

# Lexical Similarity in Pwo Karen<sup>1</sup>

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## ABSTRACT

The Pwo Karen language varieties of Thailand, particularly northern Thailand, are included in the Pwo sub-group of the Karenic languages, which are a branch of the Tibeto-Burman language family (Bradley 1997). Pwo Karen language varieties are found in both Myanmar and Thailand.

One survey instrument used in language assessment is word lists. The analysis of these word lists involves consistently grouping phonetically similar words with the same meaning in order to determine lexical similarity. The purpose of this paper is to demonstrate this word list analysis process with Pwo Karen word lists. Starting with the words chosen for word list analysis, each step is illustrated, including the removal of syllables extraneous to the concept of interest and an account of the adjustments made for Pwo Karen to a modified Blair method developed for isolating languages. Finally, the application of the counting method is illustrated with several language examples. As well, all data and background information for the lexical similarity decisions are included in several appendices.

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## **1. INTRODUCTION**

The word list comparison discussed in this paper is one component of a language assessment research project of the Pwo Karen of Northern Thailand (Dawkins and Phillips to appear). The goal of this word list analysis is to consistently group phonetically similar words with the same meaning in order to determine lexical similarity. In many cases, grouping according to phonetic similarity will group the cognates. In some cases, however, possible cognates will be grouped differently due to their phonetic dissimilarity.

Blair (1990:31-33) has addressed the need for a consistent method for measuring lexical similarity which has worked well for South Asian languages. A modified form of the Blair Method, using some steps described in Mann and Markowski (2005), is the counting method that has been

applied to the Pwo Karen word lists. The purpose of this paper is to demonstrate the application of this lexical similarity counting method, with discussion and demonstrations of adaptations required for using it with Pwo Karen word list data.

The Pwo Karen speech varieties are a subgroup of the Karenic branch of the Tibeto-Burman language family. The ten word lists used in this study were collected by the author during the course of Pwo Karen survey in Thailand. The word list from Sangkhlaburi (Sangkhla) was collected under the auspices of the Thammasat University-Summer Institute of Linguistics Language Research and Development Project. The list was elicited from different speakers at least twice during 1991 - 1994. The Omkoi word list was collected in 1993, in Chiang Mai, from a Northern Pwo Karen speaker. The remaining eight word lists were collected during the course of the Pwo Karen of Northern Thailand survey, during the years 2007 - 2008. Each word list was collected with a group of speakers, although one person served as spokesperson. For the Sop Khong, Sue Mue and Huai Thok lists, the assistance of a translator (Pwo Karen to Thai) was required.

Phonological analysis has been carried out for two Pwo Karen varieties: Plainasuan village, Srisawat, Kanchanaburi (Phillips 2000) and Nong Ung Tai village, Omkoi, Chiang Mai (Phillips forthcoming). However, all transcriptions are phonetic in this study.<sup>2</sup>

The Mainland Southeast Asia Group Word List, adjusted for Pwo Karen, was used for the collection of all the word lists. Following Mann (2004), the lexical similarity percentages are based on the comparison of 105 words that are included in the Calmsea 200 (Matisoff 1978), MSEAG 436 and the Swadesh 100 and 200 lists (1952, 1955). A total of 118 words are common to these lists. Of these, some words were eliminated due to the absence of lexical items in some of the Pwo Karen language varieties. Other words were eliminated due to doubt as to whether the same concept had been elicited in each location. For example, for the concept 'cold', Pwo Karen has a lexical item for

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<sup>2</sup> Standard IPA symbols are used in the transcription of the word lists. Tone is transcribed using the Chao tone numbers, where 5 is high and 1 is low. Thus, 45 is a high-rising tone, 33 is a mid-level tone, etc. Checked tones are indicated with the raised Chao tone numbers followed by a raised glottal stop, as in <sup>21ʔ</sup>, <sup>45ʔ</sup>, etc. Diphthongs are represented with vowel sequences, for example [ai]. Nasalization is marked with a tilde, as in [ã] and [ãi].

the property and another lexical item for the sensation. Since this was discovered after some word lists had already been collected, it was not possible to be sure that the same concept had been elicited for all the word lists. See Appendix A for the 118-word list with notes on words eliminated or adjustments made to the concepts elicited.

Section 2 covers comparable word length issues. Section 3 covers contextualizing adjustments to the Blair counting method for Pwo Karen, including the determination of Pwo Karen phonetically similar segments. The focus of Section 4 is the actual application of the lexical similarity counting method and a discussion of problems. The results and conclusion are presented in Section 5.

## 2. WORD LENGTH

Pwo Karen languages are isolating with a limited number of inflectional and derivational prefixes; both nouns and verbs have a single form with no marking for tense or agreement on verbs or number marking on nouns. New words are created through compounding processes. Additional syllables can also serve to add information to the word. During elicitation, every attempt was made to encourage language resource persons to give the simplest form of a word. However, this was not always possible. Consequently, in some cases, the words elicited are of different lengths.

First, any inflectional or derivational prefixes were eliminated. The one inflectional prefix in the data is a possessive marker  $\text{ʔə-}$  and the derivational prefixes are the nominalizers  $\text{ʔə-}$  and  $t^h\text{ə-}$  or  $t^c\text{ə-}$ . After the relatively easy exclusion of known morphology, the remaining word length issues were more concerned with distinguishing the syllables referring to the basic concept from the syllables adding additional, but unnecessary information. Situations of this type were of three kinds: final syllables coding additional information, initial class term syllables for nouns and verbal marking for verbs, and other non-final syllables. For example, the form  $\text{ʔāi}^{34}$  ‘bite’ can be extended with the syllable  $t^h\text{ə}^{21}$  ‘thing’ which is the object of the verb as in  $\text{ʔāi}^{34}t^h\text{ə}^{21}$  ‘to bite something’. Therefore,  $t^h\text{ə}^{21}$  ‘thing’ was eliminated. Or in the case of the noun  $k^h\text{o}^{34}$  ‘head’ an additional syllable is  $x\text{ɿ}^{34}$  ‘bone’. When combined with  $k^h\text{o}^{34}$  ‘head’, the combination  $k^h\text{u}^{34}x\text{ɿ}^{34}$  means ‘head bone or skull’, so  $x\text{ɿ}^{34}$  was eliminated. Examples of class terms occur in the words provided for the item ‘leaf’. The general word for ‘leaf’ is  $l\text{æ}^{34}$ , however the class term  $\theta\text{e}^{34}$  ‘tree’ is often added as in

$\theta\bar{e}^{i34}l\bar{a}e^{34}$  ‘tree leaf’. An example with verbs is  $ʔa\eta^{45}s\bar{o}u\eta a^{21?}$  ‘wash’ where the initial syllable  $ʔa\eta^{45}$  ‘eat’ is commonly added to verbs. Finally, other syllables occur for a variety of reasons, for example  $p^h a^{21?}$  in  $p^h a^{21?}t^h\bar{o}^{51}$  ‘long’ can be added to other attributive verbs and seems to have an intensifying effect.

Finally, for items such as ‘give’ the variants are in the process of sound change and the removal of syllables is impossible. Suppose the most conservative form is  $k^hi^{31}l\bar{o}\eta^{45}$ . Then aspiration is lost on the initial consonant as in  $k\bar{e}^{34}l\bar{a}\eta^{41}$ . This is followed by  $ʔa^{21}k\bar{l}\bar{a}\eta^{41}$  where the initial [k] of the first syllable is resyllabified in a cluster in the second syllable and the  $ʔa$  syllable appears.  $ʔa^{21}k\bar{l}\bar{a}\eta^{41}$  could then have possibly reduced to  $ʔa\eta^{31}l\bar{a}\eta^{34}$  with a further reduction to  $ʔ\bar{o}l\bar{o}^{45}$ .

### 3. CLASSIFICATION OF SOUND CORRESPONDENCES: THE BLAIR METHOD

The lexical similarity counting procedure in Blair (1990:31-33) is composed of two steps. In the first step, each set of corresponding phones between two words are compared and the sound correspondence between each phone pair is assigned to one of three categories. The categories, as defined in Blair (1990), are reproduced as follows.

Category I includes:

- a. Exact matches (e.g., [b] occurs in the same position in each word.)
- b. Vowels which differ by only one phonological feature (e.g., [i] and [e] occur in the same position in each word.)
- c. Phonetically similar segments which occur consistently in the same position in three or more word pairs.

Category II includes:

- a. Phonetically similar nonvocalic segments which are not attested in three pairs.
- b. Vowels which differ by two or more phonological features (e.g., [a] and [u]).

Category III includes:

- a. All corresponding segments which are not phonetically similar.
- b. A segment which corresponds to nothing in the second word of the pair.

Finally, additional parameters are specified as needed for the language varieties under consideration, for example, disregarding interconsonantal [ə].

Once each pair of phones that correspond in a pair of words have been categorized into one of the three categories, the researcher looks at the whole word in Step 2. Word length refers to the number of phones in the word. If two words being compared have a different number of phones, the

word with the greatest number of phones is considered the word length for comparison purposes. Words are considered lexically similar if at least half of the phone correspondences are in Category I and at least half of the remaining phone correspondences are in Category II. For example, words four phones long are counted lexically similar if they have at least two phone correspondences in Category I, one phone correspondence in Category II and one phone correspondence in Category III. Note that for words two phones long, both phone correspondences must be in Category I. The intersection of word length and phonetic similarity is illustrated in Table 1 from Blair (1990:32).

*Table 1 Word length and phonetic similarity*

Word Length		Category I	Category II	Category III
2	=	2	0	0
3	=	2	1	0
4	=	2	1	1
5	=	3	1	1
6	=	3	2	1
7	=	4	2	1
8	=	4	2	2
9	=	5	2	2
10	=	5	3	2
11	=	6	3	2
12	=	6	3	3

## 4. CONTEXTUALIZING FOR PWO KAREN

For Pwo Karen, adjustments were made in four areas: 1) defining phonetic similarity for Pwo Karen, 2) phonetic similarity features vs. phonological features, 3) the treatment of nasalization and the final velar nasal, 4) the treatment of [θ] and [s], 5) the treatment of [w/u] and [j/i] in second position, 6) the comparison of diphthongs with monophthongs and 7) the treatment of tone.

### 4.1 *Phonetic similarity*

The guidelines for phonetically similar segments in Burquest (2001:51-59) were adopted for the word list comparison. The criteria used for identifying phonetic similarity, while related to phonological features, is somewhat looser. For consonants, the criteria are stricture, point of articulation, laterality, voicing, aspiration and velic position (nasality). Stricture, in phonetic feature

terms, includes the consonantal, sonorant, continuant and constriction phonological features.<sup>3</sup> Point of articulation is any change in where the sound is produced in the vocal tract, which would include the phonological features labial, coronal, anterior, distributed and dorsal. Finally, laterality and velic position distinguish the lateral approximant [l] and the nasals, while voicing and aspiration refer to the state of the glottis.

For vowels, the criteria are closure, backness, roundness and nasality. Closure is concerned with the vertical position at which the vowel is pronounced and takes in both the high and low phonological features. For backness, since Pwo Karen exhibits both central and back unrounded vowels, the central vowels are [-back] in comparison to back vowels, but [+back] in comparison to front vowels. For example, for [i] and [ɨ], the feature difference would be backness, while with [ɨ] and [u], the feature differences would be backness and roundness. Roundness refers to the rounding of the lips; Pwo Karen only has back rounded vowels. Finally, nasality refers to the velic position.

Consonant and vowel feature matrices, along with a listing of phonetically similar pairs and their feature differences, can be found in Appendix E.

## **4.2 Phonetic similarity features vs. phonological features**

In the Blair system, under Categories I and II, vowels differing by one and two phonological features are listed. For Pwo Karen vowels, this is problematic for two reasons. First, phonetically, four levels of front vowels occur in Pwo Karen [i, e, ε, æ]. The phonological features [high] and [low] are not sufficient to distinguish them. If a third feature is introduced to distinguish the four vowel heights, the result is too much differentiation for the central and back vowels. Furthermore, phonologically, Pwo Karen has two or three front vowel heights, instead of four, so it is good to avoid placing too much weight on vowel height by using phonological features such as highness and lowness. So, for Pwo Karen, the criteria for phonetic similarity is used instead of phonological

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<sup>3</sup> Burquest (2001:55) refers to both manner of articulation and manner of closure criteria for phonetic similarity. However, both manner of articulation and manner of closure seem to be referencing the same concept as stricture where the degree of closure is in focus. In light of this, neither manner of articulation nor manner of closure is used in the phonetic similarity scheme for this paper. Instead, laterality is used to distinguish the lateral approximant from non-lateral approximants.

features when invoking vowel correspondences with one or two feature differences, which results in a system that leads to a more accurate count of lexical similarity.

### 4.3 *The treatment of nasalization and the final velar nasal*

The Pwo Karen syllable is composed of one or two initial consonants and the rhyme, which consists of the vowel, either oral or nasalized as in  $C_1(C_2)V$ . During data collection, nasalization and the final velar nasal were observed to be in free variation throughout the Pwo Karen speech varieties, therefore both nasalization on the vowel and the final velar nasal will be counted as the feature [nasal]; a part of the syllable rhyme. This proviso is illustrated with the item ‘arm’ where the transcription is  $t\zeta\tilde{u}^{34}$  for Mae Lek and the transcription is  $t\zeta u\eta^{45}$  for Ban Salok. The correspondence  $\tilde{u}$  and  $u\eta$  is counted an exact match and assigned to Category I.

### 4.4 *The treatment of [θ] and [s]*

The Pwo Karen sound represented by [θ] in the data is actually a devoiced alveolar fronted sibilant [ $\zeta$ ], a type of [s] sound. In speech, the pronunciation of the alveolar sibilants represented by [θ] and [s] range between [ $\zeta$ ] and [ $\zeta$ ]. Therefore, these two sounds will be treated the same, with no feature difference. For example, comparing the forms for ‘afraid’, from Mae Pho and Mae Lek, the [θ] and [s] would be counted as a Category I correspondence as illustrated in Table 2.

*Table 2 Comparison of [θ] and [s]*

Mae Pho	$\theta a^{21\zeta} me^{34}$
Mae Lek	$sa^{32\zeta} me^{34}$

### 4.5 *The treatment of [w] and [j]*

As mentioned earlier, the Pwo Karen syllable includes a second initial consonant  $C_1(C_2)V$ . That the Pwo Karen syllable has a second consonant slot is supported by the fact that the lateral approximant [l] occurs in the  $C_2$  slot, e.g.  $ble^{45}$  ‘satiated’. The Pwo Karen pronunciation of the [w] and [j] medial consonants ranges between a slower articulation and faster articulation, which is non-distinctive. In the data, syllables such as [xwe] and [pju] have been transcribed as [xue] and [piu], respectively, which reflects the articulation speed. In light of this, second-position [w] and [u] and second-position [j] and [i] are treated as being the same and assigned to Category I. For example,

the transcription for ‘vomit’ is *pju*<sup>32?</sup> for Omkoi, while the transcription for Sangkhla is *piu*<sup>31?</sup>. This is illustrated in Table 3 where the medial consonant [j] is lined up with the onglide to the diphthong [i]. The comparison is counted a Category I correspondence.

*Table 3 Comparison of [j] and [i]*

Omkoi	p	j	u <sup>32?</sup>
Sangkhla	p	i	u <sup>31?</sup>
Category	I	I	I

Table 4 illustrates the comparison of medial [w] and an initial [u] in the vowel sequence [ua]. The [w]/[u] are counted as a Category I correspondence.

*Table 4 Comparison of [w] and [u]*

Ban Salok	ʔ	w	a <sup>31</sup>
Sangkhla	ʔ	u	a <sup>31</sup>
Category	I	I	I

#### **4.6 The comparison of diphthongs with monophthongs**

Pwo Karen has a number of diphthongs. These are: *ĩ*, *ẽ<sup>i</sup>*, *ai*, *ai*, *au*, *ɬu* and *ɔi*. Except for *ĩ* and *ẽ<sup>i</sup>*, which are nasalized variants of the oral vowels [i] and [e], when comparing diphthongs with monophthongs, the diphthong is compared with two instances of the monophthong. Take, for example, the phones [i] and [ai]. The comparison would be between [ii] and [ai]. The first instance of [i] would be compared with [a] and the second instance of [i] would be compared with [i]. This is summarized in Table 5 where [i] and [a] differ by two features and [i] and [i] do not differ. Therefore, [ai] and [i], with this counting method, differ by a total of two features.

*Table 5 Comparison of [ai] and [i]*

i and a	Differ by closure, backness
i and i	No difference

On the other hand, with the diphthongs [*ĩ*] and [*ẽ<sup>i</sup>*], they are considered to differ from their oral counterparts, [i] and [e] by nasalization only, which would be one feature difference.

#### 4.7 The treatment of tone and glottalization

In the analysis of Pwo Karen, glottalized phonation is treated as a property of a particular tone. For example, Sangkhla Pwo Karen has six tones, four oral tones (high [<sup>45</sup>], high falling [<sup>51</sup>], mid [<sup>33</sup>] and low [<sup>21</sup>]) and two checked tones (high [<sup>45ʔ</sup>] and low [<sup>21ʔ</sup>]). For lexical similarity comparison, tone, including any phonation, is not counted.

### 5. PWO KAREN LEXICAL SIMILARITY COUNTING

The purpose of this section is to demonstrate the application of the lexical similarity counting method to Pwo Karen word list data. For reference, the adjusted guidelines, with changes italicized, are presented below, including the provisos for Pwo Karen delineated in the previous section.

Category I includes:

- a. Exact matches (e.g., [b] occurs in the same position in each word.)
- b. Vowels which differ by only one *phonetic similarity* feature (e.g., [i] and [e] occur in the same position in each word.)
- c. Phonetically similar segments which occur consistently in the same position in three or more word pairs.

Category II includes:

- a. Phonetically similar nonvocalic segments which are not attested in three pairs.
- b. Vowels which differ by two or more *phonetic similarity* features (e.g., [a] and [u]).

Category III includes:

- a. All corresponding segments which are not phonetically similar.
- b. A segment which corresponds to nothing in the second word of the pair.

Pwo Karen provisos:

- a. Nasalization and final velar nasals are counted as [+nasal] on the vowel, e.g. [ɪ̃] and [iŋ] are counted the same.
- b. [s] and [θ] are counted the same.
- c. Diphthongs are compared with two instances of a monophthong, e.g. [ai] and [aa].
- d. Tone is not included in the lexical similarity counts.

#### 5.1 Comparison of vowels differing by one phonetic similarity feature

The word pair in Table 6 illustrates the treatment of vowel phones that differ by one phonetic similarity feature. The Pwo Karen words are for the English gloss ‘cloud’.

Table 6 Vowels differing by one phonetic similarity feature

Ban Klang	t <sup>h</sup>	ə	ʔ	iŋ <sup>34</sup>
Huai Thok	t <sup>h</sup>	ə	ʔ	əŋ <sup>34</sup>
Category	Ia	Ia	Ia	Ib

In the first three columns the phone pairs match exactly fulfilling the requirements for "a" under Category I. In the last column, there is one feature difference (closure) between [iŋ] and [əŋ]. The correspondence fulfills the requirements set out in "b" under Category I. Since the four phone correspondences in these words are in Category I both words are assigned to the same similarity set.<sup>4</sup>

## 5.2 Phonetically similar segments occurring in the same position in three or more word pairs

Corresponding phonetically similar phones are considered to be a Category I if they correspond in three or more words. This provision is designed to identify consistent sound correspondences. Appendix F contains groupings of words with phonetically similar segments. In the data, the first instance of phonetically similar segments occurring in three word pairs is with the consonants [t<sup>h</sup>] and [tɕ<sup>h</sup>], which appear either in the noun meaning ‘thing’ or the nominalizing prefix. This is illustrated with the forms for ‘cloud’ in Table 7.

