

## A PRELIMINARY PHONOLOGY AND LATIN-BASED ORTHOGRAPHY OF PARA NAGA (JEJARA), NORTHWEST MYANMAR

Melissa Lubbe  
*Independent Researcher*  
[melissa@3dots.ink](mailto:melissa@3dots.ink)

Tiffany Priest<sup>1</sup>  
*Payap University*  
[tiffanyrpriest@gmail.com](mailto:tiffanyrpriest@gmail.com)

Sigrid Lew  
*Dallas International University*  
[sigrid\\_lew@diu.edu](mailto:sigrid_lew@diu.edu)

### Abstract

This paper presents the sociolinguistic background and phoneme inventory of Para Naga, ethnonym Jejara, spoken in Northwest Myanmar. The phoneme-grapheme correspondences of the orthography based on the phonological analysis and the history of orthography development of this lesser known and previously unwritten language are presented, too. A word list, a short glossed text in phonological and orthographic representation, and evidence of contrast with phoneme distribution charts are provided in the Appendix.

**Keywords:** Para Naga, Jejara, phonology, orthography development

**ISO 639-3 codes:** pzn

### 1 Introduction

This paper is based on an earlier unpublished manuscript “Statement of orthography for Para Naga, Northwest Myanmar” from 2007. Data were obtained from a 432-item Swadesh-based word list taken informally in 1998 and then checked, recorded and supplemented with additional words and phrases between 2005-2007. The language consultants were two 30-year-old, male, mother-tongue speakers of Para Naga, bilingual speakers of Para Naga and the national language Burmese, in which they are literate. The phonological analysis was conducted to help develop an orthography, which is described in the earlier version of this paper. Slight amendments to the orthographic representation have been made in the meantime (Barkman 2014), and the phoneme-grapheme correspondences in this paper have been adjusted accordingly. A few adjustments have been made to the phoneme inventory in this paper, too, ignoring the predictable glottal-stop preceding vowel onsets and representing the voiceless rhotic fricative with an under-ring instead of marking it as aspirated. Due to the limited corpus available for the study, the current description can be seen as only preliminary. It should be noted that preliminary grammatical observations indicate the presence of grammatical tone; however, since only single words in their citation form were collected for the phonological analysis, the full investigation of grammatical tone in Para Naga requires future research in a syntactic context.

Para Naga is a tonal Tibeto-Burman language. Naga languages are linguistically heterogeneous so that the name “Naga” should not be confused as a linguistic label (Burling 2003). To provide a more detailed classification for the Naga languages in the Eastern area of North-east India (the area between the Bodo-Konyak-Jinghpaw group in the Northeastern part and the Mizo-Kuki-Chin group in the South), Burling identifies the following groups: Ao group, Angami-Pochuri group, Zeme group, Tangkhul group, Karbi, Meithei and Mizo-Kuki-Chin (2003).

The Para Naga live in the Sagaing Division in the North-western area of Myanmar. They are descendants of the Laruri Naga, said to be a Pochuri Naga subgroup in the Eastern region of Nagaland, North-east India (Saul 2005). The name Para means “new settlers” in both Para and Laruri. In recent years, the Para have

---

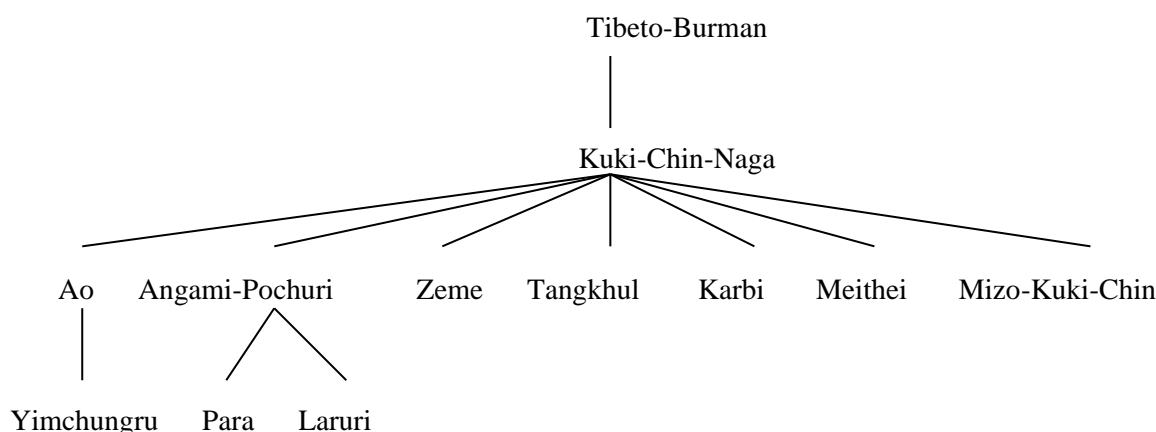
<sup>1</sup> Previously Barkman

preferred to call themselves “Jejara”, which refers to the place Jedger Yawkyweh in India where they migrated from, meaning “peaceful people” (Saul 2005).

The Para generally consider Laruri and Longphuri the languages closest to theirs (p.c. Para Naga/Jejara language consultants 2022). The Laruri have been identified ethnically as part of Pochuri (Saul 2005:23). If this ethnic association happened to transfer to linguistic affiliation, they would fall under Burling’s Angami-Pochuri group. Since there are no data or available linguistic descriptions of Laruri, neither this linguistic designation nor the degree of mutual intelligibility between Laruri and Para could be verified by data comparison. Laruri speakers live across the Myanmar-India border from the Para in Nagaland, where there is also a village by the same name. The Longphuri live in Layshi Township in villages near the Para. Of the two languages, Laruri is closer to Para Naga than Longphuri is. Para Naga speakers understand about 50 percent of Laruri Naga (p.c. Para Naga/Jejara language consultants 2022). Longphuri and Para show 24 percent lexical similarity, indicating that they are separate, distinct languages (Naga Survey Team 2006). With Longphuri and Laruri as possibly the closest of any other languages to Para, and Laruri closer than Longphuri, it is natural that they feel a significant sense of mutual intelligibility between the two and claim that their language is mutually intelligible (p.c. Para Naga language and orthography consultant 1998). The likelihood still seems to be that these are not varieties or dialects, but distinct languages.

