

A Preliminary Phonology of the Banlan Dialect of Lahu Shi

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Abstract

A phonological analysis of the Banlan dialect of the Lahu Shi language in northern Thailand is presented based on phonetic data gathered in field research¹. The analysis demonstrates evidence for 2 syllable types, 22 consonants, 8 vowels, and 7 tones in this primarily mono-syllabic Tibeto-Burman language. Evidence for contrast is given for the 2 syllable shapes and each phonemic segment and tone. A study of variation and distribution in the data reveals 5 phonological processes. These are described and shown to be rule governed. Finally, points requiring further study are highlighted, the data set is presented, and a possible orthography is suggested.

บทคัดย่อ

งานวิจัยนี้เป็นการนำเสนอการวิเคราะห์ระบบเสียงในภาษาเหนือเหลืองบานลาน (Banlan) ในภาคเหนือของประเทศไทย โดยใช้ข้อมูลสัทอักษรที่รวบรวมได้จากการวิจัยในพื้นที่นั้น ภาษานี้เป็นภาษา พม่า-ทิเบต ซึ่งจากการวิเคราะห์แสดงให้เห็นว่าคำในภาษานี้ส่วนใหญ่เป็นคำพยางค์เดี่ยว รูปแบบของพยางค์มี 2 ชนิด มีพยัญชนะ 22 ตัว สระ 8 ตัวและวรรณยุกต์ 7 รูป มีตัวอย่างยืนยันข้อแตกต่างระหว่างรูปแบบของพยางค์ 2 ชนิด หน่วยเสียงแต่ละหน่วยและระดับเสียงแต่ละระดับ การศึกษาการ

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เปลี่ยนแปลง(variation) และ การกระจาย (distribution) จากข้อมูลแสดงให้เห็นขบวนการ 5 ขบวนการทางระบบเสียง โดยมีการอธิบายและเสนอกฎที่ใช้ในขบวนการนั้นๆด้วย ท้ายที่สุด ได้มีการเน้นจุดที่ควรจะทำการศึกษาต่อจากนี้ มีการเสนอการจัดข้อมูล พร้อมทั้งเสนอแนะการสะกดคำเพื่ออ่านนำไปทดลองใช้ได้

1. Introduction

1.1 Language Classification

Lahu Shi, or Yellow Lahu is one of the two main branches of Lahu languages. The other branch is Lahu Na (Black Lahu), which has been extensively investigated by a number of linguists. The Lahu languages are part of the Sino-Tibetan stalk of languages, more specifically the Tibeto-Burman family. Figure 1 illustrates the position of the Lahu languages in the Tibeto-Burman language family:

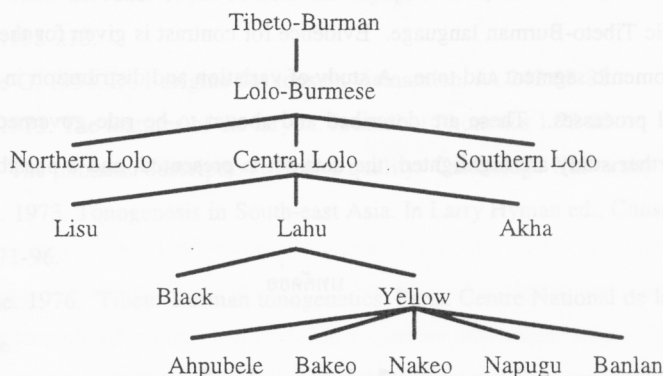


Figure 1: Lahu languages family tree

The division between Yellow and Black is a 'folk' division held by the Lahu themselves and is supported by some linguistic research. As shown in figure 1, the Yellow Lahu branch can be divided into 5 dialects²: Ahpubele, Bakeo, Nakeo, Napugu, and Banlan. Bradley (1979),

² The term dialect here is used in a broad sense meaning language or dialect of a language. Research concerning intelligibility between the Yellow Lahu dialects is not available.

who has done extensive research into the Lahu languages, does not mention Nakeo and Napugu, but includes Ahpubele which is not mentioned elsewhere.

The Banlan dialect is the focus of this research. It is the dialect most recognized by linguists as Yellow Lahu³, being more divergent from Black than the others. The Yellow Lahu Banlan people see the divisions similarly. Some of the Lahu in China who identify themselves as Yellow Lahu are actually speakers of the Bakeo variety. The Yellow Lahu Banlan in Thailand, however, do not consider Bakeo to be Yellow Lahu, but rather a variant of Black Lahu.

1.2 Population

The combined Lahu population is spread over at least 5 nations in South East Asia. In southwestern Yunnan Province of China there is an autonomous Lahu county with population estimates of 250,000 people (Lewis 1986:172). Most of these are Black Lahu speakers. Burma, Thailand, and Laos are also home to numerous Lahu people. Lewis (p.172) reported population estimates for these countries in mid 1983 adding as many as 200,000 more people to the totals from China. A number of Yellow Lahu people in Thailand report that there are some 5,000 Yellow Lahu people in Vietnam.

It is difficult to obtain exact and reliable population data about the Lahu people for many reasons. One reason is that the borders in these countries are somewhat porous to the Lahu people. Another reason is that many have left the South East Asian region, moving to Europe and North America.

There is a sizeable population of Yellow Lahu people in the United States consisting mainly of people who were refugees from Laos. The bulk of these people live in the Visalia, California area, and are primarily Yellow Lahu Banlan speakers. There are more than 1,500 Yellow Lahu people in that area alone⁴.

In Thailand, there are more than 40,000 Lahu people. They live in 5 provinces of northern Thailand: Tak, Chiang Mai, Chiang Rai, Mae Hong Son, and Lampang. There is a rather

³The literature on the Lahu languages generally uses the names Black Lahu and Yellow Lahu. The Lahu themselves use Lahu Na and Lahu Shi, 'na' being the word for 'black', and 'shi' the word for 'yellow'. In order to be consistent and to comply with the established standard, the names Black Lahu and Yellow Lahu will be used in this paper. The name 'Yellow Lahu' will generally be used when referring specifically to the Lahu Shi Banlan.

⁴Personal communication from Paul Lewis and a Lahu man named Moody.

random mix in each of the provinces of the various languages with concentrations of different dialects clustered in areas, often intermixed in the same village. According to Lewis (p.172), the Yellow Lahu Banlan constitute 17 percent of the Lahu population in Thailand. Using these statistics, there are over 6,800 Yellow Lahu Banlan people in Thailand.

1.3 Data Collection

1.3.1 Place

The data collected in this study derive mainly from the Yellow Lahu Banlan village Thung Phrao in Chiang Rai Province, Thailand. During the months of February through May of 1994, research and language learning were conducted under the auspices of the Payap Research and Development Institute (PRDI) and the Summer Institute of Linguistics (SIL).

1.3.2 People

The primary language assistants were Khomson Nananikhom, Naykong Miseri, and Ikhamu Miseri, all who are native speakers of Yellow Lahu. Various others in Thung Phrao assisted my wife and I, being both patient and encouraging as we began to learn to speak their language.

1.3.3 Phonetics

The data included in this report is part of a larger corpus collected mostly in the form of word lists. IPA transcriptions were used to record words in the SIL 406 word list⁵. The data contains 27 phonetic consonants and 34 phonetic vowels.

⁵The SIL 406 word list is a compilation of the Swadish 100 and 200 word lists with additional words added. It contains glosses in English, Central Thai, and Northern Thai. See appendix A for a partial listing of words collected from this list.

2. The Syllable

2.1 Contrast

The syllable skeleton of Yellow Lahu words is very basic. All syllables are made up of an optional initial consonant followed by an obligatory vowel and tone. There are no consonant clusters. This structure is represented as: (C) V T.