Table 7 Correspondence of [t<sup>h</sup>] and [tɕ<sup>h</sup>]

Ban Klang	t <sup>h</sup>	ə	ʔ	iŋ <sup>34</sup>
Sangkhla	tɕ <sup>h</sup>	ĩ <sup>33</sup>	ʔ	ẽ <sup>45</sup>
Category	Ic	Ib	Ia	Ib

Since at least three instances of the correspondence of [t<sup>h</sup>] and [tɕ<sup>h</sup>] occur, the phone correspondence is counted as a Category Ic. In second position, [ə] and [ĩ] differ by closure, one phonetic similarity feature, so are a Category Ib correspondence. In position three, the two glottal consonants are an exact match, so are counted a Category Ia correspondence. Finally, [iŋ] and [ẽ] differ only by closure, since the velar nasal and nasalization on the vowel are counted the same. With one feature difference the fourth position phones are counted as a Category Ib correspondence.

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<sup>4</sup> For the rest of the paper, the type of correspondence will be indicated with the particular category, represented by the roman numerals I, II or III, and the lowercase letters a, b, or c to indicate the sub-point within each category. For example, the correspondence of [t] and [t] in first position, in Table 6, is a Ia correspondence.

Finally, since all the phone correspondences are in Category I, the two words are put into the same similarity set.

The correspondence of [t<sup>h</sup>] and [tɕ<sup>h</sup>] in either the noun ‘thing’ or the nominalizing prefix is a comparison between the Sangkhla variety and all the other varieties in this study. Another correspondence between [t<sup>h</sup>] and [tɕ<sup>h</sup>] occurs in other words, however, this comparison is between Mae Pho and the other varieties in this study. This is illustrated with the forms for ‘dog’ in Table 8.

*Table 8 Correspondence of [t<sup>h</sup>] and [tɕ<sup>h</sup>]*

Sop Khong	t <sup>h</sup>	u	i <sup>45</sup>
Mae Pho	tɕ <sup>h</sup>	u	i <sup>34</sup>
Category	IIa	Ia	Ia

Unfortunately, this correspondence was only found in two pairs in the available data, so the phone correspondence in the first position had to be counted as a Category IIa correspondence. In the second and third positions, the two corresponding phones are exact matches, thus Category Ia. Since two of the correspondences are Category I in a three-phone length word, the two forms are included in the same similarity set.

A fairly common phone correspondence occurring in more than three pairs is [ɛ/æ] and [a]. While [a] and [æ] differ by backness, [a] and [ɛ] differ by backness and closure, so showing correspondence in three pairs is necessary. Also, phonologically, [æ] is an allophone of [e] or [ɛ] in both Pwo Karen varieties that have undergone phonological analysis, so a correspondence can be established with either [ɛ] or [æ]. The correspondence is illustrated in the forms for ‘moon’ in Table 9.

*Table 9 Correspondence of [ɛ/æ] and [a]*

Mae Lek	l	æ <sup>21</sup>
Sue Mue	l	ɛ <sup>21</sup>
Sop Khong	l	a <sup>31</sup>
Category	Ia	Ic

In first position, all three varieties have [l] which is an exact match and a Category Ia. In second position, with the correspondence between [ɛ/æ] and [a] occurring in three or more pairs, the correspondence is counted as a Category Ic correspondence.

The correspondence of [ʃ̃], [au] and [ɔ] occurs in at least three word pairs in the data. This correspondence is illustrated with the forms for ‘black’ in Table 10. In first position, the [s] and [θ] have no feature difference according to the provisos for Pwo Karen, so are counted as Category Ia. In second position, the correspondence of [ʃ̃], [au] and [ɔ] occurs consistently in three word pairs, so the correspondence is counted as Category Ic. Since both phones are in Category I, these forms are placed in the same similarity set.

*Table 10 Correspondence of [ʃ̃], [au] and [ɔ]*

Ban Klang	s	ʃ̃ <sup>41</sup>
Ban Doi	s	au <sup>51</sup>
Sue Mue	θ	ɔ <sup>45</sup>
Category	Ia	Ic

Another common correspondence in multiple word pairs is that of [aŋ] and [ʃ̃]. It is this correspondence to which Pwo Karen often refer as an illustration of the sound differences between various Pwo Karen varieties. The correspondence is illustrated with forms for ‘eat’ in Table 11.<sup>5</sup> In first position the two glottal stops are an exact match, thus a Category Ia correspondence. Then, in second position, [aŋ] and [ʃ̃] correspond in three pairs, so the phone correspondence is a Category Ic correspondence. Since both phone correspondences are Category I, the two forms are included in the same similarity set.

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<sup>5</sup> In Appendix F, where the listing of corresponding word pairs can be found, some of the forms do not show nasalization. And in the Omkoi form ləŋ<sup>51</sup>t<sup>h</sup>e<sup>45</sup> ‘fall’ [əŋ] occurs instead of [aŋ]. These differences could be due to the word list elicitation situation, free variation or sound change in progress. However, in company with the rest of the data, the correspondences can be seen. This approach is also taken with other three-word correspondence sets where nasalization and/or vowel height are not exactly the same.

Table 11 Correspondence of [aŋ] and [ɔ̃]

Mae Pho	ʔ	aŋ <sup>45</sup>
Sangkhla	ʔ	ɔ̃ <sup>45</sup>
Category	Ia	Ic

A correspondence with back vowels is seen with [ũ], [oŋ], [ɣ] and [ɔŋ]. Ban Klang has [ũ] while all the other varieties have [oŋ], [ɣ] or [ɔŋ]. This is illustrated with the forms for ‘stone’ in Table 12. In first position, all forms have [l] making this a Category Ia correspondence. Then, in second position, [ũ], [oŋ], [ɣ] and [ɔŋ] have been shown to correspond in three word pairs, so the correspondences are counted Category Ic. With two Category I correspondences in a two-phone word, these forms are placed in the same similarity set.

Table 12 Correspondence of [ũ], [oŋ], [ɣ] and [ɔŋ]

Ban Klang	l	ũ <sup>34</sup>
Ban Doi	l	oŋ <sup>34</sup>
Sangkhla	l	ɣ <sup>33</sup>
Mae Pho	l	ɔŋ <sup>21</sup>
Category	Ia	Ic

Another three-word pair correspondence occurs with [u/uŋ] and [o/oŋ], where Mae Pho has [o/oŋ] and the other Pwo Karen varieties have [u/uŋ]. As delineated in Footnote 5, the presence or lack of nasalization has a number of possible explanations. In any case, for this particular correspondence set, it is disregarded. The correspondence is illustrated with the forms for ‘blow’ in Table 13. In first position all forms have glottal stops, a Category Ia correspondence. Second position has the vowels [o], [u/uŋ] which occur in three word pairs, making this a Category Ic correspondence. With two Category I correspondences these three forms are placed in the same similarity set.

Table 13 Correspondence of [o/oŋ] and [u/uŋ]

Mae Pho	ʔ	o <sup>45</sup>
Mae Lek	ʔ	u <sup>34</sup>
Omkoi	ʔ	uŋ <sup>33</sup>
Category	Ia	Ic

A couple of correspondences in three word pairs occur between central and front vowels. The first of these is between [ē<sup>i</sup>] and [ai/āi]. Ban Klang and Ban Salok have [ē<sup>i</sup>] while all the other varieties have [ai] or [āi]. The correspondence is illustrated with the forms for ‘bite’ in Table 14 where the [ʔ] in first position in both words is a Category Ia correspondence. Then, in second position, the correspondence of [ē<sup>i</sup>] and [ai/āi] which occurs in three word pairs, is counted as Category Ic. Since both phone correspondences have been counted as Category I, these forms are placed in the same similarity set.

Table 14 Correspondence of [ē<sup>i</sup>] and [ai/āi]

Ban Salok	ʔ	ē <sup>i34</sup>
Sue Mue	ʔ	ai <sup>34</sup>
Sangkhla	ʔ	āi <sup>33</sup>
Category	Ia	Ic

Another central and front vowel correspondence is that between [i] and [ai] where Ban Klang has [i] and all the other varieties have [ai]. This is illustrated with the forms for ‘wing’ in Table 15. In first position the two alveolar implosives are a Category Ia correspondence and the [i] and [ai], which correspond in three word pairs, are a Category Ic correspondence. Two Category I correspondences in a two-phone length word place these forms in the same similarity set.

Table 15 Correspondence of [i] and [ai]

Ban Klang	ɖ	i <sup>21ʔ</sup>
Huai Thok	ɖ	ai <sup>32ʔ</sup>
Category	Ia	Ic

The last two three-pair correspondences are not as straightforward as the previous three-pair correspondences. The first of these is the correspondence of [au], [ai], [ɬu] and [u]. In the Sangkhla variety, [au], [ai] and [ɬu] are not phonemically distinct. However, in the Omkoi variety, [au], [ai] are distinct phonemically. In the word list data, Ban Klang has [u] while the other varieties have [au], [ai] or [ɬu]. This is illustrated with the forms for ‘near’ in Table 16. In first position all the forms have the bilabial implosive making this a Category Ia correspondence. Then the three-word

correspondence in second position is a Category Ic, which places all these forms in the same similarity set.

*Table 16 Correspondence of [u], [au], [aɪ] and [ʌu]*

Ban Klang	6	u <sup>21?</sup>
Mae Pho	6	au <sup>21?</sup>
Ban Salok	6	aɪ <sup>32?</sup>
Sangkhla	6	ʌu <sup>21?</sup>
Category	Ia	Ic

The final three-word pair correspondence is between [ɪ] and [u/ũ]. Mae Pho consistently has [ɪ] while the other varieties have [ɪ], [u] or [ũ]. Even though there is some lack of consistency in the other varieties in comparison to Mae Pho, it appears that the differences are most likely due to sound change in progress. The correspondence is illustrated with the form for ‘arm’ in Table 17. All three forms have the initial consonant [tɕ] which is a Category Ia correspondence. Then, with the three-pair correspondence, the vowels in position two are Category Ic which places these forms in the same similarity set.

*Table 17 Correspondence of [ɪ], [u] and [ũ]*

Mae Pho	tɕ	ɪ <sup>45</sup>
Ban Klang	tɕ	u <sup>34</sup>
Mae Lek	tɕ	ũ <sup>34</sup>
Category	Ia	Ic

A number of other possible correspondences were identified for which three word pairs could not be found in the available data. These are [ɿ and ui], [k and k<sup>h</sup>], [æ, a, ɛ and ə] and [tɕ<sup>h</sup> and ɕ]. In these cases, the correspondences were counted as Category IIa correspondences.

### **5.3 Category III correspondences**

The final two examples illustrate situations where a correspondence is counted as Category III in cases where corresponding phones are not phonetically similar (differ by 3 or more features) as in Table 18, or where a phone corresponds to nothing in the other word as in Table 19.

In Table 18, the forms for ‘head’ differ significantly. In first position, [k<sup>h</sup>] and [s] are compared. They differ in stricture, place of articulation and aspiration. The correspondence is counted a Category IIIa correspondence. In position two, the vowels differ by closure, backness and rounding. This correspondence is counted a Category IIb correspondence since these vowels differ by two or more phonetic similarity features. With one Category III correspondence and one Category II correspondence in a two-phone length word, the forms do not belong to the same similarity set.

*Table 18 Phonetically dissimilar pairs*

Ban Salok	s	a <sup>34?</sup>
Omkoï	k <sup>h</sup>	u <sup>33</sup>
Category	IIIa	IIb

Comparing the forms for ‘round’ in Table 19, the correspondence of [p] and [p<sup>h</sup>] in first position is counted a Category IIa correspondence since [p] and [p<sup>h</sup>] have not been found to correspond in three word pairs in the available data. Then, except for Ban Klang, none of the other varieties have a consonant cluster with [l] as the medial consonant. Therefore, the correspondence between [l] and nothing in the other form is a Category IIIb correspondence. In third position, the vowels are the same for the two forms; a Category Ia correspondence. In position four, both forms have [l], a Category Ia correspondence. Finally, the vowels in position five differ by closure, one phonetic similarity feature, so are counted as a Category Ib correspondence. For a five-phone word, over half of the correspondences are Category I with one Category II and one Category III correspondence. This places both of these forms in the same similarity set.

*Table 19 Phones corresponding to nothing*

Ban Klang	p <sup>h</sup>	l	oŋ <sup>23</sup>	l	uŋ <sup>23</sup>
Omkoï	p		oŋ <sup>33</sup>	l	oŋ <sup>33</sup>
Category	IIa	IIIb	Ia	Ia	Ib

One of the most complicated comparison of forms was that for ‘give’. The result was four similarity sets. These are listed in Table 20.

Table 20 'give' similarity sets

A	B	C	D
k <sup>h</sup> ɛ <sup>21</sup> laŋ <sup>21</sup>	k <sup>h</sup> ɛ <sup>21</sup> laŋ <sup>21</sup>	ʔa <sup>21</sup> kləŋ <sup>41</sup>	p <sup>h</sup> lɔ <sup>51</sup>
kɛ <sup>34</sup> laŋ <sup>41</sup>	kɛ <sup>34</sup> laŋ <sup>41</sup>	ʔəɔ <sup>45</sup>	
ki <sup>21</sup> la <sup>34?</sup>	ki <sup>21</sup> la <sup>34?</sup>	ʔaŋ <sup>31</sup> laŋ <sup>34</sup>	
k <sup>h</sup> i <sup>31</sup> ləŋ <sup>45</sup>	ke <sup>31</sup> ma <sup>45</sup>		
k <sup>h</sup> i <sup>21</sup> ləŋ <sup>45</sup>			

Starting with Similarity Set A, which is listed with the location names in Table 21, in first position, the [k<sup>h</sup>] and [k] differ by one feature, however, the correspondence is not found in three pairs, therefore the correspondence is Category IIa. For forms with [k<sup>h</sup>], the correspondence is an exact match, which is Category Ia. So for first position in Similarity Set A, the correspondence counted either Ia or IIb depending on whether [k<sup>h</sup>] and [k<sup>h</sup>] are being compared or [k] and [k<sup>h</sup>]. In position two, the front vowels [i] and [ɛ] differ only by closure which is a Category Ib correspondence. In position three, all forms have [l] which is a Category Ia. Finally, in position four, the phonetically similar [aŋ], [əŋ] and [əŋ] correspond in three pairs, so are a Category Ia correspondence. As for [a] in relation to the other vowels in position four, [a] and [aŋ] differ by one feature (nasalization) which is a Category Ib correspondence, [a] and [əŋ] differ by two features (closure and nasalization) which is a Category IIb correspondence and [a] and [əŋ] differ by three features (backness, roundness and nasality) which is also a Category IIb correspondence. In a four-phone length word, if the correspondence categories include at least two Category I correspondences and at least one Category II correspondence, then the forms are placed in the same similarity set. For the forms in Table 21, they have at least two Category I correspondences and either Category I or II correspondences for the remaining two phones. Therefore they are counted as members of the same similarity set.

Table 21 Similarity Set A

Ban Doi	k <sup>h</sup>	ɛ <sup>21</sup>	l	aŋ <sup>21</sup>
Mae Lek	k	ɛ <sup>34</sup>	l	aŋ <sup>41</sup>
Ban Salok	k	i <sup>21</sup>	l	a <sup>34?</sup>
Sop Khong	k <sup>h</sup>	i <sup>31</sup>	l	ɔŋ <sup>45</sup>
Mae Pho	k <sup>h</sup>	i <sup>21</sup>	l	əŋ <sup>45</sup>
Category	Ia/IIa	Ib	Ia	Ia/Ib/IIb

Similarity Set B includes some of the forms from Similarity Set A along with the Omkoi form *ke<sup>31</sup>ma<sup>45</sup>*. In first position, the [k] and [k<sup>h</sup>] correspondence is a Category IIa and the [k] and [k] correspondence is Category Ia. In position two, all the vowels are front vowels differing by closure which is a Category Ib correspondence. In position three, the [l] and [m] are not phonetically similar, which is a Category IIIa correspondence. In position four [a] and [aŋ] differ by one feature (nasalization) which is a Category Ib correspondence. With two Category I, one Category III and one Category I or II correspondence, the forms in Table 22 are placed in the same similarity set.

Table 22 Similarity Set B

Ban Doi	k <sup>h</sup>	ɛ <sup>21</sup>	l	aŋ <sup>21</sup>
Mae Lek	k	ɛ <sup>34</sup>	l	aŋ <sup>41</sup>
Ban Salok	k	i <sup>21</sup>	l	a <sup>34?</sup>
Omkoi	k	e <sup>31</sup>	m	a <sup>45</sup>
Category	Ia/IIa	Ib	IIIa	Ib

To demonstrate the necessity of Similarity Sets A and B, when *ke<sup>31</sup>ma<sup>45</sup>* (Set B) is compared to the Sop Khong and Mae Pho forms (Set A), the result is a Category IIa in first position between [k] and [k<sup>h</sup>], a Category Ib in second position between the vowels [i] and [e], a Category IIIa in third position between [m] and [l], and a Category IIb in fourth position between [a] and [əŋ], which differ by two features (closure and nasalization) and [a] and [ɔŋ], which differ by three features (roundness, backness and nasalization). With only one Category I correspondence in a four-phone word pair, it is not possible to place both of these forms in the same similarity set, as shown in Table 23.

Table 23 Comparison of Set A and Set B

Sop Khong	k <sup>h</sup>	i <sup>31</sup>	l	ɔŋ <sup>45</sup>
Mae Pho	k <sup>h</sup>	i <sup>21</sup>	l	əŋ <sup>45</sup>
Omkoï	k	e <sup>31</sup>	m	a <sup>45</sup>
Category	IIa	Ib	IIIa	IIb

Similarity Set C is presented in Table 24. In first position, all forms have an initial [ʔ] consonant, which is a Category Ia correspondence. In position two, [a] and [aŋ] differ by nasalization, which is a Category Ib correspondence, [a] and [ə] differ by closure, which is also a Category Ib correspondence, and [ə] and [aŋ] differ by two features, closure and nasalization, and do not correspond in three word pairs, so the correspondence is a Category IIb. In third position, [k] corresponds to nothing in the other forms which is a Category IIIb correspondence. In position four, all three forms have [l] which is a Category Ia correspondence. In fifth position, [əŋ] and [ɔ] differ by backness, roundness and nasalization, a Category IIb correspondence, [əŋ] and [aŋ] differ by closure, a Category Ib correspondence and [ɔ] and [aŋ] differ by backness, roundness and nasality, a Category IIb correspondence. In a five-phone word, at least three Category I correspondences are necessary, with only one Category III correspondence allowed. Comparing Ban Klang and Huai Thok, they have the following correspondence categories: I, I, III, I, II. Ban Klang and Sue Mue have the following correspondences: I, I, III, I, I. Huai Thok and Sue Mue have the following correspondences: I, II, I, I, II. Thus, they all belong in the same similarity set.

Table 24 Similarity Set C

Ban Klang	ʔ	a <sup>21</sup>	k	l	əŋ <sup>41</sup>
Huai Thok	ʔ	ə		l	ɔ <sup>45</sup>
Sue Mue	ʔ	aŋ <sup>31</sup>		l	aŋ <sup>34</sup>
Category	Ia	Ib/IIb	Ia/IIIb	Ia	Ib/IIb

Finally, Similarity Set D contains a single form, *p<sup>h</sup>lɔ̃<sup>51</sup>*, which is lexically similar to none of the other forms.