The Para Naga do not see similarities with Yimchungru (Ao group) or Tangkhul languages (Saul 2005). For further clarification see Figure 1, which results from Burling’s, Saul’s and the first author’s own conclusions.

**Figure 1:** *The status of Para Naga within the Tibeto-Burman languages*



According to the speaker community, there are no other Para Naga dialects. There are other Para villages (and other Naga groups) within Layshi township, and also a small minority living scattered in other urban centers where the language use may differ (Naga Survey Team 2006). Currently, the languages that are mainly being used are Para Naga and Burmese.

Even though they live in a region where Burmese has significant sociolinguistic status, speakers of Para Naga prioritize the use of their language and place high value on their culture in a variety of ways. They do not appreciate intermarriage and want their children to grow up learning Para Naga as their first language and be able to read and write in Para Naga, even though parents want their children to be fluent and literate in the national language Burmese, too. Para Naga speaking village communities use their mother tongue at home with family members and friends, and with employees and in churches and temples. Burmese is used with non-native speakers and when reading scriptures in churches and temples. School lessons are taught in Burmese although the students speak Para Naga to each other. In the larger towns, for example Layshi, where Makuri, Longphuri and others live along with Para Naga, speakers communicate in their own mother tongue with people from their own group (Naga Survey Team 2006).

The Para Naga use the national language Burmese to communicate with anyone who is not from their language group, since Para and languages of other Naga peoples are not mutually understandable. Longphuri, Makuri, Meithei, Tangkhul, Chin and Koki are spoken by only a small number of Para Naga (Naga Survey Team 2006). Because of their contact with Karen Christians and Bible school education, some of the Para Naga can speak a Karen language. currently, an increasing number of young Para Naga are able to complete higher grades in the national language education system, an opportunity that was less accessible to them in the

past. In conjunction, an increasing percentage of Para Naga live part-time or full-time in towns with mixed ethnicities. Most speakers ages 60 and up can hardly speak any Burmese (p.c. with Naga language consultants 2022). Although this is the only remaining near-monolingual demographic, there is a high probability for Para Naga to continue to be spoken since the Para people all have positive attitudes towards their language, and the children learn Para Naga as their first language (Naga Survey Team 2006).

## 2 Para Naga Phonology

In total, Para Naga has 39 consonants organised into pairs of plosives, affricates and fricatives with aspiration or voicing contrast. Most plosives and some affricates further have a prenasalized member of their set. Para Naga also has approximants with partial voicing contrast, voiced nasals and a lateral. There are nine vowels and three tones. Below, each phoneme will be presented with its allophones whenever applicable and illustrated with examples. Evidence of contrast for consonants, vowels and tones is illustrated with minimal pairs in Appendix C.

### 2.1 Consonant Phonemes

The Para Naga consonant inventory includes five sets of plosives and three sets of affricates distinguished by aspiration and in some cases prenasalization, four fricative pairs distinguished by voicing, a voiceless glottal fricative, five approximants and three nasals. All consonant phonemes are shown in Table 1. To underline its contrastive nature, the single symbol / $\tau$ / is chosen to represent a voiceless laminal-dental plosive [t̪] which contrasts with the voiceless apical-alveolar plosive /t/ [t̪] (for a preliminary discussion of contrastive dental stops in Burmese, see Cooper et. al. 2012).

**Table 1:** Para Naga consonant phonemes

	Labial	Dental (laminal)	Alveolar (apical)	Palatal	Velar	Glottal
<b>Plosive</b>	<sup>n</sup> p p p <sup>h</sup>	<sup>n</sup> τ τ τ <sup>h</sup>	t t <sup>h</sup>	<sup>n</sup> c c c <sup>h</sup>	<sup>n</sup> k k k <sup>h</sup>	
<b>Affricate</b>	<sup>n</sup> pf pf pf <sup>h</sup>	<sup>n</sup> ts ts ts <sup>h</sup>		tɕ tɕ <sup>h</sup>		
<b>Fricative</b>	v f		r ɾ	z ɕ	ɣ x	h
<b>Approximant</b>	β	ð	l	j	w	
<b>Nasal</b>	m		n	ɲ		

#### 2.1.1 Plosives

Para Naga plosives at labial, dental, alveolar, palatal and velar places of articulation occur aspirated and unaspirated. Prenasalized unaspirated plosives are also seen at labial, dental, palatal and velar places of articulation. The glottal stop is predictable, always occurring before vowels at the beginning of a syllable, such as in /á<sup>n</sup>ci/ [ʔá<sup>n</sup>ci] ‘sarong’, /áya/ [ʔáya] ‘bamboo’, /apa/ [ʔapa] ‘father’.

/<sup>n</sup>p/ Prenasalized voiceless bilabial plosive

/<sup>n</sup>pá/ ‘beside’, /<sup>n</sup>pé/ ‘wrong’, /<sup>n</sup>pilwà/ ‘dream’ (N), /<sup>n</sup>pi/ ‘fire’

/p/ Voiceless bilabial plosive

/pú/ ‘hand grenade’, /pé/ ‘fly’ (N), /pwè/ ‘year’, /pézi/ ‘rat’, /apa/ ‘father’

/p<sup>h</sup>/ Voiceless aspirated bilabial plosive

/p<sup>h</sup>ù/ ‘paddy rice’, /p<sup>h</sup>í/ ‘mat’, /p<sup>h</sup>we/ ‘basket’, /p<sup>h</sup>àp<sup>h</sup>a/ ‘type of spice’

/<sup>n</sup>τ/ Prenasalized voiceless laminal dental plosive [t̪̚]

/<sup>n</sup>τà/ ‘village’, /<sup>n</sup>τó <sup>n</sup>τé/ ‘garbage’, /<sup>n</sup>τó/ ‘shadow/reflection’, /<sup>n</sup>τú/ ‘be present’

/τ/ Voiceless laminal dental plosive [t̪]

/τórí/ ‘cane/rattan’, /τayà/ ‘roof’ (house), /tilə/ ‘weave’, /τwa/ ‘speak/say’