Two distinct syllable shapes are possible. These are: CVT and VT. There appears to be no restriction on vowels filling the syllable initial V slot. Some CV combinations may be restricted (see 3.3). Examples of the two canonical syllable shapes follow.

CVT

[kæ ³]	'mountain'
[je ³⁻²]	'house'
[tʃɔ ³]	'person'
[ʏa ⁵]	'chicken'
[p ^h i ⁵]	'dog'

VT

[a ³ .tæ ³]	'knife'
[ɔ ¹]	'cooked rice'
[a ³ .ku ¹]	'head'
[uʔ ³ .tʃ _Λ ʔ ¹] ⁶	'hat'
[Λ ³⁻²]	'four'

2.2 Variation

The raw phonetic data contains a possible variation of the phonological syllable shapes. Phonetic syllables may end with a consonant (C); either a nasal or a glottal stop. The syllable final nasal consonants are the result of strong nasalization on the preceding vowel, a phonological feature of vowels (see 4.1). The syllable final glottal stops are a feature of two of the tones (see 5.1). Neither of these is to be considered a variation of the canonical syllable shapes.

⁶The diacritic (small box below the vowel) used to augment the [Λ] is usually used to denote laminal articulation in consonants. This choice of diacritic was based on the availability of the mark in the IPA script being used, not on the phonetic value usually associated with it. Transcriptions were made with a zig-zag line under the [Λ], representing 'clenched teeth' to the researchers.

2.3 Distribution

Only one restriction applies to the distribution of syllables within words. Consecutive vowel initial syllables are not permitted. The vast majority of Yellow Lahu words are consonant initial single syllables. Most vowel initial syllables perform a grammatical function, and are either preposed or postposed to a consonant initial syllable.

3. Consonants

3.1 Contrast

The data provides evidence of contrast for the following consonants:⁷

/p/	/t/	/k/
/p ^h /	/t ^h /	/k ^h /
/b/	/d/	/g/
	/tʃ/	
	/tʃ ^h /	
	/dʒ/	
/f/	/s/	/h/
/v/	/j/	/y/
/m/	/n/	/ŋ/
	/l/	

Figure 2: Yellow Lahu Consonants

Evidence illustrating consonant contrast is in the following 4 sets of data.

Contrastive Sets of Consonants

Set 1: C /a/ T

/p/	[ha ¹ .pa ³]	'moon'
/p ^h /	[sa ² ʔ ⁵ .p ^h a ³]	'leaf'
/t/	[a ¹ .vaʔ ³ .sa ² .ta ³]	'7 bamboo poles'
/t ^h /	[k ^h aʔ ¹ .t ^h a ⁵ .li ³]	'when'

⁷It is interesting to note two differences between the Black and Yellow Lahu languages here. First, Yellow Lahu does not have post-velar stops which are present in the Black Lahu dialects. Secondly, /s/ is phonemic instead of /ʃ/ in Black Lahu.

/k/	[lo ⁵ .ka ³]	'river'
/k ^h /	[mɛ ⁵ .k ^h a ³]	'eye'
/b/	[na ³ .pɿ ³ .ba ³⁻¹ .tʃ ^h i ¹]	'deaf'
/d/	[ʃu ¹ .da ³]	'same'
/g/	[li ³ .k ^h ɿ ⁵ .ga ³]	'sing'
/tʃ/	[tʃãŋ ³ .da ³ ʔ.tʃ ^h i ³]	'hate'
/tʃ ^h /	[tʃa ³ ʔ.tʃi ⁵ ʔ.dʒa ³⁻¹]	'dirty'
/dʒ/	[p ^h a ³ .dʒa ³⁻²]	'spicy, hot'
/f/	[fa ³ ʔ.tʃ ^h a ³]	'mouse'
/s/	[k ^h ɿ ⁵ .sa ³ ʔ]	'corn'
/h/	[ha ¹]	'pants'
/v/	[a ³ .va ⁵]	'bamboo'
/ɣ/	[ɣa ³]	'people'
/m/	[a ³ .vi ³⁻⁵ .ma ³]	'older sister'
/n/	[a ³ .na ¹⁻³]	'younger sibling'
/ŋ/	[ŋa ³⁻²]	'I, 1st person sing. pronoun'
/j/	[ja ³]	'offspring'
/l/	[la ³⁻¹]	'come'

Set 2: C /i/ T

/p/	[la ³ .pi ² ʔ]	'ring'
/p ^h /	[p ^h i ³ .tʃ ^h i ³]	'spit'
/t/	[ɕ ³ .ti ³]	'cook (rice)'
/t ^h /	[ɣi ³⁻¹ .t ^h i ² ʔ ⁵]	'swim'
/k/	[dʒu ³ .ki ³ .tu ⁵⁻³]	'sew'
/k ^h /	[k ^h i ³ .hu ³]	'foot'
/b/	[a ³ .bi ² ʔ]	'comb'
* /d/	no data	
/g/	[lɛ ³ .gi ⁵]	'play'
/tʃ/	[tʃi ⁵ .tʃ ^h i ³]	'shave'
/tʃ ^h /	[tʃ ^h i ³]	'verb ending - stative'

/dʒ/	[a ³ .dʒiŋ ⁵]	'dirt'
/f/	[ɔ ³⁻² .fiŋ ⁵ .ku ³]	'stomach'
/s/	[a ³ .miŋ ¹ .ʃi ¹⁻³ .sɛ ¹ ŋ ¹]	'extinguish'
/v/	[sɛ ¹ .viŋ ⁵]	'flower'
/m/	[a ³ .mi ¹]	'fire'
/n/	[a ³ .mi ³ .ni ³]	'yesterday'
/ŋ/	[a ³ .ŋi ³]	'snow'
/j/	[mɛ ⁵ .k ^h a ³ .ji ³]	'wink'
/l/	[li ³]	'substance question marker'

Set 3: C /u/ T

/p/	[a ³ .pu ⁵ .ha ¹ .ma ³ .viŋ ³]	'naked'
/p ^h /	[mæ ⁵ ŋ.k ^h a ³ .p ^h u ³]	'eyeball'
/t/	[a ³ .miŋ ¹ .tu ¹⁻³]	'burn'
/t ^h /	[ɔ ³⁻¹ .t ^h u ¹ .di ³]	'thick'
/k/	[pɔ ⁵ .ku ³]	'banana'
/k ^h /	[mɔ ³ ŋ.k ^h u ³]	'cooking'
/b/	[a ³ .buŋ ⁵]	'blanket'
* /d/	no data	
* /g/	no data	
/tʃ/	[mɛ ⁵ .k ^h a ³ .tʃu ¹⁻³ .tʃ ^h i ³]	'blind'
/tʃ ^h /	[a ³ .tʃ ^h u ⁵]	'thorn'
/dʒ/	[ha ¹⁻³ .dʒu ³]	'cave'
* /f/	no data	
/s/	[ʃu ³]	'they - 3rd person pl. pronoun'
/h/	[ɔ ³⁻² .hu ³]	'winnow'
* /v/	no data	
* /ɣ/	no data	
* /m/	no data	
/n/	[ma ³ .nu ¹⁻³]	'jackfruit'
* /ŋ/	no data	

/j/	[ju ³⁻²]	'grab'
/l/	[ɔ ³ .ji ¹ .lu ⁵]	'yellow'