## 6. CONCLUSION

Using the lexical similarity counting guidelines as described in this paper, the following lexical similarity percentages result as shown in Table 25.

*Table 25 Thailand Pwo Karen lexical similarity percentages*

Variety	Ban Doi	Ban Salok	Ban Klang	Mae Lek	Huai Thok	Omkoi	Sue Mue	Sop Khong	Mae Pho	Sangkhla
Ban Doi	100%	95%	90%	100%	93%	96%	95%	89%	90%	90%
Ban Salok	95%	100%	90%	95%	93%	91%	91%	88%	90%	86%
Ban Klang	90%	90%	100%	90%	90%	88%	90%	88%	86%	87%
Mae Lek	100%	95%	90%	100%	93%	96%	95%	89%	90%	90%
Huai Thok	93%	93%	90%	93%	100%	93%	94%	88%	89%	90%
Omkoi	96%	91%	88%	96%	93%	100%	97%	90%	91%	92%
Sue Mue	95%	91%	90%	95%	94%	97%	100%	90%	91%	91%
Sop Khong	89%	88%	88%	89%	88%	90%	90%	100%	90%	88%
Mae Pho	90%	90%	86%	90%	89%	91%	91%	90%	100%	90%
Sangkhla	90%	86%	87%	90%	90%	92%	91%	88%	90%	100%

With lexical similarity percentages between 86% and 100%, we can conclude that these are related varieties. Looking at the results, it appears that Ban Klang, Sop Khong, Mae Pho and Sangkhla show the lower percentages in relation to the remaining varieties. Considering intelligibility, a married couple, (one from the Sue Mue area and the other from Ban Klang) reported not being able to use Pwo Karen with each other. We have also been repeatedly told that Ban Klang is not intelligible with any of the other varieties. Sop Khong is reported to be difficult to understand by Pwo Karen to the north of them, represented by the Sue Mue list. The intelligibility of Mae Pho with other varieties is unknown, since they report almost no contact with any other Pwo Karen groups.

As for Sangkhla and the other varieties, intelligibility testing has been carried out between the Omkoi and Sangkhla varieties (Dawkins and Phillips to appear). The results indicated a 25% understanding of the Omkoi story by the Sangkhla Pwo Karen and 25% understanding of the

Sangkhla story by the Omkoi Pwo Karen. This is a good indication that the Sangkhla and Omkoi varieties are not intelligible with each other. Observing a number of Omkoi Pwo Karen and a Sangkhla Pwo Karen person together, everyone expected to understand each other at least 70%, however, after two days, the Sangkhla Pwo Karen person reported that he understood Omkoi Pwo Karen about 5%.

Other intelligibility testing averages indicate a 69% understanding of the Omkoi story by Ban Doi Pwo Karen and a 65% understanding of the Omkoi story by Ban Salok Pwo Karen (Dawkins and Phillips to appear). With a 69% understanding of the Omkoi story and lexical similarity percentages of 96% between Ban Doi and Omkoi, it is not clear whether the Ban Doi and Omkoi groups would be able to use the same materials. As for Ban Salok, the combination of 65% intelligibility of the Omkoi story and 91% lexical similarity between Omkoi and Ban Salok seems to point to understanding difficulties between the Ban Salok and Omkoi Pwo Karen. In any case, word list comparison percentages are not enough to predict intelligibility.

The relatively high lexical counts combined with the relatively low results on intelligibility tests for the Ban Salok and Ban Doi Pwo Karen could be due to such things as tonal differences, grammatical differences, especially with function words, and differences in word formation patterns. Further cross-dialectal comparison of these areas may yield useful indicators of intelligibility barriers between the Pwo Karen language varieties.

As for the lexical similarity counting method, it seems to work reasonably well, with minor adjustments. Since Pwo Karen has CV syllables, the use of phonetically similar segments within three corresponding pairs is especially important for an accurate analysis of phone correspondences. With additional data, other correspondences could likely be found.

## APPENDIX A: WORDS COMPARED

No.	Gloss	Notes
1	afraid	
2	animal	This word was eliminated because it is not clear what this word is referring to. Seems also to be used for 'insect'.
3	ashes	
4	belly (exterior)	
5	bird	
6	bite	
7	black	
8	blood	
9	blow	
10	bone	
11	breast/milk	The word elicited is milk, two-syllable combination of breast + water.
12	breath	The word elicited is breathe, although the same word can be used as a noun 'breath'
13	burn	This word was eliminated because Pwo Karen has at least two words for burn depending on what is being burned. Since this was discovered late in the survey, it is not possible to be sure that forms with the equivalent semantic meanings are being compared.
14	child	
15	cloud (white)	
16	cold	This word was eliminated because Pwo Karen has two words for cold, a property and a sensation. Not sure what was elicited in various places.
17	cut (with knife)	Cut, as in cutting hair, presumably with scissors was elicited.
18	die	
19	dig	
20	dog	
21	drink	
22	ear	
23	earth/soil	
24	eat	
25	egg	
26	eye	
27	fall (v, down)	

<b>No.</b>	<b>Gloss</b>	<b>Notes</b>
28	far	
29	fat (n)	
30	feather	
31	finger nail/claw	Just finger nail was elicited.
32	fire	
33	fish	
34	five	
35	flower	
36	fly (v)	
37	foot	The word 'leg' was elicited which includes the foot in Pwo Karen. However, the word was eliminated from the comparison due to some doubt as to whether the same word was elicited in all locations.
38	four	
39	fruit	
40	full (container)	
41	give	
42	grass	
43	hair	
44	hand	The word for 'arm' was elicited since for most Pwo Karen, this word includes the hand.
45	head	
46	heart	
47	heavy	
48	horn (buffalo)	
49	hunt	Not elicited; Pwo Karen does not seem to have a lexical item for this concept.
50	I (1sg.)	
51	intestine	
52	kill	Some doubt that the same concept was elicited for all varieties, possibly Thai translation difficulties.
53	know (v facts)	
54	laugh (not smile)	For most Pwo Karen varieties, 'laugh' and 'smile' are the same word.
55	leaf	
56	left (side or hand)	
57	live	Not elicited.
58	liver	
59	long (length)	
60	louse	
61	many	
62	moon	

No.	Gloss	Notes
63	mountain	
64	mouth	
65	name	
66	near	
67	neck (front)	Not elicited.
68	new	
69	night	
70	nose	
71	old age	In earlier forms of the MSEAG word list used for Pwo Karen the concept of an old item was elicited which is not the same as old age, so this item was not included in comparison.
72	one	
73	person (n)	
74	rain (n)	
75	red	
76	right (side/hand)	
77	river	
78	road/path	Some Pwo Karen varieties have different words for 'road' and 'path', so the word for 'path' was elicited.
79	root	
80	round	
81	rub	
82	salt	
83	scratch (v, fingernail)	
84	see	
85	sew	
86	sharp (knife)	
87	sit (state)	
88	skin	
89	sky	
90	sleep	
91	smell	
92	smoke	
93	snake	
94	spit	
95	squeeze (one hand)	Not elicited.
96	stand (state)	
97	star	
98	stick	Not elicited.
99	stone	

<b>No.</b>	<b>Gloss</b>	<b>Notes</b>
100	sun	
101	tail	
102	thick (object)	
103	thin (object)	
104	thou	Not elicited in all varieties so not included in the comparison.
105	three	
106	tie (vine, cord)	Not sure the same kind of tying was elicited for all varieties, so this item was excluded from the comparison.
107	tongue	
108	tooth	
109	tree	
110	two	
111	vomit	
112	warm	
113	wash	
114	water	
115	white	
116	wind	
117	wing	
118	year	

APPENDIX B WORD LISTS<sup>6</sup>

No. ⇒	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Gloss ⇒	afraid	arm	ashes	belly	bird	bite	black	blood	blow	bone	breathe	child	cloud	cut (hair)
<b>Ban Klang</b>	θə <sup>21</sup> me <sup>34?</sup>	tɕu <sup>34</sup>	p <sup>h</sup> i <sup>41</sup> k <sup>h</sup> lɛ <sup>34</sup>	ka <sup>21?</sup> p <sup>h</sup> oŋ <sup>41</sup>	t <sup>h</sup> o <sup>34</sup>	ʔɛ <sup>i34</sup>	sə <sup>41</sup>	θui <sup>34</sup>	ʔu <sup>23</sup>	xwi <sup>34</sup>	sæ <sup>34</sup>	p <sup>h</sup> o <sup>34</sup>	t <sup>h</sup> əʔiŋ <sup>34</sup>	nja <sup>34</sup> k <sup>h</sup> u <sup>23</sup>
<b>Ban Doi</b>	sa <sup>21?</sup> me <sup>34</sup>	tɕu <sup>34</sup>	p <sup>h</sup> i <sup>51</sup> k <sup>h</sup> la <sup>34</sup> mũ <sup>34</sup>	ɰu <sup>21?</sup> p <sup>h</sup> oŋ <sup>51</sup>	t <sup>h</sup> u <sup>34</sup>	ʔai <sup>45</sup>	sau <sup>51</sup>	θui <sup>34</sup>	ʔu <sup>45</sup>	xi <sup>45</sup>	sa <sup>34</sup>	p <sup>h</sup> u <sup>45</sup>	t <sup>h</sup> əʔiŋ <sup>45</sup>	na <sup>45</sup> k <sup>h</sup> u <sup>45</sup>
<b>Mae Lek</b>	sa <sup>32?</sup> me <sup>34</sup>	tɕũ <sup>34</sup>	p <sup>h</sup> ɛ <sup>i34</sup> k <sup>h</sup> læ <sup>21</sup>	ɰo <sup>21</sup> p <sup>h</sup> o <sup>41</sup>	t <sup>h</sup> u <sup>34</sup>	ʔai <sup>34</sup>	sau <sup>34</sup>	sũ <sup>34</sup>	ʔu <sup>34</sup>	xɪ <sup>34</sup>	sɛ <sup>34</sup>	p <sup>h</sup> u <sup>34</sup>	t <sup>h</sup> əʔeŋ <sup>34</sup>	na <sup>34?</sup> k <sup>h</sup> u <sup>45</sup>
<b>Huai Thok</b>	sa <sup>31</sup> mi <sup>34</sup>	tɕũ <sup>34</sup>	p <sup>h</sup> i <sup>31</sup> k <sup>h</sup> lɛ <sup>34</sup>	kəp <sup>h</sup> oŋ <sup>45</sup>	t <sup>h</sup> u <sup>34</sup>	ʔai <sup>34</sup>	sə <sup>45</sup>	sui <sup>45</sup>	ʔu <sup>45</sup>	xɪ <sup>34</sup>	sɛ <sup>34</sup>	p <sup>h</sup> u <sup>34</sup>	t <sup>h</sup> əʔəŋ <sup>34</sup>	ɰai <sup>34?</sup> k <sup>h</sup> u <sup>34</sup>
<b>Sue Mue</b>	θa <sup>32?</sup> me <sup>34?</sup>	tɕu <sup>45</sup>	p <sup>h</sup> i <sup>34</sup> k <sup>h</sup> lɛ <sup>34</sup>	ɰoŋ <sup>21</sup> p <sup>h</sup> oŋ <sup>45</sup>	t <sup>h</sup> u <sup>34</sup>	ʔai <sup>34</sup>	θə <sup>45</sup>	θũ <sup>45</sup>	ʔu <sup>34</sup>	xi <sup>45</sup>	θɛ <sup>34</sup>	p <sup>h</sup> u <sup>34</sup>	t <sup>h</sup> əʔiŋ <sup>34</sup>	rai <sup>32?</sup> k <sup>h</sup> u <sup>45</sup>
<b>Sop Khong</b>	θa <sup>32?</sup> me <sup>34</sup>	tɕi <sup>34</sup>	mə <sup>21</sup> ʔə <sup>31</sup> ʔi <sup>21</sup>	ɰoŋ <sup>21</sup> p <sup>h</sup> o <sup>45</sup>	t <sup>h</sup> u <sup>34</sup>	ʔai <sup>45</sup>	θə <sup>45</sup>	θui <sup>45</sup>	ʔu <sup>34</sup>	xi <sup>34</sup>	kəθa <sup>45</sup>	p <sup>h</sup> u <sup>34</sup>	t <sup>h</sup> əʔə <sup>34</sup>	rai <sup>32?</sup> k <sup>h</sup> u <sup>34</sup>
<b>Mae Pho</b>	θa <sup>21?</sup> me <sup>34</sup>	tɕi <sup>45</sup> di <sup>34</sup>	p <sup>h</sup> ɛ <sup>i34</sup> k <sup>h</sup> la <sup>21</sup>	ɰoŋ <sup>21</sup> p <sup>h</sup> oŋ <sup>45</sup>	t <sup>h</sup> u <sup>34</sup>	ʔai <sup>34</sup>	θau <sup>45</sup>	θui <sup>34</sup>	ʔo <sup>45</sup>	xɪ <sup>45</sup>	kəθa <sup>45</sup>	p <sup>h</sup> u <sup>34</sup>	t <sup>h</sup> əʔəŋ <sup>45</sup>	lɔŋ <sup>51</sup> k <sup>h</sup> u <sup>45</sup>
<b>Ban Salok</b>	sa <sup>32?</sup> me <sup>31</sup>	tɕuŋ <sup>45</sup>	p <sup>h</sup> i <sup>45</sup> k <sup>h</sup> la <sup>34</sup>	ki <sup>21</sup> p <sup>h</sup> oŋ <sup>45</sup>	t <sup>h</sup> u <sup>34</sup>	ʔɛ <sup>i34</sup>	sau <sup>45</sup>	θũiŋ <sup>45</sup>	ʔu <sup>34</sup>	xɪŋ <sup>45</sup>	sa <sup>34</sup>	p <sup>h</sup> u <sup>45</sup>	t <sup>h</sup> əʔi <sup>45</sup>	lɔŋ <sup>31</sup> k <sup>h</sup> u <sup>34</sup>
<b>Omkoï</b>	θa <sup>45?</sup> me <sup>31</sup>	tɕuŋ <sup>33</sup>	p <sup>h</sup> i <sup>45</sup> k <sup>h</sup> lɛ <sup>33</sup>	ɰoŋ <sup>31</sup> p <sup>h</sup> oŋ <sup>45</sup>	t <sup>h</sup> u <sup>33</sup>	ʔai <sup>33</sup>	θa <sup>45</sup>	θui <sup>33</sup>	ʔuŋ <sup>33</sup>	xɪ <sup>31</sup>	θɛ <sup>33</sup>	p <sup>h</sup> u <sup>45</sup>	t <sup>h</sup> əʔəŋ <sup>33</sup>	rai <sup>34?</sup> k <sup>h</sup> u <sup>33</sup>
<b>Sangkhla</b>	θa <sup>31?</sup> me <sup>45</sup>	tɕuŋ <sup>33</sup>	p <sup>h</sup> ɛ <sup>45</sup> k <sup>h</sup> la <sup>31</sup>	p <sup>h</sup> o <sup>33</sup> p <sup>h</sup> o <sup>51</sup>	t <sup>h</sup> u <sup>45</sup>	ʔai <sup>33</sup>	θə <sup>51</sup>	θũi <sup>45</sup>	ʔũ <sup>45</sup>	xũi <sup>45</sup>	θa <sup>45</sup>	p <sup>h</sup> u <sup>45</sup>	tɕi <sup>33</sup> ʔə <sup>45</sup>	t <sup>h</sup> ai <sup>45?</sup> k <sup>h</sup> u <sup>45</sup>

<sup>6</sup> Standard IPA symbols are used in the transcription of the word lists. Tone is transcribed using the Chao tone numbers, where 5 is high and 1 is low. Thus, 45 is a high-rising tone, 33 is a mid-level tone etc. Checked tones are indicated with the raised Chao tone numbers followed by a raised glottal stop, [21?, 45?, etc.]. Nasalization is marked with a tilde. All data is phonetic and has not undergone detailed phonological or syntactic analysis.

No. =>	15	16	17	18	19	20	21	22	23	24	25
Gloss =>	die	dig	dog	drink	ear	earth, soil	eat	egg	eye	fall	far
<b>Ban Klang</b>	θi <sup>41</sup>	k <sup>h</sup> i <sup>34?</sup>	t <sup>h</sup> ui <sup>34</sup>	ʔo <sup>21</sup> t <sup>h</sup> i <sup>41</sup>	næ <sup>34</sup>	ɰaŋ <sup>21</sup> k <sup>h</sup> u <sup>34</sup> k <sup>h</sup> loŋ <sup>41</sup>	ʔə <sup>34</sup>	di <sup>34</sup>	me <sup>34?</sup> θæ <sup>34</sup> k <sup>h</sup> li <sup>41</sup>	loŋ <sup>21</sup> t <sup>h</sup> ə <sup>34?</sup>	jē <sup>21</sup>
<b>Ban Doi</b>	si <sup>51</sup>	k <sup>h</sup> əŋ <sup>34</sup>	t <sup>h</sup> ui <sup>45</sup>	ʔo <sup>21</sup> t <sup>h</sup> i <sup>51</sup>	na <sup>34</sup>	nəŋ <sup>51</sup> k <sup>h</sup> u <sup>34</sup>	ʔaŋ <sup>45</sup>	di <sup>34</sup>	me <sup>45?</sup> k <sup>h</sup> li <sup>51</sup>	laŋ <sup>21</sup> t <sup>h</sup> e <sup>45?</sup> p <sup>h</sup> a <sup>34</sup>	jai <sup>21</sup>
<b>Mae Lek</b>	s <sup>i</sup> <sup>45</sup>	k <sup>h</sup> ə <sup>34</sup>	t <sup>h</sup> ui <sup>34</sup>	ʔo <sup>34</sup> t <sup>h</sup> i <sup>45</sup>	ne <sup>21</sup>	ɰaŋ <sup>34</sup> k <sup>h</sup> u <sup>21</sup>	ʔaŋ <sup>34</sup>	d <sup>i</sup> <sup>34</sup>	me <sup>34?</sup> k <sup>h</sup> li <sup>45</sup>	laŋ <sup>34</sup> t <sup>h</sup> i <sup>34?</sup>	jai <sup>31</sup>
<b>Huai Thok</b>	s <sup>i</sup> <sup>45</sup>	k <sup>h</sup> əŋ <sup>34</sup>	t <sup>h</sup> ui <sup>34</sup>	ʔo <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	ne <sup>21</sup>	ɰə <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	ʔə <sup>45</sup>	d <sup>i</sup> <sup>34</sup>	me <sup>34</sup> k <sup>h</sup> li <sup>45</sup>	lə <sup>45</sup> t <sup>h</sup> e <sup>34?</sup>	jāi <sup>31</sup>
<b>Sue Mue</b>	θi <sup>45</sup>	k <sup>h</sup> ə <sup>34</sup>	t <sup>h</sup> ui <sup>45</sup>	ʔo <sup>45</sup> t <sup>h</sup> i <sup>45</sup>	ne <sup>21</sup>	ɰaŋ <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	ʔaŋ <sup>45</sup>	t <sup>h</sup> ədi <sup>34</sup>	me <sup>34</sup> k <sup>h</sup> li <sup>45</sup>	laŋ <sup>31</sup> t <sup>h</sup> i <sup>34?</sup>	jai <sup>31</sup>
<b>Sop Khong</b>	θi <sup>45</sup>	k <sup>h</sup> ə <sup>34</sup>	t <sup>h</sup> ui <sup>45</sup>	ʔo <sup>51</sup> t <sup>h</sup> i <sup>45</sup>	na <sup>31</sup>	ɰəŋ <sup>21</sup> k <sup>h</sup> u <sup>45</sup>	ʔəŋ <sup>45</sup>	d <sup>i</sup> <sup>45</sup>	mi <sup>32?</sup> k <sup>h</sup> li <sup>45</sup>	laŋ <sup>51</sup> t <sup>h</sup> i <sup>21?</sup>	jāi <sup>31</sup>
<b>Mae Pho</b>	θi <sup>45</sup>	k <sup>h</sup> əŋ <sup>45</sup>	t <sup>h</sup> ui <sup>34</sup>	ʔo <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	na <sup>21</sup>	ɰaŋ <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	ʔaŋ <sup>45</sup>	d <sup>i</sup> <sup>34</sup>	mi <sup>45?</sup> k <sup>h</sup> li <sup>45</sup>	laŋ <sup>51</sup> t <sup>h</sup> i <sup>45?</sup>	jai <sup>51</sup>
<b>Ban Salok</b>	θi <sup>45</sup>	k <sup>h</sup> əŋ <sup>34</sup>	t <sup>h</sup> ui <sup>34</sup>	ʔo <sup>31</sup> t <sup>h</sup> i <sup>45</sup>	na <sup>34</sup>	ɰaŋ <sup>31</sup> k <sup>h</sup> u <sup>34</sup>	ʔaŋ <sup>45</sup>	d <sup>i</sup> <sup>34</sup>	me <sup>34?</sup> k <sup>h</sup> li <sup>45</sup>	laŋ <sup>31</sup> t <sup>h</sup> e <sup>34?</sup>	jēiŋ <sup>31</sup>
<b>Omkoï</b>	θi <sup>45</sup>	k <sup>h</sup> əŋ <sup>33</sup>	t <sup>h</sup> ui <sup>33</sup>	ʔo <sup>41</sup> t <sup>h</sup> i <sup>45</sup>	ne <sup>34</sup>	ɰaŋ <sup>33</sup> k <sup>h</sup> u <sup>33</sup>	ʔaŋ <sup>33</sup>	d <sup>i</sup> <sup>33</sup>	me <sup>34?</sup> k <sup>h</sup> li <sup>45</sup>	ləŋ <sup>51</sup> t <sup>h</sup> e <sup>45</sup>	jai <sup>41</sup>
<b>Sangkhla</b>	θi <sup>51</sup>	k <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ui <sup>45</sup>	ʔo <sup>31</sup>	na <sup>45</sup> kuŋ <sup>51</sup>	ɰəŋ <sup>33</sup> k <sup>h</sup> u <sup>33</sup>	ʔə <sup>45</sup>	ʔə <sup>31</sup> d <sup>i</sup> <sup>45</sup>	mi <sup>45?</sup> θa <sup>45</sup> k <sup>h</sup> li <sup>51</sup>	lɔ <sup>31</sup> t <sup>h</sup> i <sup>45</sup>	jāi <sup>31</sup>