- /tʰ/ Voiceless aspirated laminal dental plosive [tʰ]  
/tʰə̀ràci/ ‘river’, /tʰàtə̀lə/ ‘believe’, /japətʰe/ ‘class’, /tʰə̀tʰə̀ɣa/ ‘scolding manner’
- /t/ Voiceless apical-alveolar [t]  
/tílə/ ‘afraid’, /litata/ ‘mosquito’, /tələ/ ‘skinny’, /tútú/ ‘floor’, /twələ/ ‘weep’
- /tʰ/ Voiceless aspirated apical alveolar plosive [tʰ]  
/tʰəri/ ‘rib’, /tʰáɣa/ ‘hard’, /tʰílə/ ‘to tie’, /tʰwalə/ ‘to cut’ (tumor/gland)
- /n̥c/ Prenasalized voiceless palatal plosive  
/n̥cá/ ‘aunt’, /n̥cáncáha/ ‘noisily’, /n̥cəwe/ ‘yesterday’, /n̥có/ ‘neck’, /n̥cí/ ‘arrive’
- /c/ Voiceless palatal plosive  
/ci/ ‘water’, /cələ/ ‘to shoot’, /máci/ ‘heel’, /cé/ ‘forehead’, /cólə/ ‘pour/strain’
- /cʰ/ Voiceless aspirated palatal plosive  
/cʰi mətə̀elə/ ‘to count’, /cʰə/ ‘excrement’, /məcʰílə/ ‘short’
- /n̥k/ Prenasalized voiceless velar plosive  
/n̥kiteʰə/ ‘drive away’, /n̥ki/ ‘see’, /n̥kuteúrə/ ‘siblings’, /n̥kwə/ ‘watch over’
- /k/ Voiceless velar plosive  
/kisə/ ‘pine tree’, /kə̀ralə/ ‘good’, /kó/ ‘shrimp’, /kwələ/ ‘pinned down’
- /kʰ/ Voiceless aspirated velar plosive  
/kʰi/ ‘bind together’, /kʰə̀ra/ ‘heart’, /kʰəsusù/ ‘coconut’, /kʰwələ/ ‘sew’

### 2.1.2 Affricates

The Para Naga consonant inventory includes voiceless affricates at three places of articulation, contrasting in aspiration. Labiodental and dental affricates further include a prenasalized member in their set.

- /n̥pf/ Prenasalized voiceless labiodental affricate  
The distribution of /n̥pf/ is limited and only occurs before /ə/ and /i/.  
/n̥pfí/ ‘be full’ /n̥pfə/ ‘goat’
- /pf/ Voiceless labiodental affricate [p̥ɸ]  
The distribution of /pf/ is limited to /ə/ and /i/.  
/pfə̀tə̀i/ ‘buttocks’, /rwáp̥fí/ ‘forest’
- /pfʰ/ Voiceless aspirated labiodental affricate  
The distribution of /pfʰ/ is limited and only occurs before /ə/ and /i/.  
/pfʰələ/ ‘to make a hole’, /tə̀hətə̀pfʰə̀p̥fʰə̀/ ‘window’, /pfʰí/ ‘pot’
- /n̥ts/ Prenasalized voiceless laminal dental sibilant affricate  
/n̥tsə̀tsi/ ‘eye’, /n̥tsó/ ‘name’, /n̥tsi/ ‘knife’
- /ts/ Voiceless laminal dental sibilant affricate [t̥ʂ]  
/tsalə/ ‘eat’, /tselə/ ‘to dance’, /tsə̀/ ‘rain’, /tsilù/ ‘face’
- /tsʰ/ Voiceless aspirated laminal dental sibilant affricate [t̥ʂʰ]  
/tsʰalə/ ‘to hurt’, /tsʰe/ ‘wash’ (hair), /tsʰə̀/ ‘wooden mortar’, /tsʰílə/ ‘difficult’

/tɛ/ Voiceless alveolo-palatal affricate  
/tɛə/ ‘that’, /tɛó lá/ ‘enough’, /tɛwe/ ‘mushroom’

/tɛ<sup>h</sup>/ Voiceless aspirated alveolo-palatal affricate  
/tɛ<sup>h</sup>á/ ‘door’, /tɛ<sup>h</sup>ɔ/ ‘chop’, /tɛ<sup>h</sup>we/ ‘blanket’

### 2.1.3 Fricatives

The five pairs of fricatives contrast in voicing. Only the glottal /h/ does not have a counterpart. The pairs of fricatives occur at the same places of articulation as the plosives, except for dental, where there is no stop-fricative distinction. The alveolar rhotic is a non-sibilant fricative, slightly retracted and patterning like fricatives, not approximants, by showing voicing contrast.

/v/ Voiced labiodental fricative  
The distribution of /v/ is limited to back centralized unrounded /i/.  
/víp<sup>h</sup>é/ ‘slingshot’, /táví/ ‘dog’

/f/ Voiceless labiodental fricative  
The distribution of /f/ is limited to back centralized unrounded /i/.  
/fí/ ‘go’

/z/ Voiced alveolar sibilant  
/zə́ya/ ‘describes drying leaves’, /zə́ya/ ‘crispy’, /tùtùzizí/ ‘delirious’

/s/ Voiceless alveolar sibilant  
/sáp<sup>h</sup>ɔsù/ ‘papaya’, /sə/ ‘firewood’, /sí/ ‘bamboo shoot’, /swapa/ ‘male teacher’

/r/ Voiced alveolar non-sibilant fricative [ɹ]  
/ralə/ ‘come’, /rəpa/ ‘enemy’, /rítu/ ‘intestines’, /pá rí/ ‘Sunday’, /rwá/ ‘grass’

Between close-mid back vowels /ə, ɔ/ or close-mid /ə/ and open back-centralized vowel /a/, the alveolar fricative is realized as a flap [ɾ], as in /təra/ → [tɹɾa] ‘ten’, /sitəɾə/ → [sitɹɾə] ‘please listen’.