Set 4: C /ε/ or /æ/ T

/p/	[ti ³ .pɛ ³⁻¹]	'some'
/p ^h /	[p ^h æɽ ³]	'tie'
/t/	[tɛ ³]	'one'
/t ^h /	[ɔ ³⁻¹ .pa ³ .t ^h æ ⁵ ɽ]	'thin'
/k/	[kæ ³]	'mountain'
/k ^h /	[a ³ .k ^h ɛ ⁵]	'plate'
/tʃ/	[tʃɛ ¹ .a ³]	'a little'
/t ^h ^h /	[t ^h ɛ ³ .t ^h i ³]	'live/be at(a place)'
/dʒ/	[sɔ ³ ɽ ⁵ .dʒæ ¹]	'tree'
/b/	[lɛ ³ .bɛɽ ⁵]	'paddle(cooking)'
* /d/	no data	
/g/	[gæɽ ⁵]	'stab'
/f/	[lɛ ³ .fɛ ²⁻⁴]	'right?'
/s/	[sæɽ ³]	'pull (lead)'
/h/	[hɛ ³]	'exclusive postposition on pronouns'
/v/	[vi ³ .ve ¹ .t ^h i ³]	'dry'
/ɣ/	[ɣɛ ³⁻²]	'bear'
/m/	[ho ¹⁻³ .mæ ³]	'stone'
/n/	[tʃi ³ ɽ ⁵ .k ^h ɛ ³ .nɛ ³]	'deer (barking)'
/ŋ/	[ɔ ³⁻¹ .ŋæ ³ .do ³]	'short (length)'
/j/	[jɛ ³⁻²]	'house'
/l/	[a ³ .lɛɽ ⁵]	'salt'

3.2 Variation

Consonant variation in Yellow Lahu is limited to the non-stop alveolar and palatal consonants /s/, /tʃ/, /tʃʰ/, and /j/. They are conditioned in similar ways by the environment in which they occur. Two types of variation can be observed.

3.2.1 + Closure/Friction

The consonants /s/ and /j/ are affected by a process which increases closure in the mouth. This process resembles palatalization, but the overall effect is an increase of friction during phonation, rather than changing the point of articulation. The following rules describe the process.

$$/s/ \rightarrow [\text{ʃ}] / _ / i, u /$$

$$/j/ \rightarrow [\text{j}] / _ / i, u /$$

Since /tʃ/ and /tʃʰ/ already have a great deal of closure, this process is not apparent. Examples demonstrating this process follow.

/s/ voiceless alveolar fricative

[ʝ³ .ʃi³ .lu⁵]	'yellow'
[kɑ³ .ʃi³]	'pour'
[tʃi⁵ .ʃi³]	'fruit'
[ʃi¹]	'understand'
[ʃu³]	'they -3rd person pl. pronoun'

/j/ voiced palatal approximant

[hu³ .ji⁵]	'mat'
[ɑ³ .ji³]	'mother'
[ji³-² .tʃʰi³]	'laugh'
[ju³]	'take'

3.2.2 Raising/Fronting

The second process occurs only with the vowel /Λ/. This process involves a raising or fronting of the consonants when they precede /Λ/. The added closure due to the 'clenched teeth' required to produce the vowel (see 4.3.2) forces the consonants up and forward. The consonants /tʃ/, /tʃʰ/, and /j/ are effected, while /s/ is not since its point of articulation is further forward. Rules describing this process follow.

$$/tʃ/ \rightarrow [ts] \quad / __ / \Lambda/$$

$$/tʃʰ/ \rightarrow [tsʰ] \quad / __ / \Lambda/$$

$$/j/ \rightarrow [z] \quad / __ / \Lambda/$$

Examples demonstrating these changes follow.

/tʃ/ voiceless palato-alveolar affricate

[ts_Λʔ⁵.tʃʰi³] 'sharp'

[ts_Λʔ¹.tʃʰi³] 'cough'

/tʃʰ/ voiceless aspirated palato-alveolar affricate

[tsʰ_Λʔ³.tʃʰi³] 'suck'

[tsʰ_Λʔ⁵.tʃʰi³] 'wash'

/j/ voiced palatal continuant

[z_Λʔ³.tʃʰi³] 'sleep'

[ɑ³.z_Λʔ⁵] 'grass for house roof'

3.3 Distribution

All consonants appear in syllable and word initial position. Further research is required to determine if all consonants appear with all vowels and tones. At this time, it appears that /f/, /ɣ/, /l/, and /ŋ/ do not appear with /ʌ/ and possibly /o/ also. No explanation for this is known.

4. Vowels

4.1 Contrast

The data provides evidence for positing the following 8 vowel system:

/i/	/u/
/ɛ/	/o/
/æ/	/ʌ/ /ɔ/
	/a/

Figure 3: Yellow Lahu Vowels

Evidence illustrating vowel quality contrast follows in the next 6 sets of phonetic data.

Contrastive Sets of Vowels

Set 1: /p/ V T

[pi ⁵]	'give'
[ti ³ .pɛ ³⁻¹]	'some'
[pæ ³ .vɛ ¹ .o ³]	'full'
[a ³ .pa ³]	'father'
[pɔ ⁵ .ku ³]	'banana'
[po ³]	'float (V)'
[a ³ .pu ⁵]	'shirt'
[na ¹ .pʌ ³]	'ear'

Set 2: /p^h/ V T

[p ^h i ⁵]	'dog'
[p ^h ɛ ³⁻² .ni ³ .ɔ ¹]	'day after tomorrow'
[p ^h æŋ ³]	'tie (V)'
[p ^h a ³]	'spicy (hot)'
[ma ³ .sa ³ .p ^h ɔ ⁵]	'papaya'
[p ^h ɔ̃ ³ .da ³ .t ^h i ³]	'meet'
[p ^h u ³]	'silver'
* [p ^h ɿ]	no data

Set 3: /t/ V T

[ti ³]	'do'
[tɛ ³]	'one'
[a ³ .tæ ³]	'knife'
[ta ³]	'don't (command)'
[ma ⁵ .ni ³ .toŋ ⁵]	'east (direction)'
[to ⁵]	'walk (V)'
[tu ³]	'standing'
[ɔ ³ .naŋ ⁵ .tɿ ²⁻⁴]	'black'

Set 4: /t^h/ V T

* [t ^h i]	no data
[t ^h ɛŋ ⁵]	'kick'
[ɔ ³⁻² .pa ³ .t ^h æŋ ⁵]	'thin'
[k ^h aŋ ¹ .t ^h a ⁵ .li ³]	'when'
[t ^h ɔ]	no data
[a ³ .t ^h oŋ ⁵ .li ³]	'what'
[ɔ ³⁻² .t ^h uŋ ⁵ .di ³]	'thin'
* [t ^h ɿ]	no data

Set 5: /k/ V T

[ki ³ .vɛ ¹ .tʃi ³]	'rotten'
[Λ ³⁻² .kɛ ⁵]	'pillow'
[kæ ³]	'mountain'
[ka ³]	'fall (fruit from trees, snow)'
[mΛ ² .kɔ ³]	'day'
[ji ² .ko ³]	'split'
[a ³ .ku ¹]	'head'
[kΛ ¹ .ta ³⁻²]	'neck'

Set 6: /k^h/ V T

[bi ³ .k ^h i ¹ .tsΛ ⁵]	'laundry'
[a ³ .k ^h ɛ ⁵]	'dish'
[k ^h æ]	no data
[mɛ ⁵ .k ^h a ³]	'eye'
* [k ^h ɔ]	no data
* [k ^h o]	no data
[mɔ ² .k ^h u ³]	'cooking pot'
[nɔ ³ .k ^h Λ ⁵]	'nose'

4.2 Variation

Three types of phonetic variation of vowel quality are demonstrated in the data. These are nasalization, breathiness, and length. Six of the vowels show all three qualities. These variations are minor and generally in free variation. The degree to which they can be predicted is discussed below.