No. =>	26	27	28	29	30	31	32	33	34	35	36
Gloss =>	fat (human)	feather	finger nail	fire	fish	five (persons)	flower	fly	four (persons)	fruit	full
<b>Ban Klang</b>	so <sup>34</sup>	t <sup>h</sup> ə <sup>34</sup>	t <sup>h</sup> ə <sup>34</sup> me <sup>34</sup>	me <sup>23</sup>	jæ <sup>34</sup> p <sup>h</sup> o <sup>34</sup>	je <sup>21</sup> ɰe <sup>41</sup>	p <sup>h</sup> ə <sup>41</sup>	ju <sup>21</sup>	lui <sup>23</sup> ɰe <sup>41</sup>	θe <sup>34</sup>	ɬe <sup>21?</sup> ʔə <sup>34</sup>
<b>Ban Doi</b>	θu <sup>34</sup>	t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>34</sup> mi <sup>34</sup>	mi <sup>34</sup>	ja <sup>34</sup> p <sup>h</sup> u <sup>45</sup>	ja <sup>21</sup> ɰa <sup>21</sup>	p <sup>h</sup> ə <sup>51</sup>	ju <sup>34</sup>	li <sup>21</sup> ɰa <sup>21</sup>	t <sup>h</sup> a <sup>21</sup> sa <sup>34</sup>	kə <sup>34?</sup>
<b>Mae Lek</b>	su <sup>34</sup>	t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>34</sup> mi <sup>34</sup>	mi <sup>45</sup>	je <sup>34</sup>	je <sup>21</sup> ɰe <sup>21</sup>	p <sup>h</sup> o <sup>34</sup>	ju <sup>21</sup>	li <sup>21</sup> ɰe <sup>21</sup>	t <sup>h</sup> əse <sup>34</sup>	ka <sup>i</sup> <sup>21?</sup>
<b>Huai Thok</b>	su <sup>34</sup>	t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>34</sup> mē <sup>34</sup>	mi <sup>34</sup>	je <sup>34</sup> p <sup>h</sup> u <sup>34</sup>	je <sup>21</sup> ɰe <sup>21</sup>	p <sup>h</sup> o <sup>45</sup>	ju <sup>21</sup>	li <sup>21</sup> ɰe <sup>21</sup>	təsa <sup>45</sup>	ble <sup>31</sup> ʔə <sup>45</sup>
<b>Sue Mue</b>	θu <sup>34</sup>	t <sup>h</sup> u <sup>34</sup> t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>34</sup> mi <sup>34</sup>	mi <sup>34</sup>	je <sup>34</sup> p <sup>h</sup> u <sup>45</sup>	je <sup>34</sup> ɰe <sup>21</sup>	təp <sup>h</sup> o <sup>45</sup>	ju <sup>31</sup>	li <sup>21</sup> ɰe <sup>21</sup>	təθe <sup>34</sup>	ble <sup>34?</sup> ʔaŋ <sup>31</sup>
<b>Sop Khong</b>	θu <sup>45</sup>	t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>34</sup> mi <sup>45</sup>	mə <sup>21</sup> ʔə <sup>31</sup>	ja <sup>45</sup> p <sup>h</sup> u <sup>45</sup>	je <sup>21</sup> ɰa <sup>31</sup>	p <sup>h</sup> o <sup>45</sup>	ju <sup>21</sup>	lui <sup>21</sup> ɰa <sup>31</sup>	t <sup>h</sup> əθa <sup>45</sup>	ble <sup>21</sup>
<b>Mae Pho</b>	θu <sup>34</sup>	t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>45</sup> mi <sup>45?</sup>	mi <sup>34</sup> ʔa <sup>21</sup>	ja <sup>34</sup> p <sup>h</sup> u <sup>34</sup>	je <sup>21</sup> ɰa <sup>21</sup>	p <sup>h</sup> o <sup>45</sup>	ju <sup>21</sup>	li <sup>21</sup> ɰa <sup>21</sup>	θa <sup>45</sup>	ble <sup>21</sup>
<b>Ban Salok</b>	θu <sup>45</sup>	t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>45</sup> mi <sup>45</sup>	mi <sup>34</sup>	ja <sup>34</sup>	je <sup>34</sup> ɰa <sup>31</sup>	p <sup>h</sup> ə <sup>34?</sup>	ju <sup>31</sup>	li <sup>21</sup> ɰa <sup>31</sup>	θa <sup>34</sup>	ka <sup>i</sup> <sup>34?</sup>
<b>Omkoï</b>	θu <sup>51</sup>	t <sup>h</sup> u <sup>33</sup> t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>45</sup> mi <sup>45</sup>	mi <sup>33</sup>	je <sup>33</sup> p <sup>h</sup> u <sup>33</sup>	je <sup>21</sup> ɰe <sup>51</sup>	p <sup>h</sup> o <sup>45</sup>	ju <sup>41</sup>	li <sup>21</sup> ɰe <sup>51</sup>	θē <sup>45</sup> θe <sup>45</sup>	ɬi <sup>45?</sup> ʔəŋ <sup>33</sup>
<b>Sangkhla</b>	θu <sup>45</sup>	t <sup>h</sup> u <sup>45</sup> t <sup>h</sup> ə <sup>45</sup>	t <sup>h</sup> ə <sup>33</sup> mi <sup>33</sup>	mi <sup>45</sup>	ja <sup>33</sup>	je <sup>45</sup> ɰa <sup>21</sup>	p <sup>h</sup> o <sup>51</sup>	ju <sup>31</sup>	li <sup>21</sup> ɰa <sup>21</sup>	θē <sup>45</sup> θa <sup>45</sup>	ɬe <sup>31</sup>

No. =>	37	38	39	40	41	42	43	44	45	46	47	48	49
Gloss =>	give	grass	hair (head)	head	heart	heavy	horn	i (1s)	intestines	know	laugh	leaf	left side
<b>Ban Klang</b>	ʔa <sup>21</sup> kləŋ <sup>41</sup>	nɔ <sup>34</sup>	k <sup>h</sup> o <sup>34</sup> θu <sup>41</sup>	k <sup>h</sup> o <sup>34</sup>	θa <sup>243</sup>	xə <sup>41</sup>	nũ <sup>41</sup>	jæ <sup>21</sup>	fi <sup>34</sup> fui <sup>34</sup>	sə <sup>21</sup> ɣa <sup>34</sup>	ni <sup>23</sup>	le <sup>34</sup>	ʔa <sup>21</sup> tɕe <sup>23</sup>
<b>Ban Doi</b>	k <sup>h</sup> ɛ <sup>21</sup> lan <sup>21</sup>	nan <sup>34</sup>	k <sup>h</sup> u <sup>45</sup> θu <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> xi <sup>45?</sup>	sa <sup>32?</sup>	xau <sup>51</sup>	noŋ <sup>34</sup>	ja <sup>21</sup>	xwai <sup>34?</sup>	si <sup>34</sup> ɣa <sup>51</sup>	ni <sup>31</sup>	la <sup>34</sup>	ʔətɕi <sup>45?</sup>
<b>Mae Lek</b>	ke <sup>34</sup> lan <sup>41</sup>	nan <sup>34</sup>	k <sup>h</sup> u <sup>34</sup> su <sup>45</sup>	k <sup>h</sup> u <sup>34</sup> xi <sup>34</sup>	sa <sup>32?</sup>	xau <sup>45</sup>	nɔ <sup>21</sup>	je <sup>21</sup>	xwai <sup>34?</sup>	si <sup>34</sup> ɣe <sup>45</sup>	nɪ <sup>34</sup>	le <sup>34</sup>	ʔətɕi <sup>34</sup>
<b>Huai Thok</b>	ʔəɔ <sup>45</sup>	nɔ̃ <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> su <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> xui <sup>45</sup>	sa <sup>32?</sup>	xə̃ <sup>45</sup>	nɔ̃ <sup>21</sup>	je <sup>21</sup>	xwai <sup>34?</sup>	si <sup>34</sup> ɣe <sup>45</sup>	nɛ <sup>i31</sup>	læ <sup>34</sup>	ʔətɕi <sup>34</sup>
<b>Sue Mue</b>	ʔan <sup>31</sup> lan <sup>34</sup>	nan <sup>34</sup>	k <sup>h</sup> u <sup>34</sup> θu <sup>45</sup>	k <sup>h</sup> u <sup>34</sup> xi <sup>34</sup>	θa <sup>32?</sup>	xɔ <sup>45</sup>	nɔ̃ <sup>31</sup>	je <sup>31</sup>	xwai <sup>34?</sup>	θi <sup>34</sup> ɣe <sup>45</sup>	nɪ <sup>31</sup>	θɛ <sup>i34</sup> læ <sup>34</sup>	tɕi <sup>34</sup>
<b>Sop Khong</b>	k <sup>h</sup> i <sup>31</sup> lɔŋ <sup>45</sup>	nɔŋ <sup>45</sup>	k <sup>h</sup> u <sup>34</sup> θu <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> xi <sup>45</sup>	θa <sup>32?</sup>	xə <sup>45</sup>	noŋ <sup>31</sup>	jə <sup>21</sup>	xwai <sup>32?</sup>	θi <sup>34</sup> ɣa <sup>45</sup>	nɪ <sup>21</sup>	θɛ <sup>i45</sup> la <sup>45</sup>	tɕi <sup>45</sup>
<b>Mae Pho</b>	k <sup>h</sup> i <sup>21</sup> lɔŋ <sup>45</sup>	nan <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> θu <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> xi <sup>45</sup>	θa <sup>21?</sup>	xau <sup>34</sup>	nɔ̃ <sup>51</sup>	jə <sup>21</sup>	xɔi <sup>45?</sup>	θi <sup>45</sup> ja <sup>45</sup>	nɪ <sup>21</sup> xwe <sup>45</sup>	la <sup>34</sup>	tɕi <sup>34</sup>
<b>Ban Salok</b>	ki <sup>21</sup> la <sup>34?</sup>	nan <sup>34</sup>	k <sup>h</sup> u <sup>34</sup> θuŋ <sup>34</sup>	sa <sup>34?</sup> xi <sup>45</sup>	sa <sup>34?</sup>	xau <sup>45</sup>	noŋ <sup>31</sup>	jæ <sup>31</sup>	xwai <sup>34?</sup>	θi <sup>34</sup> ɣa <sup>45</sup>	nɪ <sup>31</sup>	la <sup>34</sup>	tɕi <sup>45</sup>
<b>Omkoï</b>	ke <sup>31</sup> ma <sup>45</sup>	nan <sup>33</sup>	k <sup>h</sup> u <sup>33</sup> θuŋ <sup>45</sup>	k <sup>h</sup> u <sup>33</sup> xi <sup>33</sup>	θa <sup>32?</sup>	xə <sup>45</sup>	noŋ <sup>41</sup>	je <sup>41</sup>	xɔi <sup>34?</sup>	θi <sup>33</sup> ɣe <sup>45</sup>	nɪ <sup>33</sup>	θɛŋ <sup>33</sup> le <sup>33</sup>	tɕi <sup>33</sup>
<b>Sangkhla</b>	p <sup>h</sup> lɔ̃ <sup>51</sup>	nɔ̃ <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> tɕ <sup>h</sup> uŋ <sup>45</sup>	k <sup>h</sup> u <sup>45</sup> xui <sup>45</sup>	θa <sup>31?</sup>	xə̃ <sup>51</sup>	ʔə <sup>31</sup> nɣ <sup>31</sup>	jə <sup>21</sup>	xwai <sup>31?</sup>	θi <sup>31</sup> ja <sup>51</sup>	nɪ <sup>33</sup>	θɛ <sup>i45</sup> la <sup>45</sup>	tɕi <sup>33</sup>

No. =>	50	51	52	53	54	55	56	57	58	59
Gloss =>	liver	long	louse (head)	many (people)	milk	moon	mountain	mouth	name	near
<b>Ban Klang</b>	θəŋ <sup>23</sup>	t <sup>h</sup> ɔ̃ <sup>41</sup>	θəŋ <sup>34</sup>	təɔ̃li <sup>34</sup> ɣe <sup>21</sup>	nũ <sup>21</sup> t <sup>h</sup> i <sup>41</sup>	læ <sup>21</sup>	t <sup>h</sup> ə <sup>21</sup> lu <sup>34</sup>	no <sup>ʔ43</sup>	me <sup>21</sup>	ɔ̃u <sup>21?</sup>
<b>Ban Doi</b>	səŋ <sup>34</sup>	p <sup>h</sup> a <sup>21?</sup> t <sup>h</sup> ɔ̃ <sup>51</sup>	səŋ <sup>34</sup>	ʔa <sup>21</sup> ɣa <sup>21</sup>	nũ <sup>34</sup> t <sup>h</sup> i <sup>51</sup>	la <sup>21</sup>	t <sup>h</sup> əlu <sup>34</sup>	nu <sup>21?</sup>	mɛ <sup>i21</sup>	bau <sup>21</sup>
<b>Mae Lek</b>	sə̃ <sup>34</sup>	t <sup>h</sup> o <sup>45</sup>	sə̃ <sup>34</sup>	ʔe <sup>34</sup> ɣe <sup>21</sup>	nũ <sup>21</sup> t <sup>h</sup> i <sup>34</sup>	læ <sup>21</sup>	t <sup>h</sup> əlu <sup>21</sup>	nu <sup>32?</sup>	mɛ <sup>i21</sup>	bai <sup>21?</sup>
<b>Huai Thok</b>	səŋ <sup>45</sup>	t <sup>h</sup> o <sup>45</sup>	səŋ <sup>34</sup>	ʔe <sup>21</sup> ɣe <sup>21</sup>	nũ <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	p <sup>h</sup> ɛ <sup>34</sup> le <sup>34</sup> mə <sup>34</sup>	t <sup>h</sup> əlu <sup>31</sup>	nɔ̃ <sup>31</sup> p <sup>h</sup> ai <sup>21?</sup>	mɛ <sup>i21</sup>	bau <sup>21?</sup>
<b>Sue Mue</b>	θə̃ <sup>34</sup>	t <sup>h</sup> o <sup>45</sup>	θə̃ <sup>34</sup>	təɔ̃lai <sup>34?</sup> ɣe <sup>21</sup>	nũ <sup>32</sup> t <sup>h</sup> i <sup>45</sup>	le <sup>21</sup>	t <sup>h</sup> əlu <sup>21</sup>	nu <sup>34?</sup>	mɛ <sup>i31</sup>	bau <sup>32?</sup>
<b>Sop Khong</b>	θə̃ <sup>45</sup>	t <sup>h</sup> o <sup>45</sup>	θə̃ <sup>45</sup>	ʔa <sup>34</sup> ɣa <sup>31</sup>	t <sup>h</sup> ənu <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	la <sup>31</sup>	t <sup>h</sup> əlu <sup>31</sup>	nu <sup>32?</sup>	mɛ <sup>i21</sup>	bai <sup>21?</sup>
<b>Mae Pho</b>	θəŋ <sup>45</sup>	t <sup>h</sup> o <sup>45</sup>	θəŋ <sup>45</sup>	təɔ̃lau <sup>21?</sup> ɣa <sup>21</sup> , ʔa <sup>34</sup> ɣa <sup>21</sup>	nɔ̃ <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	la <sup>21</sup>	kətɕ <sup>h</sup> an <sup>21</sup>	nu <sup>21?</sup>	mɛ <sup>i21</sup>	bau <sup>21?</sup>
<b>Ban Salok</b>	səŋ <sup>34</sup>	t <sup>h</sup> ɔ̃ <sup>45</sup>	θəŋ <sup>34</sup>	ʔa <sup>34</sup> ɣa <sup>31</sup>	nuŋ <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	la <sup>21</sup>	t <sup>h</sup> əluŋ <sup>21</sup>	nu <sup>34?</sup>	mɛ <sup>iŋ</sup> <sup>31</sup>	bai <sup>32?</sup>
<b>Omkoï</b>	θəŋ <sup>33</sup>	t <sup>h</sup> o <sup>45</sup>	θəŋ <sup>33</sup>	ʔe <sup>33</sup> ɣe <sup>51</sup>	ŋu <sup>41</sup> nuŋ <sup>34</sup> t <sup>h</sup> i <sup>45</sup>	le <sup>41</sup>	k <sup>h</sup> u <sup>33</sup> lɔŋ <sup>45</sup>	nu <sup>32?</sup>	mɛ <sup>i51</sup>	bau <sup>32?</sup>
<b>Sangkhla</b>	θə̃ <sup>45</sup>	t <sup>h</sup> o <sup>51</sup>	θə̃ <sup>33</sup>	ʔa <sup>45</sup> ɣa <sup>21</sup>	nuŋ <sup>33</sup> t <sup>h</sup> i <sup>51</sup>	la <sup>31</sup>	k <sup>h</sup> u <sup>45</sup> lɔŋ <sup>31</sup>	no <sup>31?</sup> p <sup>h</sup> ai <sup>31?</sup>	mɛ <sup>i31</sup>	ɔ̃lu <sup>21?</sup>