/r/ → [ɾ] / ə \_ ɔ/a  
[ɹ] elsewhere

/ɾ/ Voiceless alveolar non-sibilant fricative [ɹ̥]  
/ɾè/ ‘a type of fish’, / rí/ ‘call of a mountain goat’, / ɾamárà/ ‘general/various’

/z/ Voiced alveolo-palatal fricative  
/zélə/ ‘to fly’, /ázá/ ‘paddy rice’, /pùzùzù/ ‘drum’, /zwélə/ ‘sell’

/ɕ/ Voiceless alveolo-palatal fricative  
/ɕələ/ ‘long’, /ɕá/ ‘flesh’, /ɕə/ ‘ginger’, /tapəeiei/ ‘green’, /ɕwələ/ ‘stand’

/ɣ/ Voiced velar fricative  
/áya/ ‘bamboo’, /ɣalə/ ‘enter’, /ɣìrə/ ‘spider’, /sə́yà/ ‘leaf’, /tayé/ ‘chicken stomach’

/x/ Voiceless velar fricative  
/xa/ ‘tooth’, /xitó/ ‘armpit’, /súxa/ ‘elephant tusk’, /làxó/ ‘liquor’

/h/ Voiceless glottal fricative  
/há/ ‘this’, /hoúeahə/ ‘many’, /kwáti hə/ ‘when (past)’, /hwelə/ ‘winnow’ (rice)

### 2.1.4 Approximants

Para Naga has five voiced approximants.

- /β/ Voiced bilabial approximant  
The distribution of /β/ is limited and only occurs before /a/, /e/ and /ə/.  
/mats<sup>h</sup>aβa/ ‘don’t do it’, /βeði/ ‘it is said that...’, /tseβə/ ‘rotten’
- /ð/ Voiced inter-dental approximant  
The distribution of /ð/ is limited and only occurs before /a/ and /i/.  
/ðahi/ ‘if so’, /ði/ ‘evidential marker’
- /l/ Voiced alveolar lateral approximant  
/lálə/ ‘to flow’, /ləzə/ ‘pestle’, /lí/ ‘leg’, /lólə/ ‘to plant’, /lwalə/ ‘correct’
- /j/ Voiced palatal approximant  
/jasələ/ ‘kill’, /jəjə/ ‘fat’, /pəjə/ ‘navel’, /ts<sup>h</sup>ək<sup>h</sup>əji/ ‘buffalo’. The palatal central approximant underwent a sound change from a palatal lateral approximant [ɬ], which is currently being used only by the older generation. When /j/ occurs before /i/, it is realized as a fricative [j], for example, /jípweələ/ → [jípweələ] ‘angry’  
/j/ → [j] / \_ i  
[j] elsewhere  
/j/ also occurs as the second segment in consonant clusters, where it is limited to bilabial stops, /s/, and /h/. Examples: /pjáya/ ‘shiny’, /ts<sup>h</sup>əsja/ ‘severed with one blow’, /hjahji/ ‘promise’ (N).
- /w/ Voiced labial-velar approximant  
/wápəya/ ‘round’, /wíçələ/ ‘throw’, /təwə/ ‘pig’, /təwe/ ‘bear’  
If /w/ is preceded by the alveolar apical plosive /t/ and followed by centralised back vowel /ə/, it is realized as a labialized alveolar approximant, as in /twələ/ → [t<sup>w</sup>ələ] ‘weep’.  
/w/ → [t<sup>w</sup>] / t \_ ə  
/w/ also occurs as the second segment in consonant clusters, where it is not as restricted as /-j-/. Examples: /pwè/ ‘year’, /k<sup>h</sup>wə/ ‘hand’, /ləpwá/ ‘cloud’, /ɛwáya/ ‘blunt’, /tewè/ ‘mushroom’, /tswà/ ‘cooked rice’, /hwíhwít<sup>h</sup>alə/ ‘to whistle’, /swəswəya/ ‘rough’.

### 2.1.5 Nasals

Para Naga includes three nasals, which are restricted in their distribution to only occur before /a/ and/or /ə/.

- /m/ Voiced bilabial nasal  
/məzítələ/ ‘to swallow’, /teamə/ ‘yes’, /matewaβa/ ‘don’t answer’
- /n/ Voiced alveolar nasal  
/teaná/ ‘I agree’, /anə anə/ ‘male expression when angry/sorry’
- /ɲ/ Voiced palatalised nasal  
/ɲə/ ‘you’ (2SG)

### 2.1.6 Prenasalization

Prenasalization seems to be the reflex of an old morpheme preceding verbal or noun roots that is not active in the language anymore, and in many Naga languages, prenasalization is present in words denoting body parts and kinship terms, which suggest that these fossilized prefixes may have had a possessive function once (Matisoff 2003). Word onsets preceded by these fossilized prefixes are now perceived as single phonemes as the prenasal contributes nothing to the meaning. This prenasalization feature can be observed in Para Naga as well. Many prenasalized onsets in Para Naga occur with vocabulary referring to body parts, especially the head and face. Examples are /<sup>n</sup>ta/ ‘ear’, /<sup>n</sup>tápá/ ‘nose’, /<sup>n</sup>tsətsí/ ‘eye’, /<sup>n</sup>tsəpfí/ ‘eyelid’, /<sup>n</sup>tsətə<sup>n</sup>pfí/ ‘eyebrow’, /kú<sup>n</sup>pfí/ ‘hair’, /<sup>n</sup>kutsí/ ‘cheek’, /<sup>n</sup>tswè/ ‘mouth’.

Prenasalization is transcribed as /<sup>n</sup>/, though it changes the place of articulation to the following stop consonant, as in these examples.

/<sup>n</sup>pári/ → [ᵐpáí] ‘Sunday’, /<sup>n</sup>pjí<sup>n</sup>pji/ → [ᵐpjí<sup>n</sup>pji] ‘cat’, /<sup>n</sup>pfələ/ → [ᵐp̥f̥lə] ‘wipe’  
/<sup>n</sup>τà/ → [ᵐτ̥à] ‘ear’, /<sup>n</sup>tsó/ → [ᵐt̥s̥ó] ‘name’, /<sup>n</sup>cəe/ → [ᵐc̥əe] ‘yesterday’, /<sup>n</sup>kí/ → [ᵐk̥í] ‘go’.