4.2.1 Nasalization

When a word with a syllable final nasal consonant is borrowed, the preceding vowel is strongly nasalized in Yellow Lahu. Examples representing 5 of the 8 vowels follow.

Nasalization

[lĩ]	'forget'
[hẽ ³ .ja ³⁻²]	'strong'
[sæ ²⁻⁴ .ji ¹]	'sand'
[kã ³ .ti ³]	'work'
[sõ ³]	'steel, iron'

It is also common for vowels following nasal consonants to become nasalized, though it is not predictable. Speakers may actually nasalize any vowel in any syllable. There is no way to predict when a speaker will use more or less nasalization, though some speakers generally use more nasalization than others.

Nasalized Vowels (in free variation)

/nu ⁵ /	[nũ ⁵] ~ [nu ⁵]	'cow'
/a ³ .pa ³ /	[ã ³ .pã ³] ~ [a ³ .pa ³]	'father'
/hΛ ³⁻² /	[hΛ̃ ³⁻²] ~ [hΛ ³⁻²]	'weep'

4.2.2 *Breathiness*

Breathiness on vowels is in free variation with clear phonation in one environment. It only occurs with the falling tone. However, not all speakers employ it at all times, and some speakers seldom use it. It is more likely to occur in one of two environments. First, if the syllable with the falling tone is emphasized, the vowel will often be breathy. Second, a vowel occurring with a falling tone is more likely to be breathy if the tone falls from mid level instead of high.

Vowels with Breathiness

[mi ³ .gi ³⁻²] ~ [mi ³ .gi ³⁻²]	'world'
[je ³⁻²] ~ [jɛ ³⁻²]	'house'
[ŋa ³⁻²] ~ [ŋɔ ³⁻²]	'I -1st person singular pronoun'

4.2.3 Length

Length on vowels occurs in two predictable discourse level environments. First, in utterance final position with the level unstopped tones (see 5.1) a vowel may be lengthened. The second environment is when emphasis is applied to a word.

Utterance final (listing)

/tu ⁵ /	[tu: ⁵]	'stand'
/po ³ /	[po: ³]	'float'
/tʃ ^h ɔ ³ /	[tʃ ^h ɔ: ³]	'person'

Emphasis

/vi ³ .vɛ ¹ .tʃi ³ /	[vi: ³ .vɛ ¹ .tʃi ³]	'dry (V)'
/dʒɔ ³ .dʒa ³⁻² /	[dʒɔ: ³ .dʒa ³⁻²]	'correct'
/je ³⁻² /	[jɛ: ³⁻²]	'long'

The final example above shows one word which informants insist has a long vowel. Phonemically, the words for 'house' and 'long' are both /je³⁻²/. However, when spoken in isolation, speakers differentiate between the words by lengthening the vowel in 'long'. This distinction has not been apparent in connected speech.

[jɛ ³⁻²]	'house'
[jɛ: ³⁻²]	'long'

4.3 Distribution

All vowels appear in the single vowel (VT) syllable type. Some restrictions may apply to consonant vowel combinations (see 3.3). The distribution of vowels in vowel-vowel sequences and the vowel /ʌ/, as described below, requires further research.

4.3.1 Vowel-vowel sequences

The data contains 11 vowel-vowel sequences, but only 20 separate examples. Only the vowels /i/, /ɛ/, /a/, /ɔ/, /o/, and /u/ occur in sequences. Some sequences are clearly in loan words, and most occur with contour tones. Speakers are generally able to separate the vowels, but in regular speech, most of the sequences sound like diphthongs. Vowel sequences in the data are treated as separate syllables.

Vowel-vowel sequences in phonetic data.

/i.ɔ/	[p ^h ɛ ³⁻¹ .ni ³ .ɔ ¹]	'day after tomorrow'
/ɛ.i/	[gɛ ³ .iɿ ³]	'enter'
/ɛ.o/	[pæ ³ .vɛ ¹ .o ³]	'full'
/ɛ.o/	[la ³ .vɛ ¹ .o ³]	'left (side)'
/ɛ.a/	[nɛ ³ .a ⁵]	'small'
/a.i/	[la.i ²⁻³ .ɣa ³]	'many people'
/a.o/	[ga ³ .o ³]	'crawl'
/ɔ.a/	[p ^h ɔ ³ .a ³ .tʃi ³]	'move (house)'
/ɔ.i/	[bo ³ .i ⁵ .tiɿ ¹]	'dance'
/o.o/	[ɔ ³ .mãõ ¹⁻³ .o ¹]	'son-in-law'
/u.a/	[k ^h a ³ .fu ¹ .a ³]	'same'

The 'clenched teeth' vowel: /ʌ/

Yellow Lahu has an unusual mid back unrounded oral vowel, represented phonemically as /ʌ/. It does not appear with the consonants: /f/ /l/ /ɣ/ and /ŋ/. Bradley (p. 116) transcribed

this vowel as four different back unrounded vowels⁸, dependent upon the environment in which they occur.

Acoustic phonetic research is required before this vowel can be accurately described, however, observation of Yellow Lahu speakers producing this vowel led to the name 'clenched teeth'. A number of speakers offered the advice that one's teeth must be held together to correctly produce this particular vowel. In the phonetic data, this vowel is represented with the IPA symbol [ɘ].

5. Tones

5.1 Contrast

The data provides evidence for positing the following 7 tone system:

high level	[a ⁵]
mid level	[a ³]
low level	[a ¹]
rising (low or mid)	[a ²⁻⁴] or [a ³⁻⁵]
falling (mid or high)	[a ³⁻²] or [a ⁵⁻⁴]
(extra) high stopped	[aʔ ⁵]
mid (or low) stopped	[aʔ ³] or [aʔ ¹]

Figure 4: Yellow Lahu Tones

The pitch patterns represented above in phonetic form are intended to provide phonetic values for the tones represented. The numbers represent a pitch scale in which 1 is low. Contour tones contain two numbers representing movement from one pitch to another. Evidence illustrating tone quality contrast follows in the next 4 sets of data.

⁸These vowels are the high, mid, mid-low, and low unrounded back vowels: [u], [ø], [ʌ], [a].

Contrastive sets of Tones

Set 1

[tʃa ⁵ .tʃi ³]	'eat'
[tʃa ³ .tʃi ³]	'seek'
[tʃa ¹ .tʃi ³]	'grow'
[tʃa ²⁻⁴ .tʃi ³]	'join'
[tʃa ³⁻² .ʃi ¹]	'rice (seed for planting)'
[tʃaʔ ⁵ .k ^h ɛ ³]	'rope, cord'
[tʃaʔ ³ .pu ³⁻²]	'airplane [machine fly]'

Set 2

* [mæ ⁵]	no data
[ɔ ³ .mæ ³]	'name'
[mæ ¹]	'tail (of an animal)'
[mæ ³⁻⁴ .vɛ ³ .tʃi ³]	'lost'
[mæ ³⁻²]	'delicious'
[mæʔ ⁵ .ʃi ³]	'eye'
* [mæʔ ³]	no data

Set 3

[ka ⁵ .tʃi ³]	'hear'
[ka ³ .tʃi ³]	'sleep'
[tʃ ^h ɔ ³ .ka ¹]	'deaf person'
[ka ²⁻⁴ .tʃi ³]	'be stuck'
[ka ³⁻² .tʃi ³]	'buying and selling'
[a ³ .kaʔ ⁵]	'water'
* [kaʔ ³]	no data

Set 4

[ŋa ⁵]	'fish (N)'
[ŋæ ³]	'lean against'

[ŋa ¹ .tʃ ^{hi3}]	'barrow (V)'
[ŋa ²⁻⁴ .tʃ ^{hi3}]	'spread open (V)'
[ŋa ³⁻²]	'I - 1st person singular pronoun'
[ŋaʔ ⁵]	'bird'
* [ŋaʔ ³]	no data

Set 5

[h _Λ ⁵]	'sell, heavy'
[h _Λ ³]	'hot (temperature)'
[h _Λ ¹]	'twist, wind (V)'
[h _Λ ²⁻⁴]	'look after animals'
[h _Λ ³⁻²]	'cry'
[h _Λ ʔ ⁵]	'maggot'
[haʔ ³]	'love'

5.2 Variation

Tone variations are present, but have not yet been analyzed. As noted above, the contour tones and the mid or low stopped tone in particular show variation of their phonetic values. Discourse level features also contribute phonetic pitch variations.