No. =>	60	61	62	63	64	65	66	67	68
Gloss =>	new	night	nose	one (person)	path	person	rain	red	right side
<b>Ban Klang</b>	sə <sup>41</sup>	mij <sup>33</sup> ne <sup>21</sup> k <sup>h</sup> ɔ <sup>34</sup>	na <sup>21</sup> dij <sup>41</sup>	ləuɛ <sup>21</sup>	kle <sup>41</sup>	kəp <sup>h</sup> loŋ <sup>21</sup>	t <sup>h</sup> ə <sup>21</sup> uə <sup>21</sup> tɛ <sup>h</sup> ə <sup>34</sup>	uɔ <sup>21</sup>	ʔa <sup>21</sup> xo <sup>21?</sup>
<b>Ban Doi</b>	səŋ <sup>51</sup>	ləmənə <sup>21</sup>	na <sup>45</sup> dɛŋ <sup>21</sup>	ləuɛ <sup>21</sup>	klæ <sup>21</sup>	p <sup>h</sup> loŋ <sup>21</sup>	mai <sup>21?</sup> k <sup>h</sup> u <sup>34</sup> tɛ <sup>h</sup> au <sup>21</sup>	uɔ <sup>21</sup>	ʔəxo <sup>21?</sup>
<b>Mae Lek</b>	səŋ <sup>45</sup>	mənɛ <sup>21</sup> k <sup>h</sup> ɛ <sup>34</sup>	ne <sup>34</sup> dɛi <sup>21</sup>	ləuɛ <sup>21</sup>	kle <sup>21</sup>	kəp <sup>h</sup> lɔ <sup>21</sup>	t <sup>h</sup> ətɛ <sup>h</sup> a <sup>21</sup>	wo <sup>21</sup>	ʔəxu <sup>32?</sup>
<b>Huai Thok</b>	sə <sup>45</sup>	mənə <sup>21</sup> k <sup>h</sup> o <sup>34</sup>	nu <sup>34</sup> nɛi <sup>21</sup>	ləuɛ <sup>21</sup> , nəuɛ <sup>21</sup>	kle <sup>21</sup>	kəp <sup>h</sup> loŋ <sup>21</sup>	mɔ <sup>34</sup> k <sup>h</sup> u <sup>34</sup> tɛ <sup>h</sup> ə <sup>21</sup>	ʔəvo <sup>21</sup>	ʔəxo <sup>21?</sup>
<b>Sue Mue</b>	θaŋ <sup>45</sup>	mij <sup>34</sup> ne <sup>21</sup> k <sup>h</sup> o <sup>34</sup>	ɲɛ <sup>34</sup> dɛi <sup>21</sup>	ləuɛ <sup>21</sup>	kle <sup>31</sup>	p <sup>h</sup> loŋ <sup>31</sup>	mu <sup>34</sup> k <sup>h</sup> u <sup>34</sup> uɛ <sup>45</sup> tɛ <sup>h</sup> a <sup>51</sup> , t <sup>h</sup> ətɛ <sup>h</sup> a <sup>51</sup>	wo <sup>31</sup>	xo <sup>34?</sup>
<b>Sop Khong</b>	θɔŋ <sup>45</sup>	mənə <sup>51</sup> k <sup>h</sup> a <sup>34</sup>	na <sup>45</sup> dɛi <sup>51</sup>	li <sup>21?</sup> uɛ <sup>31</sup>	kle <sup>31</sup>	p <sup>h</sup> lɔ <sup>31</sup>	mu <sup>31</sup> k <sup>h</sup> u <sup>21</sup> uɛ <sup>31</sup> tɛ <sup>h</sup> ə <sup>31</sup>	uɔ <sup>21</sup>	xu <sup>32?</sup>
<b>Mae Pho</b>	θəŋ <sup>45</sup>	mij <sup>34</sup> na <sup>21</sup>	na <sup>34</sup> dɛŋ <sup>21</sup>	ləuɛ <sup>21</sup>	kle <sup>21</sup>	p <sup>h</sup> loŋ <sup>21</sup>	t <sup>h</sup> ətɛ <sup>h</sup> au <sup>51</sup> , mai <sup>21?</sup> k <sup>h</sup> u <sup>45</sup> tɛ <sup>h</sup> au <sup>51</sup>	uɔ <sup>21</sup>	tɛ <sup>h</sup> we <sup>45</sup>
<b>Ban Salok</b>	səŋ <sup>45</sup>	luŋ <sup>21</sup> ma <sup>21</sup> na <sup>21</sup>	na <sup>34</sup> dɛi <sup>ŋ</sup> <sup>31</sup>	ləuɛ <sup>31</sup>	kle <sup>31</sup>	p <sup>h</sup> loŋ <sup>31</sup>	t <sup>h</sup> əuɛ <sup>34</sup> tɛ <sup>h</sup> au <sup>21</sup>	uɔ <sup>31</sup>	xo <sup>34?</sup>
<b>Omkoï</b>	θaŋ <sup>45</sup>	mə <sup>31</sup> ne <sup>31</sup> k <sup>h</sup> æ <sup>45</sup>	ne <sup>45</sup> dɛŋ <sup>41</sup>	li <sup>31</sup> uɛ <sup>51</sup>	kə <sup>31</sup> li <sup>31</sup>	p <sup>h</sup> loŋ <sup>31</sup>	t <sup>h</sup> ə <sup>31</sup> tɛ <sup>h</sup> a <sup>51</sup>	uɔ <sup>41</sup>	xu <sup>32?</sup>
<b>Sangkhla</b>	sə <sup>51</sup>	kɛ <sup>33</sup> mij <sup>33</sup> na <sup>33</sup>	na <sup>51</sup> p <sup>h</sup> u <sup>51</sup>	li <sup>31</sup> uɛ <sup>21</sup>	p <sup>h</sup> i <sup>31</sup> θa <sup>31?</sup>	p <sup>h</sup> lɔ <sup>31</sup>	tɛ <sup>h</sup> i <sup>33</sup> tɛ <sup>h</sup> ə <sup>31</sup>	vo <sup>31</sup>	t <sup>h</sup> ue <sup>45</sup>

No. =>	69	70	71	72	73	74	75	76	77	78	79	80
Gloss =>	river	root	round	rub, scrub	salt	scratch	see	sew	sharp	sit	skin	sky
<b>Ban Klang</b>	t <sup>h</sup> i <sup>34</sup> klɔŋ <sup>41</sup>	uɛi <sup>34</sup>	p <sup>h</sup> loŋ <sup>23</sup> luŋ <sup>23</sup> kuŋ <sup>33</sup>	t <sup>h</sup> u <sup>21?</sup>	t <sup>h</sup> i <sup>34</sup> læ <sup>34</sup>	wa <sup>34?</sup>	dæ <sup>23</sup>	tɛ <sup>h</sup> a <sup>21?</sup>	ʔɛi <sup>34</sup>	tɛ <sup>h</sup> e <sup>23</sup> nɔ <sup>41</sup>	p <sup>h</sup> i <sup>21?</sup>	mɭu <sup>21?</sup> k <sup>h</sup> u <sup>34?</sup>
<b>Ban Doi</b>	t <sup>h</sup> i <sup>51</sup> klɔŋ <sup>21</sup>	uɛi <sup>34</sup>	po <sup>45</sup> loŋ <sup>45</sup>	t <sup>h</sup> au <sup>21</sup>	t <sup>h</sup> i <sup>51</sup> la <sup>34</sup>	wa <sup>34?</sup>	da <sup>34</sup>	tɛ <sup>h</sup> a <sup>21?</sup>	ʔai <sup>33</sup>	tɛ <sup>h</sup> i <sup>45</sup> naŋ <sup>21</sup>	p <sup>h</sup> ai <sup>21?</sup>	mai <sup>21?</sup> k <sup>h</sup> u <sup>34</sup>
<b>Mae Lek</b>	t <sup>h</sup> i <sup>45</sup> klɔŋ <sup>21</sup>	uɛi <sup>21</sup>	pəlo <sup>34</sup>	t <sup>h</sup> ai <sup>32?</sup>	t <sup>h</sup> i <sup>51</sup> lɛ <sup>34</sup>	wa <sup>34?</sup>	dæ <sup>21</sup>	tɛ <sup>h</sup> a <sup>21?</sup>	ʔai <sup>34</sup>	tɛ <sup>h</sup> i <sup>45</sup> nə <sup>32</sup>	p <sup>h</sup> ai <sup>21?</sup>	mai <sup>34?</sup> k <sup>h</sup> u <sup>21</sup>
<b>Huai Thok</b>	t <sup>h</sup> i <sup>45</sup> klɔŋ <sup>21</sup>	uɛi <sup>21</sup>	pəlo <sup>34</sup>	t <sup>h</sup> ai <sup>32?</sup>	t <sup>h</sup> i <sup>45</sup> læ <sup>34</sup>	wa <sup>34?</sup>	dɛ <sup>34</sup>	tɛ <sup>h</sup> a <sup>31</sup>	ʔai <sup>34</sup>	tɛ <sup>h</sup> ənə <sup>21</sup>	p <sup>h</sup> ai <sup>32?</sup> jɛ <sup>34</sup>	mɔ <sup>34</sup> k <sup>h</sup> u <sup>34</sup>
<b>Sue Mue</b>	t <sup>h</sup> i <sup>45</sup> klɔŋ <sup>21</sup>	θɛi <sup>34</sup> uɛi <sup>21</sup>	pəloŋ <sup>21</sup> koŋ <sup>45</sup>	t <sup>h</sup> au <sup>32?</sup>	t <sup>h</sup> i <sup>45</sup> lɛ <sup>34</sup>	k <sup>h</sup> wa <sup>34?</sup>	dɛ <sup>34</sup>	tɛ <sup>h</sup> a <sup>34?</sup>	ʔai <sup>45</sup>	tɛ <sup>h</sup> i <sup>34</sup> nə <sup>31</sup>	p <sup>h</sup> ai <sup>32?</sup>	mu <sup>34?</sup> k <sup>h</sup> u <sup>34</sup>
<b>Sop Khong</b>	t <sup>h</sup> i <sup>45</sup> klɔŋ <sup>51</sup>	θɛi <sup>45</sup> uɛi <sup>32?</sup>	po <sup>34</sup> lɔ <sup>34</sup>	t <sup>h</sup> au <sup>32?</sup>	t <sup>h</sup> i <sup>45</sup> la <sup>34</sup>	k <sup>h</sup> wa <sup>32?</sup>	da <sup>34</sup>	tɛ <sup>h</sup> a <sup>32?</sup>	ʔai <sup>34</sup>	tɛ <sup>h</sup> i <sup>45</sup> nəŋ <sup>51</sup>	p <sup>h</sup> ai <sup>32?</sup>	mu <sup>31</sup> k <sup>h</sup> u <sup>34</sup>
<b>Mae Pho</b>	t <sup>h</sup> i <sup>45</sup> klɔŋ <sup>21</sup>	uɛi <sup>21</sup>	moŋ <sup>34</sup> loŋ <sup>34</sup>	t <sup>h</sup> au <sup>21?</sup>	t <sup>h</sup> i <sup>45</sup> la <sup>21</sup>	k <sup>h</sup> wa <sup>45?</sup>	da <sup>34</sup>	tɛ <sup>h</sup> a <sup>21?</sup>	ʔai <sup>21</sup>	tɛ <sup>h</sup> i <sup>45</sup> nəŋ <sup>51</sup>	p <sup>h</sup> ai <sup>21?</sup>	mai <sup>21?</sup> k <sup>h</sup> u <sup>45</sup>
<b>Ban Salok</b>	t <sup>h</sup> i <sup>45</sup> klɔŋ <sup>31</sup>	uɛi <sup>21</sup>	pu <sup>34</sup> lu <sup>45</sup>	t <sup>h</sup> au <sup>34?</sup>	t <sup>h</sup> i <sup>45</sup> la <sup>34</sup>	wa <sup>34?</sup>	da <sup>34</sup>	tɛ <sup>h</sup> a <sup>32?</sup>	ʔɛi <sup>ŋ</sup> <sup>34</sup>	tɛ <sup>h</sup> ə <sup>34</sup> nəŋ <sup>31</sup>	p <sup>h</sup> ai <sup>34?</sup>	mɔ <sup>32?</sup> k <sup>h</sup> u <sup>32?</sup>
<b>Omkoï</b>	t <sup>h</sup> i <sup>32</sup> klɔŋ <sup>41</sup>	uɛi <sup>34</sup>	poŋ <sup>33</sup> loŋ <sup>33</sup>	t <sup>h</sup> ɭu <sup>31?</sup>	t <sup>h</sup> i <sup>45</sup> læ <sup>33</sup>	k <sup>h</sup> wa <sup>ŋ</sup> <sup>33</sup>	dɛ <sup>33</sup>	tɛ <sup>h</sup> a <sup>31?</sup>	ʔai <sup>33</sup>	tɛ <sup>h</sup> i <sup>45</sup> nəŋ <sup>31</sup>	p <sup>h</sup> ai <sup>32?</sup>	mɔ <sup>51</sup> k <sup>h</sup> u <sup>31</sup>
<b>Sangkhla</b>	t <sup>h</sup> i <sup>51</sup> k <sup>h</sup> lu <sup>45?</sup>	θɛi <sup>45</sup> wi <sup>33</sup>	pɔ <sup>33</sup> lɔ <sup>33</sup>	t <sup>h</sup> ɭu <sup>31?</sup>	t <sup>h</sup> i <sup>45</sup> la <sup>45</sup>	k <sup>h</sup> wa <sup>ŋ</sup> <sup>33</sup>	dæ <sup>45</sup>	tɛ <sup>h</sup> a <sup>31?</sup>	ʔai <sup>45</sup>	tɛ <sup>h</sup> i <sup>45</sup> nə <sup>31</sup>	p <sup>h</sup> ai <sup>31?</sup>	mɭu <sup>31?</sup> k <sup>h</sup> u <sup>45</sup>

No. =>	81	82	83	84	85	86	87	88	89	90	91
Gloss =>	sleep	smell (general)	smoke	snake	spit	stand	star	stone	sun	tail	thick
<b>Ban Klang</b>	mi <sup>41</sup>	nə <sup>23</sup> pəli <sup>21</sup>	me <sup>23</sup> k <sup>h</sup> i <sup>23</sup>	ɣu <sup>34</sup>	t <sup>h</sup> o <sup>21</sup> p <sup>h</sup> le <sup>41</sup>	tɕ <sup>h</sup> ə <sup>34</sup> t <sup>h</sup> i <sup>23</sup>	tɕ <sup>h</sup> æ <sup>34</sup>	lū <sup>34</sup>	mɪŋ <sup>33</sup> me <sup>45?</sup>	me <sup>34</sup>	təŋ <sup>23</sup>
<b>Ban Doi</b>	mi <sup>51</sup>	nau <sup>51</sup>	k <sup>h</sup> u <sup>45</sup>	ɣu <sup>34</sup>	t <sup>h</sup> u <sup>34</sup> p <sup>h</sup> li <sup>24</sup>	tɕ <sup>h</sup> i <sup>45</sup> t <sup>h</sup> iŋ <sup>34</sup>	ɕa <sup>45</sup>	loŋ <sup>34</sup>	mɪŋ <sup>34</sup> me <sup>34?</sup>	mi <sup>21</sup> kəŋ <sup>51</sup>	taŋ <sup>45</sup>
<b>Mae Lek</b>	mi <sup>34</sup>	ne <sup>51</sup>	k <sup>h</sup> u <sup>34</sup>	ɣũ <sup>21</sup>	t <sup>h</sup> u <sup>34</sup> p <sup>h</sup> li <sup>21</sup>	tɕ <sup>h</sup> i <sup>45</sup> t <sup>h</sup> ɣ <sup>34</sup>	ɕe <sup>34</sup>	lo <sup>21</sup>	mɪŋ <sup>21</sup> me <sup>34?</sup>	mi <sup>34</sup>	taŋ <sup>34</sup>
<b>Huai Thok</b>	mi <sup>45</sup>	nə <sup>51</sup>	li <sup>21</sup> ʔək <sup>h</sup> u <sup>34</sup>	ɣũ <sup>31</sup>	t <sup>h</sup> u <sup>21</sup> p <sup>h</sup> li <sup>31</sup>	tɕ <sup>h</sup> i <sup>34</sup> t <sup>h</sup> iŋ <sup>34</sup>	ɕə <sup>34</sup>	lō <sup>21</sup>	mɪŋ <sup>31</sup>	mɛ <sup>i45</sup> kəŋ <sup>21</sup>	tə <sup>34</sup>
<b>Sue Mue</b>	mi <sup>34</sup> n <sup>i</sup> <sup>31</sup>	na <sup>34</sup>	mi <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	ɣu <sup>31</sup>	t <sup>h</sup> u <sup>34</sup> p <sup>h</sup> li <sup>31</sup>	tɕ <sup>h</sup> i <sup>34</sup> t <sup>h</sup> ɔ̃ <sup>34</sup>	ɕe <sup>34</sup>	lō <sup>21</sup>	mɪŋ <sup>31</sup>	mi <sup>34</sup> kəŋ <sup>21</sup>	taŋ <sup>34</sup>
<b>Sop Khong</b>	mi <sup>45</sup>	nə <sup>45</sup>	mi <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	ɣu <sup>31</sup>	t <sup>h</sup> u <sup>21</sup> p <sup>h</sup> li <sup>31</sup>	tɕ <sup>h</sup> i <sup>45</sup> t <sup>h</sup> ə <sup>34</sup>	tɕ <sup>h</sup> a <sup>21</sup>	lɣ <sup>31</sup>	mɪ <sup>31</sup>	mi <sup>21</sup>	təŋ <sup>34</sup>
<b>Mae Pho</b>	mi <sup>45</sup>	nau <sup>45</sup>	k <sup>h</sup> i <sup>45</sup>	ɣo <sup>34</sup>	t <sup>h</sup> u <sup>21</sup> p <sup>h</sup> i <sup>21</sup>	tɕ <sup>h</sup> i <sup>45</sup> t <sup>h</sup> aŋ <sup>34</sup>	tɕ <sup>h</sup> a <sup>21</sup>	loŋ <sup>21</sup>	mɪŋ <sup>33</sup>	me <sup>34</sup>	taŋ <sup>34</sup>
<b>Ban Salok</b>	mi <sup>45</sup>	nau <sup>45</sup>	mi <sup>34</sup> k <sup>h</sup> uŋ <sup>34</sup>	ɣu <sup>31</sup>	t <sup>h</sup> u <sup>34</sup> p <sup>h</sup> li <sup>31</sup>	tɕ <sup>h</sup> i <sup>45</sup> t <sup>h</sup> ɔ̃ <sup>34</sup>	tɕ <sup>h</sup> a <sup>21</sup>	lo <sup>31</sup>	mɪ <sup>33</sup> me <sup>45?</sup>	mi <sup>34</sup> kəŋ <sup>31</sup>	taŋ <sup>34</sup>
<b>Omkoï</b>	mi <sup>45</sup>	na <sup>45</sup> bə <sup>31</sup>	mi <sup>33</sup> k <sup>h</sup> uŋ <sup>33</sup>	ɣuŋ <sup>34</sup>	t <sup>h</sup> u <sup>31</sup> p <sup>h</sup> li <sup>51</sup>	tɕ <sup>h</sup> i <sup>45</sup> t <sup>h</sup> əŋ <sup>33</sup>	ɕe <sup>33</sup>	loŋ <sup>33</sup>	mɪŋ <sup>31</sup>	mi <sup>34</sup>	taŋ <sup>33</sup>
<b>Sangkhla</b>	mi <sup>51</sup>	nə <sup>51</sup>	mi <sup>45</sup> k <sup>h</sup> u <sup>45</sup>	ɣu <sup>33</sup>	t <sup>h</sup> u <sup>45?</sup> p <sup>h</sup> lai <sup>31?</sup>	tɕ <sup>h</sup> i <sup>45?</sup> t <sup>h</sup> ɣ <sup>45</sup>	ɕa <sup>33</sup>	lɣ <sup>33</sup>	mɪŋ <sup>31</sup> mi <sup>45?</sup>	ʔə <sup>31</sup> mi <sup>45</sup>	tɔ̃ <sup>45</sup>