/<sup>n</sup>/ → [m] / \_ p, pf  
→ [ᵐ] / \_ τ, ts  
→ [ᵐ] / \_ c  
→ [ᵐ] / \_ k

## 2.2 Vowel Phonemes

Para Naga has seven contrastive monophthongs, i.e., two front, two central and three back vowels as in Table 2. The two diphthongs /ei, ou/ are limited to interjections and loanwords from Burmese, and therefore not listed below. Examples for diphthong /ei/ are /pei/ ‘exclamation of anger’, /seisei/ ‘said when feeling cold’, /wei/ ‘male expression of disappointment’, /-hei/ ‘suffix indicating reported speech’. Examples for diphthong /ou/ are /hoóhoó/ ‘call before starting to work’, /te<sup>h</sup>oó/ ‘right!, OK!’, and /həloó/ ‘call to do something together’.

**Table 2: Para Naga vowel phonemes**

	Front	Central	Back
Close	i	ɨ	u
Mid	e	ə	ɔ
Open		a	

Para Naga vowels are listed below with examples.

/i/ close front unrounded  
/lí/ ‘leg’, /cì/ ‘water’, /tapəeie/ ‘green’, /məjijilə/ ‘to hate’

/e/ close-mid front unrounded vowel [e̞]  
/lé/ ‘paper’, /təwe/ ‘bear’, /xexéha/ ‘loosely’, /ts<sup>h</sup>éts<sup>h</sup>é/ ‘ant’

/ə/ back centralized close-mid unrounded vowel [ɤ̞]  
/táyə/ ‘light’, /ləteə/ ‘horn’, /e<sup>n</sup>τà/ ‘gold’, /k<sup>h</sup>érá/ ‘some’

When /ə/ is preceded by the unaspirated alveolar plosive /t/, there is a short alveolar approximant transition, for example, /tələ/ → [tɹ̥lə] ‘skinny’.

/ɨ/ close central unrounded vowel that phonetically realizes in the central retracted/back centralized range  
/p<sup>h</sup>ɨ/ ‘thigh’, /atsɨ/ ‘mother’, /ts<sup>h</sup>ɨlə/ ‘shave’, /xítə/ ‘armpit’

When /ɨ/ follows a voiceless unaspirated obstruent, it gets realized as a homorganic syllabic fricative, for example, /píeə/ → [pβe̞] ‘explode’, /<sup>n</sup>pí/ → [ᵐpβ] ‘fire’, /tatití/ → [t̥t̥t̥t̥] ‘many’, /ləkí/ → [l̥k̥] ‘porcupine’, /ləsi/ → [l̥s̥z̥] ‘thorn’.

/ɨ/ → [β] / p \_  
[ɹ̥] / t \_  
[ɣ̥] / k \_  
[z̥] / s \_  
[i̥] elsewhere

- /a/ open central unrounded vowel, slightly retracted [ɑ]  
/táká/ ‘silver’, /k<sup>h</sup>əra/ ‘heart’, /matswá/ ‘not sharp’, /ák<sup>h</sup>wá/ ‘floor cover’
- /u/ close back rounded vowel  
/sú/ ‘elephant’, /k<sup>h</sup>ə<sup>n</sup>tu/ ‘moon’, /p<sup>h</sup>ù/ ‘paddy rice’, /zuk<sup>h</sup>wá/ ‘answer’
- /ɔ/ open-mid back rounded vowel  
/sò/ ‘firewood’, /k<sup>h</sup>ə<sup>n</sup>tu/ ‘snail’, /p<sup>h</sup>ɔlə/ ‘bake’, /təzò/ ‘house’

### 3 Para Naga Tone and Tone Sandhi

In Para Naga, three distinct tones are present, namely, High, Mid, and Low. High and mid tones are realized with a slight drop in pitch in utterance final position. In the phonetic and phonological transcriptions, tone is marked with the grave accent diacritic for low tone and the acute accent diacritic for high tone. Mid tone is not marked. In the discussion of allotones, numbers will be used to illustrate relative pitch of tonal sandhi. Table 3 presents minimal sets for the three tones. Note that tone has a relatively low functional load; not every syllable can carry all three tones.

**Table 3:** Minimal sets for Para Naga tones

High		Mid		Low	
/p <sup>h</sup> ú/	‘type of bamboo’	/p <sup>h</sup> u/	‘to dry in the sun’	/p <sup>h</sup> ù/	‘paddy rice’
/pwé/	‘festival’	/pwe/	‘swell’	/pwè/	‘year’
/p <sup>h</sup> í/	‘pot’	/p <sup>h</sup> i/	‘plate’		
		/ <sup>n</sup> ta/	‘ear’	/ <sup>n</sup> tà/	‘village’
		/ts <sup>h</sup> ɔ/	‘deep’	/ts <sup>h</sup> ò/	‘wooden mortar’
		/ci/	‘temporary bamboo house’	/ci/	‘water’

Para Naga has not only lexical but also grammatical tone. Certain lexical items can function as both nouns and verbs, with the grammatical category distinguished by tone as seen in the following minimal pairs: *k<sup>h</sup>ò.lwà* ‘respond’ (lit: return one) vs. *k<sup>h</sup>ə.lwá* ‘response’; *za.pə.t<sup>h</sup>é* ‘to improve’ vs. *zà.pə.t<sup>h</sup>è* ‘class’

Another example of grammatical tone is the change from the unmarked or default form of the 1SG personal pronoun /à/ to 1SG POSS /a/. Grammatical tone in Para Naga has not yet been investigated in depth and needs further research.

Para Naga nouns occur with all three tones and do not undergo tone sandhi. There is regressive assimilation found on the plural marker, which can be influenced by the head preceding it. The plural suffix /-rə/ has a high tone if it follows a syllable with either a mid or a high tone, for example /p<sup>h</sup>i/ ‘plate’ → /p<sup>h</sup>i-ré/ ‘plates’, /ta<sup>n</sup>pfi/ ‘feather’ → /ta<sup>n</sup>pfi-ré/ ‘feathers’. However, it changes to a low tone in the following instances.