5.3 Distribution

The most frequently recorded tone was the mid tone. The tones can be ranked as follows; from highest to lowest frequency in the data:

Frequency of Tone Occurrence

- mid
- high level
- falling
- low
- high stopped
- mid stopped
- rising

6. Conclusion

Data has been presented illustrating the phonological system of the Yellow Lahu Banlan language. Further data gathering and checking must be done to bolster the analysis. The mid central 'clenched teeth' vowel promises interesting acoustic phonetic research, with possible implications for the existing diacritic system of the IPA. The tone system also needs further investigation, particularly concerning pitch levels and the effect of discourse functions on tone.

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Appendix

Appendix A: Phonetic Data

The following list of words is derived from the SIL 406 word list. This is the raw phonetic data collected for this research project from mother-tongue speakers of Yellow Lahu Banlan. Utterances which are known to be Black Lahu or contain segments from Black Lahu are marked '(Black Lahu)'.

word list #	utterance	gloss	speaker
001	m _ə ⁵ .no ³ .maŋ ⁵	sky	4
002	m _ə ³⁻⁵ ŋ.ni ³	sun	1
002	m _ə ⁵ .ni ³	sun	4
003	ha ¹ .pa ³	moon	1
003	ha ¹ .pa ¹³	moon	4
004	m _ə ⁵ ŋ.ki ³⁻⁵ .fi ³	star- older term	1
004	mi ⁵ ŋ.ki ³ .fi ³	star-newer term	1
004	m _ə ⁵ .ki ³	star	4
005	m _ə ³⁻¹	cloud	1
005	m _ə ³⁻¹	cloud	4
007	m _ə ³⁻⁵ .yi ³⁻¹	rain	1
007	m _ə ³⁻⁵ .yi ³⁻¹ .la ³⁻¹ .tʃi ³ ŋ	rain falling/coming	1
007	m _ə ³ .ji ³⁻¹	rain	4
012	m _ə ⁵ ŋ.k ^h a ³⁻⁵	night	1
012	m _ə ⁵ .k ^h a ³⁻⁴	night	4
013	m _ə ⁵ ŋ.ko ³	day	1
013	m _ə ⁵ .ko ¹³	day	4
014	m _ə ⁵ ŋ.fo ³⁻⁵ ŋ	morning	1
015	m _ə ⁵ ŋ.ko ³ .tʃa ⁵ ŋ.yãŋ ³	noon-time	1
016-1	ya ³⁻¹ ŋ.nji ³	today (Black Lahu)	1
016	a ³ .mi ³⁻¹ .nji ³	yesterday (Black Lahu)	1

word list #	utterance	gloss	speaker
016	α ³ .mi ³ .ni ³	yesterday	4
015+2	va ⁵ .ʃi ³ .ka ³ .tʃi ³ ʔ	hail falling	1
015+2	α ³ .ŋi ³	snow	1
015+2	α ³ .ŋi ³ .ka ³ .tʃi ³ ʔ	snow falling	1
017	ʃɔ ³ .vɔ ¹	tomorrow	1
018	k ^h Λ ³⁻¹	year	1
018	α ³ .vi ³⁻⁵	year	4
019	mΛ ⁵ .ni ³ .tɔ ⁷ ⁵	east	4
020	mΛ ⁵ .ni ³ .kæ ³⁻¹	west	4
021	na ³ .lo ³	north	1
021	ɔ ³ .ki ⁵ .p ^h ɔ ³	north	4
022	ma ³ .lo ³	south	1
022	ɔ ³ .na ⁷ ⁵ .p ^h ɔ ³	south	4
023	α ³ .ka ⁵ ʔ	water	1
023	α ³ .ka ³	river	1
023	α ³ .ka ⁷ ⁵	water	4
024	lo ⁵ .ka ³	river	4
025	na ³ .pa ³ .lai ³	sea	4
026	mi ³ .ʃa ³⁻¹	earth/soil	1
026	mi ³ .gi ³⁻¹	earth	4
026	α ³ .gi ⁷ ⁵	earth, soil	2
026+1	α ³ .gi ⁷ ⁵ .di ³	dirt ball	2
027	tʃɛ ³ .næ ⁷ ⁵	mud	2
028	dʒi ³⁻¹ .mi ³	dust	4
028	mΛ ³ .k ^h Λ ⁷ ³	dust	2
029	hɔ ³⁻⁵ ʔ.mæ ³ ʔ	stone	1
029	hɔ ¹⁻³ .mæ ⁷ ¹	stone	4
029	hɔ ¹⁻³ .mæ ³ .ʃi ¹	stone	2
030	ʃɛ ⁵ .ʃi ¹	sand	1
030	sæ̃n ³⁻⁵ .ʃi ³	sand	4
030	sæ̃n ⁵ .ʃi ¹	sand	2

word list #	utterance	gloss	speaker
032	ʃi ³	gold	1
032	ʃi ³	gold	4
032	ʃi: ³	gold	2
033	p ^h u ³	silver (white)	1
033	ɔ ³ .pfu ³	silver (Black Lahu)	4
033	p ^h u: ³	silver, money	2
034	sõŋ ³	iron (steel)	4
034	sõŋ ³	iron (steel)	2
035	kæ ³⁻⁵ ʔ	mountain	1
035	kæ ³	mountain	4
035	kæ ³	mountain	2
036	ha ¹⁻³ .dʒu ³	cave	2
037	hæ ⁵ .pi ¹	forest	4
037	hæ ³ .pi ¹ .lu ³	forest (location)	2
038	s _ʔ ⁵ .dʒæ ¹³	tree	4
038	s _ʔ ⁵ .dʒæ ¹	tree	2
039	s _ʔ ⁵ .ka ³⁻⁵	branch	4
039	ɔ ³ .ka ¹⁻³	branch	2
040	s _ʔ ⁵ .ku ³⁻⁵	bark	4
040	ɔ ³ .ku ¹⁻³	bark	2
041	ɑ ³ .tʃu ⁵	thorn	4
041	ɑ ³ .tʃu: ⁵	thorn	2
042	s _ʔ ⁵ .tʃi ¹	root	4
042	ɔ ³ .tʃi ¹	root	2
043	s _ʔ ⁵ .p ^h ɑ ³	leaf	4
043	ɔ ³ .p ^h ɑ: ³	leaf	2
044	s _ʔ ³ .vɛ ³⁻⁵ ʔ	flower	1
044	s _ʔ ³ .vi ³	flower	4
044	s _ʔ ³ .vi ³	flower	2
045	tʃi ⁵ .ʃi ³	fruit	1
045	dʒi ³⁻⁵ .ʃi ¹	fruit	4