No. =>	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Gloss =>	thin	three (persons)	tongue	tooth	tree	two (persons)	vomit	warm	wash	water	white	wind	wing	year
<b>Ban Klang</b>	kəbli <sup>21?</sup>	sa <sup>34</sup> ɣe <sup>21</sup>	p <sup>h</sup> le <sup>41</sup>	me <sup>21</sup>	θe <sup>i34</sup>	k <sup>h</sup> i <sup>23</sup> ɣe <sup>21</sup>	pjo <sup>21?</sup>	lə <sup>41</sup>	ʔa <sup>23</sup> sə <sup>34</sup> ɣa <sup>21?</sup>	t <sup>h</sup> i <sup>34</sup>	ʔwe <sup>21</sup>	kəli <sup>21</sup>	dɪ <sup>21?</sup>	ne <sup>34</sup>
<b>Ban Doi</b>	blai <sup>21?</sup>	sau <sup>51</sup> ɣa <sup>21</sup>	p <sup>h</sup> li <sup>21</sup>	θwa <sup>31</sup>	θe <sup>i45</sup> mɪ <sup>21</sup> t <sup>h</sup> ɔ̃ <sup>34</sup>	k <sup>h</sup> i <sup>51</sup> ɣa <sup>21</sup>	pju <sup>21?</sup>	lau <sup>21</sup>	ʔaŋ <sup>45</sup> səɣa <sup>21?</sup>	t <sup>h</sup> i <sup>51</sup>	ʔwa <sup>21</sup>	li <sup>34</sup>	dai <sup>34?</sup>	ne <sup>i</sup> ŋ <sup>34</sup>
<b>Mae Lek</b>	blai <sup>21?</sup>	sa <sup>34</sup> ɣe <sup>21</sup>	p <sup>h</sup> li <sup>21</sup>	swe <sup>45</sup>	sɛ <sup>i34</sup>	k <sup>h</sup> i <sup>34</sup> ɣe <sup>21</sup>	pju <sup>21?</sup>	lau <sup>21</sup>	ʔaŋ <sup>34</sup> səɣa <sup>21?</sup>	t <sup>h</sup> i <sup>45</sup>	ʔwe <sup>21</sup>	li <sup>21</sup>	dai <sup>21?</sup>	ne <sup>i</sup> 34
<b>Huai Thok</b>	bə <sup>31</sup>	səɣe <sup>21</sup>	p <sup>h</sup> li <sup>21</sup>	swe <sup>45</sup>	sɛ <sup>i34</sup>	k <sup>h</sup> i <sup>34</sup> ɣe <sup>21</sup>	pjo <sup>32?</sup>	lɔ̃ <sup>31</sup>	sɪ <sup>34</sup> ɣa <sup>32?</sup>	t <sup>h</sup> i <sup>45</sup>	ʔwe <sup>21</sup>	li <sup>21</sup>	dai <sup>32?</sup>	ne <sup>i</sup> 34
<b>Sue Mue</b>	blai <sup>32?</sup>	θə <sup>34</sup> ɣe <sup>21</sup>	p <sup>h</sup> li <sup>31</sup>	θwe <sup>45</sup>	θe <sup>i34</sup>	k <sup>h</sup> i <sup>34</sup> ɣe <sup>21</sup>	pju <sup>32?</sup>	lɔ̃ <sup>31</sup>	ʔaŋ <sup>34</sup> θu <sup>45</sup> ɣa <sup>32?</sup>	t <sup>h</sup> i <sup>45</sup>	ʔwe <sup>21</sup>	li <sup>31</sup>	dai <sup>32?</sup>	ne <sup>i</sup> 34
<b>Sop Khong</b>	bə <sup>31</sup>	θə <sup>34</sup> ɣa <sup>31</sup>	p <sup>h</sup> li <sup>31</sup>	me <sup>45</sup>	θe <sup>i45</sup>	k <sup>h</sup> i <sup>45</sup> ɣa <sup>31</sup>	pju <sup>32?</sup>	lɔ̃ <sup>31</sup>	ʔəŋ <sup>45</sup> θi <sup>45</sup> xə <sup>51</sup>	t <sup>h</sup> i <sup>45</sup>	bwa <sup>21</sup>	li <sup>21</sup>	dai <sup>32?</sup>	ne <sup>i</sup> 34
<b>Mae Pho</b>	bau <sup>21</sup>	θau <sup>45</sup> ɣa <sup>21</sup>	p <sup>h</sup> li <sup>21</sup>	θwa <sup>45</sup>	θe <sup>i34</sup>	n <sup>i</sup> <sup>45</sup> ɣa <sup>21</sup>	pju <sup>21?</sup>	lau <sup>21</sup>	ʔaŋ <sup>45</sup> θi <sup>45</sup> ja <sup>21?</sup>	t <sup>h</sup> i <sup>45</sup>	ʔwa <sup>21</sup>	kəli <sup>i</sup> <sup>21</sup>	dai <sup>21?</sup>	ne <sup>i</sup> 34
<b>Ban Salok</b>	bau <sup>21</sup>	sau <sup>34</sup> ɣa <sup>31</sup>	p <sup>h</sup> li <sup>31</sup>	θwa <sup>45</sup>	θe <sup>i45</sup>	ki <sup>34</sup> ɣa <sup>31</sup>	pju <sup>34?</sup>	lau <sup>31</sup>	ʔaŋ <sup>45</sup> sɪ <sup>34</sup> ɣa <sup>32?</sup>	t <sup>h</sup> i <sup>45</sup>	ʔwa <sup>31</sup>	li <sup>31</sup> ɣe <sup>45</sup>	dai <sup>34?</sup>	ne <sup>i</sup> 45
<b>Omkoï</b>	blai <sup>34?</sup>	θa <sup>45</sup> ɣe <sup>51</sup>	p <sup>h</sup> li <sup>31</sup>	θwe <sup>45</sup>	θeŋ <sup>33</sup>	k <sup>h</sup> i <sup>45</sup> ɣe <sup>51</sup>	pju <sup>32?</sup>	la <sup>41</sup>	ʔəŋ <sup>33</sup> θi <sup>45</sup> ɣa <sup>45?</sup>	t <sup>h</sup> i <sup>45</sup>	ʔwe <sup>41</sup>	li <sup>41</sup>	dai <sup>32?</sup>	ne <sup>i</sup> 33
<b>Sangkhla</b>	bə <sup>31</sup>	θə <sup>45</sup> ɣa <sup>21</sup>	p <sup>h</sup> li <sup>31</sup>	me <sup>33</sup>	θe <sup>i45</sup>	n <sup>i</sup> <sup>45</sup> ɣa <sup>21</sup>	piu <sup>31?</sup>	ləŋ <sup>21</sup>	θi <sup>45</sup> ja <sup>31?</sup>	t <sup>h</sup> i <sup>51</sup>	ʔua <sup>31</sup>	li <sup>31</sup>	ʔə <sup>31</sup> dai <sup>31?</sup>	ne <sup>i</sup> 33

APPENDIX C: WORD LENGTH DECISIONS<sup>7</sup>

No.	Gloss	Word Length Variants	Decisions and Notes
1	afraid	—	
2	arm	tɕi <sup>34</sup> tɕi <sup>45</sup> di <sup>34</sup>	Removed the final syllable dɿ <sup>34</sup> .
3	ashes	p <sup>hi</sup> t <sup>45</sup> k <sup>h</sup> la <sup>34</sup> p <sup>hi</sup> i <sup>51</sup> k <sup>h</sup> la <sup>34</sup> mũ <sup>34</sup>	Removed the final syllable mũ <sup>34</sup> even though meaning is unknown since in Pwo Karen additional syllables are known to enhance the meaning of a compound but are not necessary to represent the basic concept.
4	belly (exterior)	—	
5	bird	—	
6	bite	ʔai <sup>34</sup> ʔai <sup>34</sup> t <sup>h</sup> ɛ <sup>21</sup>	Removed final syllable t <sup>h</sup> ɛ <sup>21</sup> which likely means ‘thing’.
7	black	—	
8	blood	—	
9	blow	—	
10	bone	—	
11	breathe	θa <sup>45</sup> kəθa <sup>45</sup>	Removed the minor syllable kə.
12	child	—	
13	cloud (white)	—	
14	cut (hair)	—	
15	die	—	
16	dig	—	
17	dog	—	
18	drink	ʔo <sup>31</sup> ʔo <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	Removed the final syllable t <sup>h</sup> i <sup>45</sup> ‘water’.
19	ear	na <sup>34</sup> na <sup>45</sup> kuŋ <sup>51</sup>	Removed final syllable kuŋ <sup>51</sup> .
20	earth/soil	uŋaŋ <sup>34</sup> k <sup>h</sup> u <sup>34</sup> uŋaŋ <sup>21</sup> k <sup>h</sup> u <sup>34</sup> k <sup>h</sup> loŋ <sup>41</sup>	Removed final syllable; likely additional meaning not necessary for the basic concept.
21	eat	—	
22	egg	—	Removed possessive prefix ʔə- and prefix t <sup>h</sup> ə-.
23	eye	me <sup>45</sup> ʔ <sup>h</sup> li <sup>51</sup>	Removed all syllables except the initial syllable

<sup>7</sup> The — indicates that no changes were made to the comparison forms.

No.	Gloss	Word Length Variants	Decisions and Notes
		me <sup>34?</sup> θæ <sup>34</sup> k <sup>h</sup> li <sup>41</sup>	since me <sup>34?</sup> means ‘eye’ by itself. me <sup>45?</sup> k <sup>h</sup> li <sup>51</sup> ‘eyeball’
24	fall (v, down)	—	
25	far	—	
26	fat (n)	—	
27	feather	tɕ <sup>h</sup> ɔŋ <sup>34</sup> t <sup>h</sup> u <sup>34</sup> tɕ <sup>h</sup> ɔŋ <sup>45</sup>	Removed the class term t <sup>h</sup> u <sup>34</sup> ‘bird’.
28	fingernail	—	
29	fire	mi <sup>34</sup> mi <sup>34?</sup> ʔau <sup>21</sup>	Removed ʔau <sup>21</sup> ‘pile’.
30	fish	ja <sup>34</sup> ja <sup>34</sup> p <sup>h</sup> u <sup>34</sup>	Removed the second syllable p <sup>h</sup> u <sup>34</sup> .
31	five	je <sup>21</sup> uɛ <sup>41</sup>	Removed classifier uɛ <sup>41</sup> ‘person’.
32	flower	p <sup>h</sup> o <sup>45</sup> təp <sup>h</sup> o <sup>45</sup>	Removed tə, a derivational prefix.
33	fly (v)	—	
34	four	lui <sup>23</sup> uɛ <sup>41</sup>	Removed classifier uɛ <sup>41</sup> ‘person’.
35	fruit	θe <sup>34</sup> təθe <sup>34</sup> θẽ <sup>i45</sup> θe <sup>45</sup>	Removed tə/t <sup>h</sup> ə-, a derivational prefix. Removed θẽ <sup>i45</sup> ‘tree’.
36	full (satisfied)	ble <sup>21</sup> ble <sup>34?</sup> ʔaŋ <sup>31</sup>	Removed ʔaŋ <sup>31</sup> ‘eat’.
37	give	—	
38	grass	—	
39	hair (human)	—	
40	head	k <sup>h</sup> o <sup>34</sup> k <sup>h</sup> u <sup>34</sup> xɪ <sup>34</sup>	Removed xɪ <sup>34</sup> ‘bone’.
41	heart	—	
42	heavy	—	
43	horn (buffalo)	nō <sup>31</sup> ʔə <sup>31</sup> nō <sup>u31</sup>	Removed ʔə-, a possessive prefix.
44	I (1sg.)	—	
45	intestines	—	
46	know (v facts)	—	
47	laugh	nɪ <sup>i21</sup> nɪ <sup>i21</sup> xwe <sup>45</sup>	Removed the second syllable xwe <sup>45</sup> .
48	leaf	læ <sup>34</sup> θẽ <sup>i34</sup> læ <sup>34</sup>	Removed θẽ <sup>i34</sup> ‘tree’.
49	left (side or	tɕi <sup>34</sup>	Removed ʔə- derivational prefix.

No.	Gloss	Word Length Variants	Decisions and Notes
	hand)	ʔətɕi <sup>34</sup>	
50	liver	—	
51	long (length)	t <sup>h</sup> ɔ <sup>41</sup> p <sup>h</sup> a <sup>21</sup> ʔt <sup>h</sup> ɔ <sup>51</sup>	Removed p <sup>h</sup> a <sup>21</sup> ʔ, a form that combines with other attributive verbs. Possible intensifying meaning.
52	louse	—	
53	many	ʔɛ <sup>21</sup> uɛ <sup>21</sup>	Removed classifier uɛ <sup>41</sup> ‘person’.
54	milk	nũ <sup>32</sup> t <sup>h</sup> i <sup>45</sup> t <sup>h</sup> ənũ <sup>21</sup> t <sup>h</sup> i <sup>45</sup> ŋu <sup>41</sup> nuŋ <sup>34</sup> t <sup>h</sup> i <sup>45</sup>	Removed t <sup>h</sup> ə ‘derivational prefix’. Removed class term ŋu <sup>41</sup> ‘cow’.
55	moon	lɛ <sup>21</sup> p <sup>h</sup> ɛ <sup>34</sup> lɛ <sup>34</sup> mə <sup>34</sup>	Removed p <sup>h</sup> ɛ <sup>34</sup> and mə <sup>34</sup> . Likely giving more specific details about the moon.
56	mountain	—	
57	mouth	nu <sup>32</sup> nõ <sup>31</sup> p <sup>h</sup> ai <sup>21</sup> ʔ	Removed p <sup>h</sup> ai <sup>21</sup> ʔ ‘skin’.
58	name	—	
59	near	—	
60	new	—	
61	night	miŋ <sup>34</sup> na <sup>21</sup> miŋ <sup>33</sup> ne <sup>21</sup> k <sup>h</sup> ɔ <sup>34</sup> luŋ <sup>21</sup> ma <sup>21</sup> na <sup>21</sup> kɛ <sup>33</sup> miŋ <sup>33</sup> ne <sup>33</sup>	Not sure what luŋ <sup>21</sup> is referring to, but likely not necessary for basic concept. Removed k <sup>h</sup> ɔ <sup>34</sup> ‘time’. Removed kɛ <sup>33</sup> , occurs with other time of day words.
62	nose	na <sup>45</sup> deŋ <sup>21</sup> na <sup>51</sup> p <sup>h</sup> ũ <sup>51</sup>	Removed deŋ <sup>21</sup> and p <sup>h</sup> ũ <sup>51</sup> .
63	one	ləuɛ <sup>21</sup>	Removed classifier uɛ <sup>41</sup> ‘person’.
64	path	—	
65	person (n)	p <sup>h</sup> lɔŋ <sup>31</sup> kəp <sup>h</sup> lɔŋ <sup>21</sup>	Removed kə since both forms are seen in the same variety.
66	rain (n)	t <sup>h</sup> ətɕ <sup>h</sup> a <sup>21</sup> t <sup>h</sup> ə <sup>21</sup> uɔ <sup>21</sup> tɕ <sup>h</sup> ə <sup>34</sup> mai <sup>21</sup> ʔk <sup>h</sup> u <sup>34</sup> tɕ <sup>h</sup> au <sup>21</sup>	Removed t <sup>h</sup> ə- ‘nominalizer’ Removed uɔ <sup>21</sup> ‘come’ Removed mai <sup>21</sup> ʔk <sup>h</sup> u <sup>34</sup> ‘sky’
67	red	—	
68	right (side/hand)	xo <sup>34</sup> ʔəxo <sup>21</sup> ʔ	Removed ʔə- ‘derivational prefix’
69	river	—	
70	root	uɿ <sup>21</sup> θɛ <sup>i34</sup> uɿ <sup>21</sup>	Removed class term θɛ <sup>i34</sup> ‘tree’
71	round	pəlõ <sup>34</sup> pəlɔŋ <sup>21</sup> koŋ <sup>45</sup>	Removed koŋ <sup>45</sup> .
72	rub	—	

No.	Gloss	Word Length Variants	Decisions and Notes
73	salt	—	
74	scratch (v, fingernail)	—	
75	see	—	
76	sew	—	
77	sharp (knife)	—	
78	sit (state)	—	
79	skin	p <sup>h</sup> ai <sup>21?</sup> p <sup>h</sup> ai <sup>32?</sup> je <sup>34</sup>	Removed je <sup>34</sup> , possible additional information to basic concept
80	sky	—	
81	sleep	mī <sup>34</sup> mī <sup>34</sup> nī <sup>31</sup>	Removed nī <sup>31</sup> , extra information. Form seen in other varieties.
82	smell	nə <sup>45</sup> nə <sup>23</sup> pəli <sup>21</sup> na <sup>45</sup> ɔe <sup>31</sup>	Removed all except the initial syllable.
83	smoke	k <sup>h</sup> u <sup>45</sup> mi <sup>34</sup> k <sup>h</sup> u <sup>34</sup> li <sup>21</sup> ʔək <sup>h</sup> u <sup>34</sup>	Removed all except the final syllable. mi <sup>34</sup> ‘fire’
84	snake	—	
85	spit	—	
86	stand (state)	—	
87	star	—	
88	stone	—	
89	sun	miŋ <sup>31</sup> miŋ <sup>34</sup> me <sup>34?</sup>	Removed me <sup>34?</sup> ‘eye’
90	tail	mi <sup>34</sup> ʔə <sup>31</sup> mi <sup>45</sup> mi <sup>21</sup> kəŋ <sup>51</sup>	Removed possessive marker ʔə <sup>31</sup> and kəŋ <sup>51</sup> .
91	thick (object)	—	
92	thin (object)	blai <sup>34</sup> kəbli <sup>21?</sup>	Removed kə.
93	three	sa <sup>34</sup> uɛ <sup>21</sup>	Removed classifier uɛ <sup>41</sup> ‘person’.
94	tongue	—	
95	tooth	—	
96	tree	θe <sup>i34</sup> θeŋ <sup>h</sup> iŋ <sup>34</sup> θe <sup>i45</sup> mī <sup>21</sup> t <sup>h</sup> ɔ̃ <sup>34</sup>	Removed mī <sup>21</sup> which is likely adding information to the basic concept. Removed t <sup>h</sup> iŋ <sup>34</sup> . θeŋ <sup>h</sup> iŋ <sup>34</sup> means ‘wooden post’.
97	two	k <sup>h</sup> i <sup>23</sup> uɛ <sup>21</sup>	Removed classifier uɛ <sup>41</sup> ‘person’.
98	vomit	—	