- If it appears after a syllable with a low tone, for example, /yasà/ ‘bird’ → /yasà-rè/ ‘birds’, /<sup>n</sup>tà/ ‘village’ → /<sup>n</sup>tà-rè/ ‘villages’.
- Following two-syllable nouns with the sequence high tone – mid tone. The pitch of the entire word will then be descending from high to mid to low tone, for example, /ári/ ‘(one pair of) trousers’ → /ári-rè/ ‘(more than one pair of) trousers’, /répa/ ‘enemy’ → /répa-rè/ ‘enemies’.
- If there are two adjacent high tones in the noun, for example, /k<sup>h</sup>wát<sup>h</sup>é/ ‘ring’ → /k<sup>h</sup>wát<sup>h</sup>é-rè/ ‘rings’, /a<sup>n</sup>cítsí/ ‘younger sister’ → /a<sup>n</sup>cítsí-rè/ ‘younger sisters’, /ák<sup>h</sup>wá/ ‘floor cover’ → /ák<sup>h</sup>wá-rè/ ‘floor covers’.

The monosyllabic verb roots carry only mid or high tone. They exhibit regressive tone sandhi as their mid tones may change to a low surface tone, and high tones to a mid surface tone, respectively, if they are followed by suffixes with a mid surface tone. A high-tone suffix, however, causes dissimilation of a high tone verb to a mid surface tone. Examples are given below.



## Perfective /-hwi/

The mid tone perfective suffix /-hwi/, indicating completion in the recent past, is realized with a mid tone but lowers the tone of the verb root. It changes high tones of verb roots to mid tones, for example, /ɣá/ ‘go’ → [ɣahwi] ‘just gone’, /lwé/ ‘carry’ → [lwehwi] ‘just carried (something)’. Mid tones on verbs are realized as low tone, for example, /ku/ ‘go up’ → [kùmi] ‘just gone up’, /ts<sup>h</sup>a/ ‘do’ → [ts<sup>h</sup>àmi] ‘just done’. In the case of homophones, this tone change applies to only one of the pairs. For example, the mid-tone on homophones /hwə/ ‘to split’ and /hwə/ ‘to guard’ is realized for one as low [hwəhwi] ‘just split’ and the other as mid [hwəhwi] ‘just guarded’.

## Irrealis /-je/

The mid tone of some monosyllabic verbs changes to a low tone when the irrealis suffix /-je/ is added, for example, /k<sup>h</sup>i/ ‘bind together’ → [k<sup>h</sup>ije/ ‘will bind together’. Again, in the case of homophones, the tone change of one of the words is canceled, possibly in order to make differentiation easier. For example, preceding the irrealis marker /-je/, the mid-tone on homophones /hwə/ ‘to split’ and /hwə/ ‘to guard’ is realized as low [hwəje] ‘will split’ in one and in the other as mid [hwəje] ‘will guard’.

## Cohortative /-ríha/

High-tone verb syllables that precede the high-tone cohortative mood marker /-ríha/ dissimilate to a mid tone, for example, /tə<sup>h</sup>wá/ ‘go up’ → [tə<sup>h</sup>wariha] ‘Let’s go up (without delay)’, /fí<sup>n</sup>cé/ ‘go’ → [fí<sup>n</sup>ceriha] ‘Let’s go (without delay) Plural /-<sup>n</sup>cé/

Another case of dissimilation caused by high-tone suffixes is found with the high tone verb plural marker /-<sup>n</sup>cé/. A verb root with a mid tone will usually be realized with a low tone when it precedes the high tone verb plural marker /-<sup>n</sup>cé/, for example, /kwe/ ‘to follow slowly’ → [kwè<sup>n</sup>cé] ‘they follow slowly’, /tu/ ‘to flick’ → [tù<sup>n</sup>cé] ‘they flick’. For disyllabic verbs with the tone sequence High – Mid, however, the mid tone on the second syllable preceding the verb plural marker will not dissimilate, e.g., /éitə/ ‘wear’ (shirt) → /éitə-<sup>n</sup>cé/ ‘they wear’; /ári/ ‘tie together’ → [ári<sup>n</sup>cé] ‘they tie together’.

In summary, tone sandhi rules can be generalized as follows.

In most instances, the high tone is realized with level high pitch. After mid and low tones, the high tone has a slightly lower pitch. The high tone has a high-falling pitch when it precedes a mid tone.

High tone /<sup>55</sup>/ → [<sup>44</sup>] / mid, low \_  
[<sup>43</sup>] / \_ mid  
[<sup>55</sup>] elsewhere

The mid tone is realized with mid level pitch after high, mid, and low tones, and when preceding another mid tone. The mid tone is level high before high tone. If preceding low tone, the mid tone is realized with mid-falling pitch.

Mid tone /<sup>33</sup>/ → [<sup>44</sup>] / \_ high  
[<sup>32</sup>] / \_ low  
[<sup>33</sup>] elsewhere

The low tone is the most stable of the three tones. It only shows a slight drop in pitch following high and mid tones.

Low tone /<sup>11</sup>/ → [<sup>21</sup>] / high, mid \_  
[<sup>11</sup>] elsewhere

Table 4 charts the realization of the high, mid, and low tone as they occur in relation to other tones in multisyllabic words. The allophonic distribution is illustrated in the diagram below using tonemic brackets following the example from Laver (1994:476).

**Table 4:** The realisation of Para Naga tones in context

Tone x	x High	High x	x Mid	Mid x	x Low	Low x
High	↑	↑	↓	↑	↓	↑
Mid	↑	↓	↑	↓	↓	↓
Low	↓	↓	↓	↓	↓	↓

#### 4 Para Naga Syllable and Word Structure

Syllable patterns in Para Naga are CV and CCV. All consonants are possible in onset position. In clusters, the medial position is always occupied by either approximant /j/ or /w/. All vowels are possible nuclei. Grammatical morphemes are monosyllabic. Most compound verbs are disyllables, and compound nouns can consist of up to six syllables. Some examples of Para Naga word structure are given in Figure 2.