word list #	utterance	gloss	speaker
045	dʒi ¹⁻³ .ʃi ¹	fruit	2
045+1	n _Λ ʔ ³ .dʒa ³⁻¹	many, lots (of things)	2
046	ɔ ³ .k ^h a ³	seed	4
046	ɔ ³ .k ^h aʔ ³	seed	2
047	m _Λ ʔ ³	grass	4
047	m _Λ ʔ ³	grass	2
048	a ³ .va ⁵	bamboo	4
048	a ¹ .vaʔ ³	bamboo	2
048+1	a ¹ .vaʔ ³ .s _Λ ¹ .taʔ ³	7 bamboo poles	2
057	bɔ ⁵ .ku ³	banana	1
057	a ³ .pɔ ⁵ .kuʔ ³	banana	3
058	ma ³ .sã ³ .p ^h ɔ ⁵	papaya	4
059	ma ³ .mo ⁵ .ʃi ³	mango	4
060	ma ³ .nu ¹⁻³	jackfruit	4
067	k ^h Λ ⁵ ʔ.ʃa ³ ʔ	corn	1
068	dʒa ⁴ .ʃi ³	paddy rice	4
069	ɔ ¹	cooked rice	1
069	ɔʔ ³	cooked rice	4
070	va ³ .p ^h i ³ .ʃaʔ ⁵	rice husk	4
071	a ³ .lɛʔ ⁵	salt	4
072	tu ³ .ʃaʔ ³	animal	4
074	ɣɛ ³⁻¹	bear	1
075	tʃiʔ ⁵	deer	4
076	mɔ ⁵ ʔ	monkey	1
076	mɔʔ ³	monkey	4
080	fa ⁵ ʔ.tʃa ³⁻¹ .lõn ³	rat (mouse large)	1
080	faʔ ³ .tʃaʔ ³	rat (also mouse)	4
081	p ^h i ⁵	dog	1
083	tʃi ³ ʔ.da ³ ʔ.tʃi ³	bite	1
084	mɛ ³⁻⁵ .ni ³	cat	1
085	va ⁵ ʔ	pig	1

word list #	utterance	gloss	speaker
086	nũ ⁵	cow	1
088	nũ ⁵ .ka ¹	water buffalo (cow dumb)	1
099	ya ⁵	chicken	1
122	tsΛ ⁵ ʔ.k ^h ε ³	hair	1
124	mæ ⁵ ʔ.tsΛ ⁵ ʔ	eyebrow	1
125	mæ ⁵ ʔ.ʃi ³	eye area	1
127	na ¹ .k ^h Λ ⁵	nose	1
137	pa ¹ .tsΛ ⁵ ʔ.tʃi ⁵ .tse ³ ʔ	shave (face)	1
169	ho ³ .k ^h a ⁵ ʔ	man/male	1
169	ho ³ .k ^h a ⁵ ʔ	man	2
170	ya ⁵ .mi ⁵	woman/female	1
170	ya ⁵ .mi ⁵	woman	2
171	tʃo ³	person	1
171	tʃo ¹³ ʔ	person	2
172	a ³ .pa ³	father	1
172	ã ³ .pã ³	father	2
173	a ³ .yi ³	mother	1
173	ã ³ .jĩ ³ ʔ	mother	2
174	ʃi ¹	child	1
174	ʃi ¹	child	1
174	ya ⁵	child, offspring	2
175	o ³ .mãõ ¹⁻³ .o ¹	son-in-law	2
176	q̣ ³⁻¹ .p ^h a ⁵ .mo ⁵	husband	1
176	o ³ .p ^h o ³ .mo ³	husband	2
177	q̣ ³⁻¹ .mi ⁵ .ma ³	wife	1
177	o ³ .mi ⁵ .ma ³	wife	2
178	mæ ¹³ .tsΛ ⁵ .ma ³	widow	2
179	a ³ .vi ³⁻⁵ .va ¹	older brother	1
179	a ³ .vi ³⁻⁵ .ma ³	older sister	1
179	a ³ .vi ⁵ ʔ	elder sibling	2
180	a ³ .na ³⁻⁵ .va ¹	younger brother	1

word list #	utterance	gloss	speaker
180	a ³ .vi ³⁻⁵ .ma ³	younger sister	1
180	a ³ .na ¹⁻³	younger sibling	2
181	ɔ ³ .tʃɔ ¹⁵	friend	2
182	mæ ¹	name	2
183	k ^h aŋ ⁵	village	5
182+1	mæ ³ .ha ⁵ .ma ³	divorcee (woman)	2
184	yaŋ ³ .kaŋ ³	road, path	5
182+2	pɔ ³ .ha ⁵ .va ³ ŋ	divorcee (man)	2
182+3	pɔ ³ .tsa ⁴ .va ³ ŋ	widower	2
186	je ³⁻¹	house	1
186	je ³⁻¹	house	5
187	ya ⁵ .mi ⁵ ŋ	door, gate	1
187	yaŋ ⁵ .mi ¹ .k ^h ʌ ¹³	door	5
188	ya ⁵ .mi ⁵ ŋ.ne ³ .a ⁵ ŋ	window	1
188	yaŋ ⁵ .mi ¹ .ne ¹ .a ³	window	5
189	a ³ .za ⁵ .be ¹ .ki ³⁻¹	roof (thatch)	5
190	kʌ ³ .hʌ ¹⁻³ .lu ³	space under house (location)	5
191	yu ⁿ³⁻¹ .pa ¹ ŋ ³	wall(of house)	5
192	fu ³ .ji ⁵	mat	5
193	ʌ ³⁻¹ .ke ⁵	pillow	5
194	a ³⁻¹ .bu ⁵	blanket	5
195	bi ³ .kai ⁵	clothing	5
198	t ^h æ ¹ ŋ ³	sarong	5
199	ha ¹ ŋ ³	trousers	5
200	dʒu ³ .ki ³ .tu ⁵⁻³	sew	5
201	a ³ .yu ⁿ ŋ ⁵	needle	5
202	aŋ ³ .bi ¹	comb	5
203	la ³⁻¹ .pi ¹	ring	5
205	mɔ ³ ŋ.k ^h u ³	cooking pot	1
205	mo ³⁻¹ .k ^h u ⁿ³	cooking pot	5
207	tɛ ³ .k ^h u ⁵	mortar	5

word list #	utterance	gloss	speaker
208	tɛ ³ .tu ⁿ ɿ ⁵	pestle	5
209	tʃɔ ³⁻¹ .ko ¹	spoon	1
209	dʒo ³⁻¹ .ku ³	spoon	5
210	a ³⁻¹ .k ^h ɛ ³	plate	5
211	a ³ .sa ⁵ ɿ	firewood	1
210+1	ba ³ .la ³ .ma ¹³	mirror	5
211	a ³ sa ⁵ ɿ ⁵	firewood	5
210+2	lɛ ³⁻¹ bɛɿ ⁵	cooking paddle	5
212	a ³ .miɿ ¹	fire	5
210+3	a ³⁻⁵ .p ^h iɿ ¹	chili pepper	5
213	k ^h ɿ ⁵ .hãɿ ³	ashes	5
214	ma ⁵ k ^h ɿ ⁵	smoke	5
216	dʒæŋ ³⁻¹ .kuɿ ³	drum	5
218	k ^h aɿ ⁵ bo ³⁻⁵ tu ³	crossbow	5
220	a ³ .tæɿ ³	knife (large)	5
221	a ³ .tɛ ³	knife	1
222	ɣa ³ .ka ⁵⁻³ .tʃ ^h i ³	hear	1
222	ga ⁵	hear	4
223	nu ³⁻¹	smell	4
224	mo ³⁻¹	see	4
225	mɛ ⁵ .k ^h a ³ .jiɿ ³	wink	4
226	hã ³⁻¹	weep	4
227	dʒa ⁵	eat	4
230	bva ⁵ ɿ ⁵ .vɛ ¹ .o ³	full,satisfied (Black Lahu)	4
231	dɔ ³⁻¹ .tʃ ^h i ³	drink	1
232	dɔ ³⁻¹	drink	4
233	bva ⁵ ɿ ⁵	drunk (Black Lahu)	4
234	p ^h iɿ ³	vomit	4
235	dʒu ³ .jiɿ ⁵ .p ^h iɿ ³	spit	4
236	dʒa ³	cough	4
239	sa ¹⁻³ .ɣo ³⁻¹	breathe	4