No.	Gloss	Word Length Variants	Decisions and Notes
99	warm	—	
100	wash	si <sup>34</sup> uqa <sup>32?</sup> ʔaŋ <sup>45</sup> səuqa <sup>21?</sup>	Removed ʔaŋ <sup>45</sup> ‘eat’ which commonly occurs with verbs.
101	water	—	
102	white	—	
103	wind	li <sup>21</sup> li <sup>31</sup> uqe <sup>45</sup> kəli <sup>21</sup>	Removed uqe <sup>45</sup> ‘come’ Removed kə.
104	wing	dai <sup>232</sup> ʔə <sup>31</sup> dɛ <sup>i231</sup>	Removed the possessive prefix ʔə-
105	year	—	

## APPENDIX D: PWO KAREN PHONE CHARTS AND FEATURE MATRICES

### Consonant phone chart

	Bilabial	Labiodental	Dental	Alveolar	Alveolo-palatal	Velar	Glottal
Unaspirated Stops	p			t	tɕ	k	ʔ
Aspirated Stops	p <sup>h</sup>			t <sup>h</sup>	tɕ <sup>h</sup>	k <sup>h</sup>	
Implosives (pre-voiced)	ɓ			ɗ			
Nasals	m			n	ɲ	ŋ	
Voiced Fricatives	β	v					
Voiceless Fricatives		f	θ	s	ɕ	x	
Approximants Lateral	w			r	j	ɥ	
Approximant				l			

### Vowel phone chart

	Front	Central	Back
<b>Close</b>	i, ī	i, ī	u, ũ
<b>Close-Mid</b>	e, ē	ə, ẽ	ɤ, o, õ
<b>Open-mid</b>	ɛ		ʌ, ʌʷ, ɔ, ɔ̄, ɔi
	æ	a, ai, aī, au	

## FEATURE MATRIX FOR PWO KAREN CONSONANT PHONES

Phone	+/- cons	+/- son	+/- cont	+/- lat	+/- labial	+/- coronal	+/- ant	+/- dist	+/- dorsal	+/- voice	+/- spread	+/- constrict	+/- nasal
	Stricture			Lateral	Point of articulation					Voice	Aspiration	Stricture	Nasal
[p]	+	-	-	-	+	-			-	-	-	-	-
[p <sup>h</sup> ]	+	-	-	-	+	-			-	-	+	-	-
[ɸ]	+	-	-	-	+	-			-	+	-	+	-
[m]	+	+	-	-	+	-			-	+	-	-	+
[β]	+	-	+	-	+	-			-	+	-	-	-
[w]	-	+	+	-	+	-			+	+	-	-	-
[v]	+	-	+	-	+	-			-	+	-	-	-
[f]	+	-	+	-	+	-			-	-	-	-	-
[θ (ʒ)]	+	-	+	-	-	+	+	+	-	-	-	-	-
[t]	+	-	-	-	-	+	+	NA	-	-	-	-	-
[t <sup>h</sup> ]	+	-	-	-	-	+	+	NA	-	-	+	-	-
[d]	+	-	-	-	-	+	+	NA	-	+	-	+	-
[n]	+	+	-	-	-	+	+	NA	-	+	-	-	+
[s]	+	-	+	-	-	+	+	-	-	-	-	-	-
R [ɹ]	+	+	+	-	-	+	-	NA	-	+	-	-	-
[l]	+	+	+	+	-	+	+	NA	-	+	-	-	-
[tɕ]	+	-	-	-	-	+	-	NA	-	-	-	-	-
[tɕ <sup>h</sup> ]	+	-	-	-	-	+	-	NA	-	-	+	-	-
[ɕ]	+	-	+	-	-	+	-	+	-	-	-	-	-
[ɲ]	+	+	-	-	-	+	-	NA	-	+	-	-	+
[j]	-	+	+	-	-	+	-	NA	-	+	-	-	-
[k]	+	-	-	-	-	-	NA	NA	+	-	-	-	-
[k <sup>h</sup> ]	+	-	-	-	-	-	NA	NA	+	-	+	-	-
[ŋ]	+	+	-	-	-	-	NA	NA	+	+	-	-	+
[x]	+	-	+	-	-	-	NA	NA	+	-	-	-	-
[ɰ]	-	+	+	-	-	-	NA	NA	+	+	-	-	-
[ʔ]	-	-	-	-	-	-	NA	NA	-	-	-	+	-

## FEATURE MATRIX FOR PWO KAREN VOWEL PHONES

Phone	+/- high	+/- low	+/- back	+/- round	+/- nasal
	Closure				
[i]	+	-	-	-	-
[ī]	+	-	-	-	+
[e]	-	-	-	-	-
[ē <sup>i</sup> ]	-	-	-	-	+
[ɛ]	-	-	-	-	-
[æ]	-	+	-	-	-
[i̠]	+	-	—	-	-
[ī̠]	+	-	—	-	+
[ə]	-	-	—	-	-
[ə̄]	-	-	—	-	+
[a (ə)]	-	+	—	-	-
[ɤ]	-	-	+	-	-
[ʌ]	-	+	+	-	-
[u]	+	-	+	+	-
[ū]	+	-	+	+	+
[o]	-	-	+	+	-
[ō]	-	-	+	+	+
[ɔ]	-	+	+	+	-
[ō̄]	-	+	+	+	+

**APPENDIX E: PHONETIC SIMILARITY FOR PWO KAREN****Consonants**

<b>Phonetically similar pair</b>	<b>Feature differences</b>
[p] and [p <sup>h</sup> ]	differ by aspiration
[p] and [β]	differ by stricture and voicing
[p <sup>h</sup> ] and [f]	differ by stricture and aspiration
[β] and [m]	differ by stricture and velic position
[β] and [β̥]	differ by stricture
[m] and [n]	differ by point of articulation
[β̥] and [w]	differ by stricture
[β̥] and [v]	differ slightly by point of articulation
[w] and [v]	differ by stricture and point of articulation
[w] and [w̥]	differ marginally by point of articulation
[v] and [f]	differ by voicing
[f] and [θ̥]	differ by point of articulation
[θ̥] and [s]	differ marginally by point of articulation
[t] and [t <sup>h</sup> ]	differ by aspiration
[t] and [d]	differ by stricture and voicing
[t <sup>h</sup> ] and [s]	differ by stricture and aspiration
[t <sup>h</sup> ] and [t̥ <sup>h</sup> ]	differ by point of articulation
[d] and [n]	differ by stricture and velic position
[d] and [r̥]	differ by stricture
[d] and [l]	differ by stricture and laterality
[n] and [ɲ]	differ by point of articulation
[r̥] and [l]	differ by laterality
[t̥] and [t̥ <sup>h</sup> ]	differ by one feature (lenis/fortis)
[t̥] and [ç]	differ by stricture
[ç] and [j]	differ by stricture and voicing
[ɲ] and [j]	differ by stricture and nasality
[ɲ] and [ŋ]	differ by point of articulation
[j] and [w̥]	differ by point of articulation
[k] and [k <sup>h</sup> ]	differ by aspiration
[k] and [ʔ]	differ by point of articulation
[k <sup>h</sup> ] and [x]	differ by stricture and aspiration

## Vowels

Phonetically similar pair	Feature differences
[i] and [ĩ]	differ by nasality
[i] and [e]	differ by closure
[i] and [i̠]	differ by backness
[i] and [ai]	differ by closure and backness
[i] and [ɔi]	differ by closure, backness and roundness
[ĩ] and [ẽ]	differ by closure
[ĩ] and [i̠]	differ by backness
[e] and [ẽ]	differ by nasality
[e] and [ɛ]	differ by closure
[e] and [æ]	differ by closure
[e] and [ə]	differ by backness
[ẽ] and [ə̃]	differ by backness
[ɛ] and [ə]	differ by backness and small amount of closure
[ɛ] and [æ]	differ by closure
[i̠] and [ĩ̠]	differ by nasality
[i̠] and [ə]	differ by closure
[i̠] and [ai̠]	differ by closure
[ĩ̠] and [ə̃]	differ by closure
[ə] and [ə̃]	differ by nasality
[ə] and [a]	differ by closure
[ə̃] and [ã]	differ by closure
[a] and [ɛ]	differ by backness and a small closure difference
[a] and [ai]	differ by closure and backness
[a] and [a̠]	differ by closure
[a] and [au]	differ by closure by closure, backness and roundness
[a̠] and [Λu]	differ by backness
[a̠] and [au]	differ by roundness and backness
[au] and [ɔ]	differ by closure and backness
[ɤ] and [Λ]	differ by closure
[u] and [ũ]	differ by nasality
[u] and [õ]	differ by closure and nasality
[u] and [o]	differ by closure
[u] and [au]	differ by closure and backness
[ũ] and [õ]	differ by closure
[o] and [õ]	differ by nasality
[o] and [ɤ]	differ by roundness

<b>Phonetically similar pair</b>	<b>Feature differences</b>
[o] and [ɔ]	differ by closure
[õ] and [ɔ̃]	differ by closure
[ɔ] and [ɔ̃]	differ by nasality
[ɔ] and [ʌ]	differ by roundness
[ɔ] and [ɔi]	differ by closure and backness

## APPENDIX F: CORRESPONDING PAIRS

<b>t<sup>h</sup> t<sup>ç</sup> t</b>	<b>Ban Klang</b>	<b>Ban Doi</b>	<b>Mae Lek</b>	<b>Huai Thok</b>	<b>Sue Mue</b>	<b>Sop Khong</b>	<b>Mae Pho</b>	<b>Ban Salok</b>	<b>Omkoï</b>	<b>Sangkhla</b>
<b>'thing'</b>										
insect	t <sup>h</sup> ə <sup>21</sup> p <sup>h</sup> o <sup>34</sup> xæ <sup>21</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>45</sup> xa <sup>34</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xæ <sup>21</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xæ <sup>21</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xæ <sup>21</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xa <sup>21</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xa <sup>21</sup>	təp <sup>h</sup> u <sup>34</sup> xa <sup>21</sup>	t <sup>h</sup> ə <sup>31</sup> xæ <sup>31</sup>	tç <sup>h</sup> əp <sup>h</sup> u <sup>45?</sup> xa <sup>33</sup>
cloud	t <sup>h</sup> əŋiŋ <sup>34</sup>	t <sup>h</sup> əŋiŋ <sup>45</sup>	t <sup>h</sup> əŋeŋ <sup>34</sup>	t <sup>h</sup> əŋeŋ <sup>34</sup>	t <sup>h</sup> əŋiŋ <sup>34</sup>	t <sup>h</sup> əŋə <sup>34</sup>	t <sup>h</sup> əŋeŋ <sup>45</sup>	t <sup>h</sup> əŋi <sup>45</sup>	t <sup>h</sup> əŋeŋ <sup>33</sup>	tç <sup>h</sup> i <sup>33</sup> ŋə <sup>45</sup>
deer	ta <sup>21</sup> xo <sup>21</sup>	təxo <sup>21</sup>	t <sup>h</sup> əxo <sup>33</sup>	t <sup>h</sup> əxo <sup>33</sup>	təxo <sup>21</sup>	t <sup>h</sup> əxo <sup>31</sup>	t <sup>h</sup> əxo <sup>21</sup>	təxo <sup>31</sup>	t <sup>h</sup> əxo <sup>41</sup>	tç <sup>h</sup> əxo <sup>33</sup>
<b>t<sup>h</sup> t<sup>ç</sup> t</b>										
dog	t <sup>h</sup> ui <sup>34</sup>	t <sup>h</sup> ui <sup>45</sup>	t <sup>h</sup> ui <sup>34</sup>	t <sup>h</sup> ui <sup>34</sup>	t <sup>h</sup> ui <sup>45</sup>	t <sup>h</sup> ui <sup>45</sup>	tç <sup>h</sup> ui <sup>34</sup>	t <sup>h</sup> ui <sup>34</sup>	t <sup>h</sup> ui <sup>33</sup>	t <sup>h</sup> ui <sup>45</sup>
right side	ŋa <sup>21</sup> xo <sup>21?</sup>	ŋəxo <sup>21?</sup>	ŋəxu <sup>32?</sup>	ŋəxo <sup>21?</sup>	xo <sup>34?</sup>	xu <sup>32?</sup>	tç <sup>h</sup> we <sup>45</sup>	xo <sup>34?</sup>	xu <sup>32</sup>	t <sup>h</sup> ue <sup>45</sup>
<b>a e/æ</b>										
animal	t <sup>h</sup> ə <sup>21</sup> p <sup>h</sup> o <sup>34</sup> xæ <sup>21</sup>	tç <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xa <sup>23</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xæ <sup>21</sup>	təp <sup>h</sup> u <sup>34</sup> xæ <sup>21</sup>	təp <sup>h</sup> u <sup>34</sup> xæ <sup>31</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> xa <sup>21</sup>	t <sup>h</sup> əp <sup>h</sup> u <sup>34</sup> t <sup>h</sup> əxa <sup>21</sup>	təp <sup>h</sup> i <sup>34</sup> xa <sup>21</sup>	t <sup>h</sup> ə <sup>31</sup> p <sup>h</sup> u <sup>45</sup> t <sup>h</sup> ə <sup>31</sup> xæ <sup>3</sup>	tə <sup>31</sup> rai <sup>231</sup> tç <sup>h</sup> əŋ <sup>5</sup>
ashes	p <sup>h</sup> i <sup>41</sup> k <sup>h</sup> le <sup>34</sup>	p <sup>h</sup> i <sup>51</sup> k <sup>h</sup> la <sup>34</sup> mū <sup>34</sup>	pç <sup>i341</sup> k <sup>h</sup> læ <sup>21</sup>	p <sup>h</sup> i <sup>31</sup> k <sup>h</sup> le <sup>34</sup>	p <sup>h</sup> i <sup>341</sup> k <sup>h</sup> le <sup>34</sup>	mə <sup>21</sup> ŋə <sup>31</sup> ŋi <sup>21</sup>	p <sup>h</sup> ç <sup>i341</sup> k <sup>h</sup> la <sup>21</sup>	p <sup>h</sup> i <sup>45</sup> k <sup>h</sup> la <sup>34</sup>	p <sup>h</sup> i <sup>45</sup> k <sup>h</sup> le <sup>33</sup>	p <sup>h</sup> e <sup>45</sup> k <sup>h</sup> la <sup>31</sup>
breathe	sæ <sup>34</sup>	sa <sup>34</sup>	sɛ <sup>34</sup>	sɛ <sup>34</sup>	θɛ <sup>34</sup>	kəθa <sup>45</sup>	kəθa <sup>45</sup>	sa <sup>34</sup>	θɛ <sup>33</sup>	θa <sup>45</sup>
ear	næ <sup>34</sup>	na <sup>34</sup>	nɛ <sup>21</sup>	nɛ <sup>21</sup>	nɛ <sup>21</sup>	na <sup>31</sup>	na <sup>21</sup>	na <sup>34</sup>	nɛ <sup>34</sup>	na <sup>45</sup> kun <sup>51</sup>
fish	jæ <sup>34</sup> p <sup>h</sup> o <sup>34</sup>	ja <sup>34</sup> p <sup>h</sup> u <sup>45</sup>	jɛ <sup>34</sup>	jɛ <sup>34</sup> p <sup>h</sup> u <sup>34</sup>	jɛ <sup>34</sup> p <sup>h</sup> u <sup>45</sup>	ŋa <sup>45</sup> p <sup>h</sup> u <sup>45</sup>	ja <sup>34</sup> p <sup>h</sup> u <sup>34</sup>	ja <sup>34</sup>	jɛ <sup>33</sup> p <sup>h</sup> u <sup>33</sup>	ja <sup>33</sup>
fruit	θɛ <sup>34</sup>	t <sup>h</sup> a <sup>21</sup> sa <sup>34</sup>	t <sup>h</sup> əsɛ <sup>34</sup>	təsæ <sup>45</sup>	təθɛ <sup>34</sup>	t <sup>h</sup> əθa <sup>45</sup>	θa <sup>45</sup>	θa <sup>34</sup>	θç <sup>i45</sup> θɛ <sup>45</sup>	θç <sup>i45</sup> θa <sup>45</sup>
leaf	lɛ <sup>34</sup>	la <sup>34</sup>	lɛ <sup>34</sup>	læ <sup>34</sup>	θç <sup>i341</sup> læ <sup>34</sup>	θç <sup>i45</sup> la <sup>45</sup>	la <sup>34</sup>	la <sup>34</sup>	θɛŋ <sup>33</sup> lɛ <sup>33</sup>	θç <sup>i45</sup> la <sup>45</sup>
many										
(people)	təðli <sup>34</sup> uɛ <sup>21</sup>	ŋa <sup>21</sup> uɛ <sup>21</sup>	ŋɛ <sup>34</sup> uɛ <sup>21</sup>	ŋɛ <sup>21</sup> uɛ <sup>21</sup>	təblai <sup>34?</sup> uɛ <sup>21</sup>	ŋa <sup>34</sup> uɛ <sup>31</sup>	ŋa <sup>34</sup> uɛ <sup>21</sup>	ŋa <sup>34</sup> uɛ <sup>31</sup>	ŋɛ <sup>33</sup> uɛ <sup>51</sup>	ŋa <sup>45</sup> uɛ <sup>21</sup>
moon	læ <sup>21</sup>	la <sup>21</sup>	læ <sup>21</sup>	p <sup>h</sup> ɛ <sup>34</sup> lɛ <sup>34</sup> mə <sup>34</sup>	lɛ <sup>21</sup>	la <sup>31</sup>	la <sup>21</sup>	la <sup>21</sup>	lɛ <sup>41</sup>	la <sup>31</sup>
see	dæ <sup>23</sup>	da <sup>34</sup>	dæ <sup>21</sup>	dɛ <sup>34</sup>	dɛ <sup>34</sup>	da <sup>34</sup>	da <sup>34</sup>	da <sup>34</sup>	dɛ <sup>33</sup>	də <sup>45</sup>
star	tç <sup>h</sup> æ <sup>34</sup>	çə <sup>45</sup>	çɛ <sup>34</sup>	çə <sup>34</sup>	çɛ <sup>34</sup>	tç <sup>h</sup> a <sup>21</sup>	tç <sup>h</sup> a <sup>21</sup>	tç <sup>h</sup> a <sup>21</sup>	çɛ <sup>33</sup>	çə <sup>33</sup>
white	ŋwɛ <sup>21</sup>	ŋwa <sup>21</sup>	ŋwɛ <sup>21</sup>	ŋwɛ <sup>21</sup>	ŋwɛ <sup>21</sup>	bwa <sup>21</sup>	ŋwa <sup>21</sup>	ŋwa <sup>31</sup>	ŋwɛ <sup>41</sup>	ŋua <sup>31</sup>

<b>ခ</b> au ဘ	<b>Ban Klang</b>	<b>Ban Doi</b>	<b>Mae Lek</b>	<b>Huai Thok</b>	<b>Sue Mue</b>	<b>Sop Khong</b>	<b>Mae Pho</b>	<b>Ban Salok</b>	<b>Omkoi</b>	<b>Sangkhla</b>
black	sə̃ <sup>41</sup>	sau <sup>51</sup>	sau <sup>34</sup>	sə̃ <sup>45</sup>	θə̃ <sup>45</sup>	θə̃ <sup>45</sup>	θau <sup>45</sup>	sau <sup>45</sup>	θa <sup>45</sup>	θə̃ <sup>51</sup>
heavy	xə̃ <sup>41</sup>	xau <sup>51</sup>	xau <sup>45</sup>	xə̃ <sup>45</sup>	xə̃ <sup>45</sup>	xə̃ <sup>45</sup>	xau <sup>34</sup>	xau <sup>45</sup>	xa <sup>45</sup>	xə̃ <sup>51</sup>
warm	lə̃ <sup>41</sup>	lau <sup>21</sup>	lau <sup>21</sup>	lə̃ <sup>31</sup>	lə̃ <sup>31</sup>	lə̃ <sup>31</sup>	lau <sup>21</sup>	lau <sup>31</sup>	la <sup>41</sup>	lə̃ <sup>21</sup>