**Figure 2:** Examples of Para Naga word structure

CV		CCV	
/tépàya/	‘scattered’	/pjəpjəha/	‘smooth’
/há/	‘this’	/təwè/	‘mushroom’
/apa/	‘father’	/twə/	‘weep’
/mək <sup>h</sup> áci/	‘saliva’ (“chin water”)	/səpwəpwèsù/	‘apple’ (“flower fruit”)
		/hwə/	‘to guard’, ‘to split’
		/hwíhwíts <sup>h</sup> alə/	‘to whistle’
		/hjahji/	‘promise’ (N)

There are two toneless prefixes /mə-/ and /a-/. The form /à/ occurs as a single unit as first-person singular pronouns ‘I’, changing to mid pich /a/ in ‘me’ and ‘my’ and as part of the citation form for kinship terms. The prefix /mə-/ occurs mostly with nouns referring to body parts and verbs relating to the body, mind and emotions. Figure 3 provides examples of the occurrences of the prefixes /mə/ and /a/.

**Figure 3:** Prefixes in polysyllabic words

mə		a	
məsè	liver	atsì	mother
məzitolə	swallow	apa	father
məcìlə	kick	a <sup>n</sup> pupa	son-in-law
mətə <sup>h</sup> ələ	know	atə <sup>n</sup> ci	wife
məsìlə	love	a <sup>n</sup> cípa	younger brother

#### 4.1 Distribution of initial consonants

Para Naga has an extensive consonant inventory that shows several restrictions in regard to the vowels they can occur with. Palatal plosives cannot be followed by back vowels /i/ and /u/. Fricatives seldom occur before /i/, an environment restricted to the labiodental fricatives /f/ and /v/. Similarly, the labiodental affricates /<sup>n</sup>pf/, /pf/ and /pf<sup>h</sup>/ are limited to central vowels /ə/ and /i/. Labial approximants /β, w/ do not pattern before /i/, /u/ or /ə/. The lateral occurs before all vowels except /i/. Palatal and velar approximants do not occur before high back vowels. Nasals occur only before vowels /ə/ and /a/. Charts showing these phonotactic distributions are provided in Appendix D Table D.1.

#### 4.2 Consonant clusters

Consonant clusters in Para Naga are formed by the combination of two consonants. Approximants /w/ or /j/ occupies the second position in the consonant cluster, with /w/ combining with a larger variety of consonants than /j/. Consonant clusters with /w/ occur widely before vowels /a/, /e/ and /ə/, seldom with /i/ and never before /i/, /u/ and /ə/. Consonant clusters with /j/ may occur before all vowels except /i/ and /u/. Consonant clusters do not appear before diphthongs. In Appendix D, Table D.2 charts the distribution of consonant clusters with vowels. Table 5 shows the possible consonant cluster combinations with /w/ and /j/ in Para Naga together with examples.

**Table 5:** Consonant cluster combinations in Para Naga

	w	j	Example
<sup>n</sup> p	+	+	/ <sup>n</sup> pwà.sì/ ‘cow’; / <sup>n</sup> pjì <sup>n</sup> pji/ ‘cat’
p	+	+	/pwè/ ‘year’; /pjáya/ ‘shiny’
p <sup>h</sup>	+	+	/p <sup>h</sup> we/ ‘basket’; /p <sup>h</sup> jáya/ ‘wet’
<sup>n</sup> ɾ	+		/ <sup>n</sup> ɾwà/ ‘head strap for carrying basket’
ɾ	+		/ɾəzu ɾwalə/ ‘speak’
ɾ <sup>h</sup>	+		/sɪɾ <sup>h</sup> wáɾ <sup>h</sup> wá/ ‘kind of bamboo toy’
t	+		/twələ/ ‘weep’
t <sup>h</sup>	+		/t <sup>h</sup> wət <sup>h</sup> wá/ ‘comb’
<sup>n</sup> c	+		/ <sup>n</sup> cwə/ ‘lend’
c	+		/cwəlè/ ‘Does it fit?’
<sup>n</sup> k	+		/ <sup>n</sup> kwə/ ‘watch over’
k	+		/kwàkíkí / ‘radio’
k <sup>h</sup>	+		/k <sup>h</sup> wá/ ‘hand’
ts	+		/tswà/ ‘cooked rice’
ts <sup>h</sup>	+		/ts <sup>h</sup> wáp <sup>h</sup> e/ ‘cut’ (tree/wood)
tɕ	+		/tɕwè/ ‘mushroom’
tɕ <sup>h</sup>	+		/tɕ <sup>h</sup> we/ ‘blanket’
s	+	+	/swats <sup>h</sup> í/ ‘female teacher’; /ts <sup>h</sup> əsjá/ ‘severed with one blow’
z	+		/zwélə/ ‘sell’
ɕ	+		/ɕwələ/ ‘stand’
h	+	+	/hwíhwíts <sup>h</sup> alə/ ‘whistle’; /hjáji/ ‘promise’ (N)
r	+		/rwá/ ‘grass’
l	+		/lwàtsì/ ‘road’

## 5 Para Naga Orthography

The first Para Naga orthography was developed thirty years ago by a local Para Naga speaker with the aim of translating hymns into their language. The orthography was initially based on the Angami Naga script, known from the time he had lived in India as a child. Since then, this original script has been revised several times. During the late 1990s, the Para Naga wanted a hymnbook in their own language to be printed for them, which was eventually done in 2000, and it is in use today. A few story books and two primers are available, but it is not certain how widely these are in use. After the literacy representative died in 2001, the literacy project started again with two new Para Naga representatives by 2005. By 2007, five Para Naga had attended a series of literacy development workshops to develop a new primer, planning teacher training in order to facilitate literacy among the Para Naga. Since that time, further progress in vernacular literacy has been made. Two of the five Para Naga continued to participate in literacy and material development workshops regularly through the years, producing more reading materials in their language.

In 2016, literacy workers estimated that as many as 85 percent of 15-to-25-year-old Para Nagas could read Para Naga orthography at least a little bit, that is, recognize the sounds represented by their orthography. 20 percent of this same demographic group were estimated to be able to read difficult materials in Para Naga with effort. At the same time, slightly over 85 percent of 26-to-45-year-old Para Nagas were also estimated to have at least a minimal level of familiarity with the Para Naga orthography. Other literacy and education-related successes include in-school vernacular curricula. As of September 2018, a full vernacular curriculum for kindergarten students, to be taught as a subject alongside other subjects, had been developed and was being actively taught in schools for the second year. This was followed by the preparation of a curriculum for Para Naga students in the first grade, which was then incorporated in their studies. Para Naga literacy workers are part-way through developing vernacular materials for use in second grade (p.c. Literature and Culture committee 2016; 2018; 2022).