word list #	utterance	gloss	speaker
240	dʒi ⁵ hui ³ mi ³	whistle	4
241	tsʌ ³	suck	4
243	ji ³⁻¹	smile	4
244	ji ³⁻¹	laugh	
245	o ³⁻⁵ ʔ.tʃ ^h i ³	speak (real Yellow Lahu)	1
245	ko ³⁻⁵ ʔ.tʃ ^h i ³	speak (Black Lahu ?)	1
245	ku ³	speak	4
246	go ⁵ ʔ	tell	1
246	ku ³	tell	4
248	ʒo ³ .k ^h ʌ ³ ʔ ⁵	answer	4
250	li ³ .k ^h ʌ ³ ʔ ⁵ .ga ³	sing	4
251	dʌ ³	think	4
252	si ³	know	4
253	liŋ ⁵	forget	4
254	li ³	choose	4
255	ha ³⁻¹ ʔ.da ³ .tʃ ^h i ³	love	1
255	ha ³	love	4
256	tʃʌŋ ³ .da ³ ʔ.tʃ ^h i ³	hate	1
256	ni ³⁻⁵ .nq ³⁻¹	hate	4
257	lo ³	wait	4
257	ʏo ³	count	4
259	go ³⁻⁵	afraid	4
260	ni ³ .nq ³⁻¹	angry	3
261	zʌ ³ .tʃ ^h i ³ ʔ	sleep	1
261	zʌ ³	sleep	4
262	zʌ ³ ʔ ³ .k ^h ʌ ³ .bʌ ³⁻¹	snore	4
264	nq ³⁻¹	painful	4
265	na ³ .tsʌ ³	medicine	4
266	dʒʌ ³ ʔ ⁵	itch	4
267	ga ³	scratch	4
269	sʌ ³	die	4

word list #	utterance	gloss	speaker
270	ts _Λ ⁵	ghost	4
271	mi ¹ ʔ ³	sit	4
272	tu ³ .tʃ ^h i ³ ʔ	stand	1
272	tu ¹ ʔ ³	stand	4
274	tu ¹⁵	walk	4
275	gao ¹³	crawl	3
276	la ³⁻¹	come	4
277	ge ³ .i ¹ ʔ ³	enter	4
278	ko ³ .la ³⁻¹	return	4
279	bi ⁵ ʔ	push	4
280	yo ³⁻¹	pull	4
281	t ^h i ³⁻⁵	kick	4
282	tʃi ³ .ba ¹³⁻¹	throw	4
283	tʃi ¹ ʔ ³	fall	4
283	tʃ ^h i ³ .tʃi ³	fall	2
284	yi ³⁻¹ .t ^h i ¹ ʔ ⁵	swim	4
285	po ¹ ʔ ³	float	4
286	yi ³⁻¹ .ka ³	sink	4
287	ja ³	flow	4
288	pi ³ .tʃ ^h i ³ ʔ	give	1
288	pi ¹ ʔ ⁵	give	4
289	p ^h æ ¹ ʔ ³	tie	4
288+1	ju ³⁻¹	grab, grasp	4
288+2	hẽ ¹ ʔ ¹⁻³	take	4
290	t ^h u ³⁻⁵	wipe, rub, scrub	4
292	ts _Λ ¹ ʔ ⁵	wash	4
293	bi ³ .k ^h i ¹ .ts _Λ ¹ ʔ ⁵	laundry	4
294	m _Λ ³⁻¹ .ts _Λ ¹ ʔ ⁵	bathe	4
295	dɔ ³⁻⁵ ʔ ¹ .tʃ ^h i ³ ʔ	hit	1
295	dɔ ¹ ʔ ³⁻⁵	hit	4
296	dʒi ¹ ʔ ⁵ .ko ³	split	4

word list #	utterance	gloss	speaker
296+1	sæŋ ³	pull (lead an animal)	4
297	ɑ ³ .kuŋ ¹ .nuŋ ⁵	cut (hair)	4
298	gæŋ ⁵	stab	4
300	k ^h ɑ ³	plant	4
301	tiŋ ³	dig	4
302	tʃɔ ³ .sɑ ³ .tʃ ^h 5	bury (a corpse)	4
303	ɔ ³ .k ^h uŋ ³	winnow (rice)	4
304	huŋ ³⁻⁵	dry	4
305	ɔ ³ .tɛŋ ¹	pound (rice)	4
306	ɔ ³ .tiŋ ³	cook (rice)	4
307	dʒɑ ³⁻⁵	boil	4
308	ɑ ³ .miŋ ¹ .tu ¹⁻³	burn	4
309	ɑ ³ .miŋ ¹ .si ¹⁻³ .sɑ ³ ŋ ¹	extinguish (fire)	4
310	kān ³⁻⁵ .tiŋ ⁵	work	4
311	lɛ ³ .giŋ ⁵	play	4
312	bɔ ³ .i ⁵ .tiŋ ¹	dance	4
313	bɔ ¹ ŋ ⁵	shoot	4
314	sɑŋ ¹ .ɣɑŋ ³	hunt	4
315	dɔŋ ⁵ .sɑ ³ ŋ ³	kill	4
316	hiŋ ⁵ .daŋ ³	fight	4
317	vi ³⁻¹	buy	4
318	hɑ ⁵	sell	4
319	pɑ ³ .daŋ ³	exchange	4
320	piŋ ⁵	pay	4
321	tʃɑ ³ .k ^h ɑ ³ ŋ ⁵	steal	4
322	ti ² .ɣɑ ¹³	one (person)	2
323	ni ² .ɣɑ ¹³	two (people)	2
324	ʃɛ ² .ɣɑ ¹³	three (people)	2
325	ɑ ³⁻¹ .ɣɑ ¹³	four (people)	2
326	ŋɑ ³ .ɣɑ ¹³	five (people)	2
327	k ^h ɑ ³ ŋ ³ .ɣɑ ¹³	six (people)	2

