparison of selected Karenic language varieties of Kayah State*. Payap University: MA Thesis