**၁** (၁), **၁**

<b>(၁)</b>	<b>Ban Klang</b>	<b>Ban Doi</b>	<b>Mae Lek</b>	<b>Huai Thok</b>	<b>Sue Mue</b>	<b>Sop Khong</b>	<b>Mae Pho</b>	<b>Ban Salok</b>	<b>Omkoi</b>	<b>Sangkhla</b>
	u <sup>21</sup> k <sup>h</sup> u <sup>34</sup> k <sup>h</sup> lo									
earth, soil	ŋ <sup>41</sup>	nə̃ <sup>51</sup> k <sup>h</sup> u <sup>34</sup>	u <sup>34</sup> k <sup>h</sup> u <sup>21</sup>	u <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	u <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	u <sup>21</sup> k <sup>h</sup> u <sup>45</sup>	u <sup>34</sup> k <sup>h</sup> u <sup>34</sup>	u <sup>31</sup> k <sup>h</sup> u <sup>34</sup>	u <sup>33</sup> k <sup>h</sup> u <sup>33</sup>	u <sup>33</sup> k <sup>h</sup> u <sup>33</sup>
eat	ʔə̃ <sup>34</sup>	ʔa <sup>45</sup>	ʔa <sup>34</sup>	ʔə̃ <sup>45</sup>	ʔa <sup>45</sup>	ʔə̃ <sup>45</sup>	ʔa <sup>45</sup>	ʔa <sup>45</sup>	ʔa <sup>33</sup>	ʔə̃ <sup>45</sup>
fall	lə̃ <sup>21</sup> t <sup>h</sup> ə̃ <sup>34</sup> ʔ	lə̃ <sup>21</sup> t <sup>h</sup> e <sup>45</sup> p <sup>h</sup> a <sup>34</sup>	lə̃ <sup>34</sup> t <sup>h</sup> i <sup>34</sup> ʔ	lə̃ <sup>45</sup> t <sup>h</sup> e <sup>34</sup> ʔ	lə̃ <sup>31</sup> t <sup>h</sup> i <sup>34</sup> ʔ	lə̃ <sup>51</sup> t <sup>h</sup> i <sup>21</sup> ʔ	lə̃ <sup>51</sup> t <sup>h</sup> i <sup>45</sup> ʔ	lə̃ <sup>31</sup> t <sup>h</sup> e <sup>34</sup> ʔ	lə̃ <sup>51</sup> t <sup>h</sup> e <sup>45</sup>	lə̃ <sup>31</sup> t <sup>h</sup> i <sup>45</sup>
grass	nə̃ <sup>34</sup>	na <sup>34</sup>	na <sup>34</sup>	nə̃ <sup>45</sup>	na <sup>34</sup>	nə̃ <sup>45</sup>	na <sup>34</sup>	na <sup>34</sup>	na <sup>33</sup>	nə̃ <sup>45</sup>
leg	k <sup>h</sup> ə̃ <sup>34</sup>	ki <sup>34</sup> du <sup>34</sup>	k <sup>h</sup> a <sup>34</sup>	k <sup>h</sup> ə̃ <sup>34</sup>	k <sup>h</sup> a <sup>45</sup>	k <sup>h</sup> ə̃ <sup>45</sup>	k <sup>h</sup> a <sup>45</sup>	k <sup>h</sup> a <sup>45</sup>	k <sup>h</sup> a <sup>33</sup>	k <sup>h</sup> ə̃ <sup>33</sup>
new	sə̃ <sup>41</sup>	sə̃ <sup>51</sup>	sa <sup>45</sup>	sə̃ <sup>45</sup>	θa <sup>45</sup>	θə̃ <sup>45</sup>	θə̃ <sup>45</sup>	sə̃ <sup>45</sup>	θa <sup>45</sup>	sə̃ <sup>51</sup>
thick	tə̃ <sup>23</sup>	ta <sup>45</sup>	ta <sup>34</sup>	tə̃ <sup>34</sup>	ta <sup>34</sup>	tə̃ <sup>34</sup>	ta <sup>34</sup>	ta <sup>34</sup>	ta <sup>33</sup>	tə̃ <sup>45</sup>
give	ʔa <sup>21</sup> klə̃ <sup>41</sup>	k <sup>h</sup> e <sup>21</sup> la <sup>21</sup>	ke <sup>34</sup> la <sup>41</sup>	ʔə̃ <sup>45</sup>	ʔa <sup>31</sup> la <sup>34</sup>	k <sup>h</sup> i <sup>31</sup> lə̃ <sup>45</sup>	k <sup>h</sup> i <sup>21</sup> lə̃ <sup>45</sup>	ki <sup>21</sup> la <sup>34</sup> ʔ	ke <sup>31</sup> ma <sup>45</sup>	p <sup>h</sup> lə̃ <sup>51</sup>

**၁**, **၁**, **၁**

<b>၁</b>	<b>Ban Klang</b>	<b>Ban Doi</b>	<b>Mae Lek</b>	<b>Huai Thok</b>	<b>Sue Mue</b>	<b>Sop Khong</b>	<b>Mae Pho</b>	<b>Ban Salok</b>	<b>Omkoi</b>	<b>Sangkhla</b>
horn	nū <sup>41</sup>	no <sup>34</sup>	nə̃ <sup>21</sup>	nə̃ <sup>21</sup>	nə̃ <sup>31</sup>	no <sup>31</sup>	nə̃ <sup>51</sup>	no <sup>31</sup>	no <sup>41</sup>	ʔə̃ <sup>31</sup> n <sup>31</sup>
stone	lū <sup>34</sup>	lo <sup>34</sup>	lo <sup>21</sup>	lə̃ <sup>21</sup>	lə̃ <sup>21</sup>	l <sup>31</sup>	lə̃ <sup>21</sup>	lo <sup>31</sup>	lo <sup>33</sup>	l <sup>33</sup>
spoon	na <sup>23</sup> t <sup>h</sup> ū <sup>21</sup>	nə̃ <sup>45</sup> t <sup>h</sup> o <sup>21</sup>	nu <sup>45</sup> t <sup>h</sup> o <sup>33</sup>	nə̃ <sup>33</sup> t <sup>h</sup> ə̃ <sup>21</sup>	na <sup>34</sup> t <sup>h</sup> o <sup>31</sup>	na <sup>21</sup> t <sup>h</sup> ə̃ <sup>51</sup>	nu <sup>34</sup> t <sup>h</sup> ə̃ <sup>21</sup>	na <sup>45</sup> t <sup>h</sup> o <sup>51</sup>	na <sup>31</sup> t <sup>h</sup> o <sup>51</sup>	nu <sup>45</sup> t <sup>h</sup> ə̃ <sup>21</sup>

<b>u</b> , <b>၁</b> , <b>o</b> , <b>၁</b>	<b>Ban Klang</b>	<b>Ban Doi</b>	<b>Mae Lek</b>	<b>Huai Thok</b>	<b>Sue Mue</b>	<b>Sop Khong</b>	<b>Mae Pho</b>	<b>Ban Salok</b>	<b>Omkoi</b>	<b>Sangkhla</b>
blow	ʔu <sup>23</sup>	ʔu <sup>45</sup>	ʔu <sup>34</sup>	ʔu <sup>45</sup>	ʔu <sup>34</sup>	ʔu <sup>34</sup>	ʔo <sup>45</sup>	ʔu <sup>34</sup>	ʔu <sup>33</sup>	ʔū <sup>45</sup>
snake	u <sup>34</sup>	u <sup>34</sup>	u <sup>21</sup>	u <sup>31</sup>	u <sup>31</sup>	u <sup>31</sup>	u <sup>34</sup>	u <sup>31</sup>	u <sup>34</sup>	u <sup>33</sup>
milk	nū <sup>21</sup> t <sup>h</sup> i <sup>41</sup>	nū <sup>34</sup> t <sup>h</sup> i <sup>51</sup>	nū <sup>21</sup> t <sup>h</sup> i <sup>34</sup>	nū <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	nū <sup>32</sup> t <sup>h</sup> i <sup>45</sup>	t <sup>h</sup> ə̃ <sup>21</sup> nū <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	nə̃ <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	nu <sup>21</sup> t <sup>h</sup> i <sup>45</sup>	ŋu <sup>41</sup> nu <sup>34</sup> t <sup>h</sup> i <sup>45</sup>	nu <sup>33</sup> t <sup>h</sup> i <sup>51</sup>

<b>u, i</b> arm smoke sink	<b>Ban Klang</b> tɕu <sup>34</sup> me <sup>23</sup> k <sup>h</sup> i <sup>23</sup> lɔŋ <sup>21</sup> tɕi <sup>34</sup>	<b>Ban Doi</b> tɕu <sup>34</sup> k <sup>h</sup> u <sup>45</sup> laŋ <sup>21</sup> tɕu <sup>34</sup>	<b>Mae Lek</b> tɕũ <sup>34</sup> k <sup>h</sup> u <sup>34</sup> lã <sup>33</sup> tɕũ <sup>33</sup>	<b>Huai Thok</b> tɕũ <sup>34</sup> li <sup>21</sup> ʔə <sup>h</sup> u <sup>34</sup> lɔŋ <sup>33</sup> tɕũ <sup>33</sup>	<b>Sue Mue</b> tɕu <sup>45</sup> mi <sup>34</sup> k <sup>h</sup> u <sup>34</sup> laŋ <sup>31</sup> tɕu <sup>34</sup>	<b>Sop Khong</b> tɕɛ <sup>34</sup> mi <sup>34</sup> k <sup>h</sup> u <sup>34</sup> lɔŋ <sup>31</sup> tɕũ <sup>23</sup>	<b>Mae Pho</b> tɕɛ <sup>45</sup> di <sup>34</sup> k <sup>h</sup> i <sup>45</sup> laŋ <sup>51</sup> tɕi <sup>34</sup>	<b>Ban Salok</b> tɕuŋ <sup>45</sup> mi <sup>34</sup> k <sup>h</sup> uŋ <sup>34</sup> laŋ <sup>31</sup> tɕuŋ <sup>34</sup>	<b>Omkoï</b> tɕuŋ <sup>33</sup> mi <sup>33</sup> k <sup>h</sup> uŋ <sup>33</sup> lɔŋ <sup>45</sup> tɕu <sup>31</sup>	<b>Sangkhla</b> tɕuŋ <sup>33</sup> mi <sup>45</sup> k <sup>h</sup> u <sup>45</sup> lɔŋ <sup>21</sup> bə <sup>21</sup>
<b>i, ui, ʔi</b> bone four (persons)	<b>Ban Klang</b> xwi <sup>34</sup> lui <sup>23</sup> uɛ <sup>41</sup>	<b>Ban Doi</b> xii <sup>45</sup> li <sup>21</sup> uɔa <sup>21</sup>	<b>Mae Lek</b> xɿ <sup>34</sup> li <sup>21</sup> uɛ <sup>21</sup>	<b>Huai Thok</b> xɿ <sup>34</sup> li <sup>21</sup> uɛ <sup>21</sup>	<b>Sue Mue</b> xii <sup>45</sup> li <sup>21</sup> uɛ <sup>21</sup>	<b>Sop Khong</b> xii <sup>34</sup> lui <sup>21</sup> uɔa <sup>31</sup>	<b>Mae Pho</b> xɿ <sup>45</sup> li <sup>21</sup> uɔa <sup>21</sup>	<b>Ban Salok</b> xɿŋ <sup>45</sup> li <sup>21</sup> uɔa <sup>31</sup>	<b>Omkoï</b> xɿ <sup>31</sup> li <sup>21</sup> uɛ <sup>51</sup>	<b>Sangkhla</b> xü <sup>45</sup> li <sup>21</sup> uɔa <sup>21</sup>
<b>ãi and ẽi</b> bite far sharp	<b>Ban Klang</b> ẽi <sup>34</sup> jẽi <sup>21</sup> ʔẽi <sup>34</sup>	<b>Ban Doi</b> ʔai <sup>45</sup> jai <sup>21</sup> ʔai <sup>33</sup>	<b>Mae Lek</b> ʔai <sup>34</sup> jai <sup>31</sup> ʔai <sup>34</sup>	<b>Huai Thok</b> ʔãi <sup>34</sup> jãi <sup>31</sup> ʔãi <sup>34</sup>	<b>Sue Mue</b> ʔai <sup>34</sup> jai <sup>31</sup> ʔai <sup>45</sup>	<b>Sop Khong</b> ʔãi <sup>45</sup> jãi <sup>31</sup> ʔãi <sup>34</sup>	<b>Mae Pho</b> ʔai <sup>34</sup> jai <sup>51</sup> ʔai <sup>21</sup>	<b>Ban Salok</b> ʔẽi <sup>34</sup> jẽi <sup>31</sup> ʔẽi <sup>34</sup>	<b>Omkoï</b> ʔai <sup>33</sup> jai <sup>41</sup> ʔai <sup>33</sup>	<b>Sangkhla</b> ʔãi <sup>33</sup> jãi <sup>31</sup> ʔãi <sup>45</sup>
<b>k and k<sup>h</sup></b> give	<b>Ban Klang</b> ʔa <sup>21</sup> klɔŋ <sup>41</sup>	<b>Ban Doi</b> k <sup>h</sup> ɛ <sup>21</sup> laŋ <sup>21</sup>	<b>Mae Lek</b> ke <sup>34</sup> laŋ <sup>41</sup>	<b>Huai Thok</b> ʔə <sup>h</sup> lɔ <sup>45</sup>	<b>Sue Mue</b> ʔaŋ <sup>31</sup> laŋ <sup>34</sup>	<b>Sop Khong</b> k <sup>h</sup> i <sup>31</sup> lɔŋ <sup>45</sup>	<b>Mae Pho</b> k <sup>h</sup> i <sup>21</sup> lɔŋ <sup>45</sup>	<b>Ban Salok</b> ki <sup>21</sup> la <sup>34?</sup>	<b>Omkoï</b> ke <sup>31</sup> ma <sup>45</sup>	<b>Sangkhla</b> p <sup>h</sup> lɔ <sup>51</sup>
<b>æ a ɛ ə</b> I (1s)	<b>Ban Klang</b> jæ <sup>21</sup>	<b>Ban Doi</b> ja <sup>21</sup>	<b>Mae Lek</b> jɛ <sup>21</sup>	<b>Huai Thok</b> jɛ <sup>21</sup>	<b>Sue Mue</b> je <sup>31</sup>	<b>Sop Khong</b> jə <sup>21</sup>	<b>Mae Pho</b> jə <sup>21</sup>	<b>Ban Salok</b> jæ <sup>31</sup>	<b>Omkoï</b> jɛ <sup>41</sup>	<b>Sangkhla</b> jə <sup>21</sup>
<b>au, ai, au,</b> <b>u</b> near rub, scrub brain	<b>Ban Klang</b> bu <sup>21?</sup> t <sup>h</sup> u <sup>21?</sup> k <sup>h</sup> o <sup>34</sup> nu <sup>34?</sup>	<b>Ban Doi</b> bau <sup>21</sup> t <sup>h</sup> au <sup>21</sup> k <sup>h</sup> u <sup>45</sup> nai <sup>45?</sup>	<b>Mae Lek</b> bai <sup>21?</sup> t <sup>h</sup> ai <sup>32?</sup> k <sup>h</sup> u <sup>33</sup> no <sup>45?</sup>	<b>Huai Thok</b> bau <sup>21?</sup> t <sup>h</sup> ai <sup>32?</sup> k <sup>h</sup> u <sup>33</sup> no <sup>34?</sup>	<b>Sue Mue</b> bau <sup>32?</sup> t <sup>h</sup> au <sup>32?</sup> k <sup>h</sup> u <sup>34</sup> nai <sup>34?</sup>	<b>Sop Khong</b> bai <sup>21?</sup> t <sup>h</sup> au <sup>32?</sup> k <sup>h</sup> u <sup>34</sup> nai <sup>21?</sup>	<b>Mae Pho</b> bau <sup>21?</sup> t <sup>h</sup> au <sup>21?</sup> k <sup>h</sup> u <sup>45</sup> nau <sup>45?</sup>	<b>Ban Salok</b> bai <sup>32?</sup> t <sup>h</sup> au <sup>34?</sup> k <sup>h</sup> u <sup>34</sup> nai <sup>34?</sup>	<b>Omkoï</b> bau <sup>32</sup> t <sup>h</sup> au <sup>31?</sup> k <sup>h</sup> u <sup>45</sup> nau <sup>45?</sup>	<b>Sangkhla</b> ɬau <sup>21?</sup> t <sup>h</sup> au <sup>21?</sup> k <sup>h</sup> u <sup>45</sup> nau <sup>21?</sup>

	<b>Ban Klang</b>	<b>Ban Doi</b>	<b>Mae Lek</b>	<b>Huai Thok</b>	<b>Sue Mue</b>	<b>Sop Khong</b>	<b>Mae Pho</b>	<b>Ban Salok</b>	<b>Omkoi</b>	<b>Sangkhla</b>
<b>tɕ<sup>h</sup> ɕ</b> star	tɕ <sup>h</sup> æ <sup>34</sup>	ɕa <sup>45</sup>	ɕɛ <sup>34</sup>	ɕə <sup>34</sup>	ɕɛ <sup>34</sup>	tɕ <sup>h</sup> a <sup>21</sup>	tɕ <sup>h</sup> a <sup>21</sup>	tɕ <sup>h</sup> a <sup>21</sup>	ɕɛ <sup>33</sup>	ɕa <sup>33</sup>
<b>ai, i</b> wing	dɪ <sup>21?</sup>	dai <sup>34?</sup>	dai <sup>21?</sup>	dai <sup>32?</sup>	dai <sup>32?</sup>	dai <sup>32?</sup>	dai <sup>21?</sup>	dai <sup>34?</sup>	dai <sup>32?</sup>	ʔə <sup>31</sup> dɪ <sup>31</sup>
skin	p <sup>h</sup> i <sup>21?</sup>	p <sup>h</sup> ai <sup>21?</sup>	p <sup>h</sup> ai <sup>21?</sup>	p <sup>h</sup> ai <sup>32?</sup> jɛ <sup>34</sup>	p <sup>h</sup> ai <sup>32?</sup>	p <sup>h</sup> ai <sup>32?</sup>	p <sup>h</sup> ai <sup>21?</sup>	p <sup>h</sup> ai <sup>34?</sup>	p <sup>h</sup> ai <sup>32?</sup>	p <sup>h</sup> ai <sup>31</sup>
dark	k <sup>h</sup> i <sup>32?</sup>	k <sup>h</sup> ai <sup>32?</sup>	k <sup>h</sup> ai <sup>34</sup>	k <sup>h</sup> e <sup>i34?</sup>	k <sup>h</sup> ai <sup>32?</sup>	k <sup>h</sup> ai <sup>21?</sup>	k <sup>h</sup> ai <sup>21?</sup>	k <sup>h</sup> ai <sup>34?</sup>	k <sup>h</sup> ai <sup>34?</sup>	k <sup>h</sup> ai <sup>21?</sup>
thin	kəbli <sup>21?</sup>	blai <sup>21?</sup>	blai <sup>21?</sup>	bə <sup>31</sup>	blai <sup>32?</sup>	bə <sup>31</sup>	bau <sup>21</sup>	bau <sup>21</sup>	blai <sup>34?</sup>	bə <sup>31</sup>

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