word list #	utterance	gloss	speaker
328	s _Λ ¹ .ɣa ¹³	seven (people)	2
329	hi ¹⁻³ .ɣa ¹³	eight (people)	2
330	k _Λ ⁵⁻³ .ɣa ¹³	nine (people)	2
331	tɛ ³ .tʃi ³ .ɣa ¹³	ten (people)	2
332	tɛ ³ ʔ.ha ¹² .ɣa ³	one hundred (people)	2
333	tɛ ³ ʔ.hĩn ¹⁻³ .ɣa ¹³	one thousand (people)	2
334	lai ²⁻³ .ɣa ¹³	many (people)	2
335	k ^h a ³ .pwi ³	all	2
336	ti ³ .pɛ ³⁻¹	some	2
337	a ³ .dʒɛa ¹⁻³ .ləa ¹⁻³	few	2
338	tɛ ³ ʔ.kĩn ¹⁻³	(one) half	2
339	ɔ ³ .lõ ³ .ma ⁵ ʔ	big	2
340	ɔ ³ .ja ⁵ .nɛ ³ .a ⁵	small	2
341	jɛ ³⁻¹	long	2
342	ɔ ³⁻¹ .ŋæ ³ .doa ³	short (length)	2
343	m _Λ ³ .dʒa ³⁻¹	tall	2
344	ɔ ³⁻¹ .tɛ ³ .næ ³ ʔ	short (height)	2
345	ɔ ³⁻¹ .t ^h u ¹ .di ³	thick	2
346	ɔ ³⁻¹ .pa ³ .t ^h æ ⁵ ʔ	thin	2
347	ɔ ¹ .tɛ ¹ .næ ¹ ʔ	fat	2
348	ɔ ¹ .g _Λ ³⁻¹ .ts _Λ ¹⁻³	skinny	2
349	ɔ ³ .k _Λ ³⁻¹ .dʒa ³⁻¹	wide, broad	2
350	ɔ ³⁻¹ .dʒæ ¹ ʔ.nu ⁵ ʔ	narrow	2
351	nãŋ ¹⁻³ .dʒa ³⁻¹	deep (not w/ things)	2
352	ma ³ .nãŋ ¹⁻³	shallow (not w/ things)	2
353	ɔ ³ .vo ³ .ləɛ ³	round	2
354	pæ ³ .vɛ ¹ .o ³	full	2
355	la ³ .jao ³⁻¹	rightside	2
356	la ³ .vɛ ¹ .o ³	leftside	2
357	ti ¹⁵⁻³ .lao ³ .vɛ ³	straight	2
359	ɔ ³ .pi ¹⁻³	near	2

word list #	utterance	gloss	speaker
360	tʃi ³ .vi ³	this	2
361	o ¹⁻³ .vi ³	that	2
362	ɔ ³ .na ⁵ ʔ.tʰ ¹⁻³	black (also dirty)	2
363	ɔ ³ .p ^h u ¹ .tʃi ³ ʔ	white	2
364	ɔ ³ .ni ¹ .ʃi ³	red	2
365	ɔ ³ .nʰ ¹ ʔ.tsʰ ³	green	2
366	ɔ ³ .ʃi ¹ .lu ³	yellow	2
367	tʃa ³ ʔ.tʃi ⁵ ʔ.dʒa ³⁻¹	dirty	2
368	ɔ ³ .sʰ ¹ ʔ.ma ³ ʔ	new	2
369	ɔ ³ .pi ¹ ʔ	old	2
370	ɔ ³ .na ⁵ ʔ.tu ³	dark	2
371	mʰ ³ .pɔ ³ .vɛo ¹⁻³	bright	2
372	k ^h a ³ .ʃu ¹ .a ³	same	2
373	ma ³ ʔ.ʃu ¹ .da ³	different	2
374	tsʰ ¹ .dʒa ³⁻¹	sweet	2
375	dʒi ³ .dʒa ³⁻¹	sour	2
376	k ^h a ¹³ .dʒa ³⁻¹	bitter	2
377	p ^h a ³ .dʒa ³⁻¹	spicy, hot	2
378	ki ¹³ .vɛ ¹ .tʃi ³	rotten	2
379	p ^h u ³ ʔ.tʃi ³	swell	2
380	vi ¹³ .vɛ ¹ .tʃi ³	dry	2
381	næ ⁵ ʔ.tʃi ³	wet	2
382	hʰ ³ .tʃi ³	hot (the sun)	2
383	go ³⁻¹ .tʃi ³	cool	2
384	tsʰ ⁵ ʔ.dʒa ³⁻¹	sharp	2
385	ma ³ .tsʰ ⁵ ʔ	blunt	2
386	hʰ ³ ŋ ³ .dʒa ³⁻¹	heavy	2
387	he ¹ .dʒa ³⁻¹	hard	2
388	do ³⁻¹ .dʒa ³⁻¹	smooth	2
389	wai ³ .dʒa ³⁻¹	fast	2
390	ɖzu ³ .dʒa ³⁻¹	slow	2

word list #	utterance	gloss	speaker
391	ɔ ³⁻¹ .ɣa ³ .hæŋ ³⁻¹ .dʒa ³⁻¹	strong	2
392	ɔ ³⁻¹ .ɣa ³ .nu ³ .dʒa ³⁻¹	weak	2
393	ti ³ ʔ.tʃʌ ³ .dʒa ³⁻¹	tired	2
394	mɛ ⁵ ʔ.k ^h a ³ .dʒu ¹⁻³ .tʃi ¹	blind	2
395	na ³ .pʌ ³ .ba ³⁻¹ .tʃi ¹	deaf	2
396	a ³ .ku ¹ .ti ¹⁻³ .tʃi ¹	bald	2
397	a ³ .pu ⁵ .ha ¹ .ma ³ .vi ³ ʔ	naked	2
398	da ³ ʔ	good	2
399	ma ³ .da ³ ʔ	bad	2
400	dʒɔ ³ .dʒa ³⁻¹	correct	2
401	ma ³ .dʒɔ ¹⁵	wrong	2
402	k ^h aʔ ¹ .t ^h a ⁵ .li ³	when?	2
403	k ^h aʔ ¹ .lu ³ .li ³	where?	2
404	a ³ .ʃu ⁵⁻³ .li ³	who?	2
405	a ³ .t ^h u ⁷⁵ .li ³	what?	2
406	k ^h wɛ ⁵⁻³ .ma ³ .li ³	how many?	2
015+	va ⁵ .ʃi ³	hail	1
016+	sʌ ⁵ ʔ.mi ³⁻¹ ni ³	day before yesterday	1
017+	p ^h ɛ ³⁻¹ .ni ³ .ɔ ¹	day after tomorrow	1
018+	tʃi ³⁻¹ .nʃi ³ .k ^h ʌ ³⁻¹	this year	1
023+	na ³ .bo ¹ ʔ	pond	1
026+	mi ³ .gi ³⁻¹	world	1
036+	dʒi ¹ ʔ.no ³	clay	1
057+	bo ⁵ .ku ³	banana tree	1
125+	mæ ⁵ ʔ.k ^h a ³ .p ^h u ³	eyeball	1
	a ³ .pfu ³⁻⁵	gourd for water (Black Lahu)	5
016+	ja ³ ni ³	today	2
042+	a ³ .dʒi ⁷⁵	dirt	2
071+	gi ³ .ku ³	digging hoe	2
075+	tʃi ⁷⁵ .k ^h ɛ ³ .ne ¹³	barking deer	2
098+	p ^h ɔ ³ .a ³ .tʃi ³	move (house)	2

word list #	utterance	gloss	speaker
	ɔ³.dʒu¹⁵.lu³	far	2
DN#1-56	ka³.fɿ³ʔ	fall on its own from above/	1
		pour	
019-20	o³.lo³	east/west	1

Appendix B: Orthography

While further research is always possible, it is possible now to suggest a working orthography for the Yellow Lahu Banlan language. It is hoped that this and other ongoing research will be of service to the people of Thailand.

Roman alphabet based orthography for the Yellow Lahu Banlan:

Consonants

p	t	k	
ph	th	kh	
b	d	g	
		c	ch
		j	
f	s	y	h
	v		q
m	n	ng	
	l		

n = nasalization on preceding vowel when syllable final

Vowels

i		u
e		o
ae	uh	aw
	a	

Tones

Many Yellow Lahu people have expressed a desire to have a system similar to Black Lahu except for tone marking. Black Lahu uses some diacritics to mark tone that are not available on common typewriters, therefore requiring special equipment. Chinese linguists have developed a very good Roman based orthography for Black Lahu which uses consonants in syllable final position to mark tone. The following suggestion for tone marking mirrors the Chinese system.

- d high level
- mid level
- r low level
- x rising (low or mid)
- g falling (mid or high)
- z (extra) high stopped
- q mid (or low) stopped