Based on the phonological analysis, some minor changes have been made to the orthography in consultation with the Para Naga Literature and Cultural committee in 2007.

- Following English orthography, open-mid rounded back vowel /o/ is represented as <aw> instead of <o>, for example, la`ghaw versus previous la`gho ‘liquor’;
- <y> represents /j/, instead of previous <ly>. The newly chosen grapheme reflects a recent sound change from a palatal lateral approximant [ʎ], used only by speakers of the age of 60 or older. The younger generation consistently uses the palatal central approximant.
- The low tone is marked with a grave accent <`> instead of the letter <r>, for example, qi` versus previous qir ‘water’;
- The high tone is marked with an acute accent <´> instead of an apostrophe <'>, for example, sü´ versus previous sü ‘bamboo shoot’.

Between 2007 and 2014, the Literature and Culture committee made a few more adjustments for their writing ease:

- Vowel graphemes using diacritics are replaced with digraphs, representing /i/ with <ui> instead of <ü> and /ə/ using <ai> instead of <ä>;
- Tone marks are avoided, except when necessary or desired to clarify rare cases where homographs cannot be easily discerned based on context, for example, <shárai> ‘monkey’ and <shárai> ‘tiger’.

The orthographic symbols that are currently being used to represent Para Naga consonant and vowel phonemes are shown in Table 6 and 7 respectively, listed according to the place of articulation from bilabial to glottal consonants.

**Table 6: Para Naga consonants**

Phonemic	Phonetic	Orthographic
/ <sup>n</sup> p/	[ <sup>m</sup> p]	<mp>
/p/	[p]	<p>
/p <sup>h</sup> /	[p <sup>h</sup> ]	<ph>
/β/	[β]	<b>
/m/	[m]	<m>
/v/	[v]	<v>
/f/	[f]	<f>
/ <sup>n</sup> ɽ/	[ <sup>n</sup> t̪]	<nt>
/ɽ/	[t̪]	<t>
/ɽ <sup>h</sup> /	[t̪ <sup>h</sup> ]	<th>
/ð/	[ð]	<td>
/t/	[t̪]	<d>
/t <sup>h</sup> /	[t̪ <sup>h</sup> ]	<dh>
/ <sup>n</sup> ts/	[ <sup>n</sup> ts]	<ntz>
/ts/	[ts]	<tz>
/ts <sup>h</sup> /	[ts <sup>h</sup> ]	<tsh>
/z/	[z]	<z>
/s/	[s]	<s>
/n/	[n]	<n>
/r/	[r̪]	<r>
/r̥/	[r̥]	<rh>
/l/	[l]	<l>
/ <sup>n</sup> c/	[ <sup>n</sup> c]	<nq>
/c/	[c]	<q>
/c <sup>h</sup> /	[c <sup>h</sup> ]	<qh>
/z/	[z]	<zh>
/e/	[e]	<sh>
/j/	[j]	<y>
/ɲ/	[ɲ]	<ny>
/ <sup>n</sup> k/	[ <sup>n</sup> k]	<nk>

Phonemic	Phonetic	Orthographic
/k/	[k]	<k>
/k <sup>h</sup> /	[k <sup>h</sup> ]	<kh>
/ɣ/	[ɣ]	<g>
/x/	[x]	<gh>
/h/	[h]	<h>
/w/	[w]	<w>

Table 7: Para Naga vowels

Phonemic	Phonetic	Orthographic
/i/	[i]	<i>
/e/	[e]	<e>
/ə/	[ɤ]	<ai> <sup>2</sup>
/ɨ/	[ɯ]	<ui> <sup>3</sup>
/a/	[ɑ]	<a>
/u/	[u]	<u>
/ɔ/	[o]	<aw>
/ɛi/	[ei]	<ay>
/oo/	[oo]	<o>

## 6 Conclusion

This paper gives account of the phoneme inventory of Para Naga (ethnonym Jejara), as spoken in Northwest Myanmar. It is a slightly revised version of an unpublished description based on a 432-item wordlist from 2007. Changes include updated information of the sociolinguistic situation, orthographic choices, and a slightly different phonological rendering of central vowels and affricates.

With 39 contrastive consonants, many of which have restricted occurrences but are fully contrastive, the language has a rather extensive consonant inventory. The palatal lateral approximant /ʎ/, which is used by older people who either are monolingual or speak only a few words of Burmese, underwent a sound change. Speakers under the age of 60 use the central palatal approximant /j/ instead. The highly limited occurrence of the central palatal approximant in medial position, restricted to initial /p, s, h/, may be related to this sound change. Para Naga has nine contrastive monophthongs and two diphthongs, occurring in exclamations and borrowed from Burmese, the national language.

The three tones have a low functional load and undergo tone sandhi, which cannot be analyzed based on citation forms. Lack of insight regarding tonal patterns led the Para Naga (Jegara) community to leaving tone unmarked in their Latin-based orthography, except for rare cases of homography in ambiguous contexts.

Areas for further study include a systematic investigation of tone. A larger data corpus is needed to close the existing gaps in phoneme distribution. A cognate comparison with other Naga varieties may shed light on highly unsymmetrical consonant patterns, such as the medial palatal approximant and the restriction of labial obstruents to central vowels.

## References

- Barkman, Tiffany. 2014. A descriptive grammar of Jejara (Para Naga). Unpublished Master's thesis. Chiang Mai, Thailand: Payap University.
- Burling, Robbins. 2003. The Tibeto-Burman languages of Northeastern India. *The Sino-Tibetan languages*, edited by Graham Thurgood and Randy J. LaPolla, 169-192. New York: Routledge.
- Cooper, Lisa, Cooper, Beau and Lew, Sigrid. 2012. A phonetic description of Burmese obstruents. Conference presentation at the 45th International Conference of Sino-Tibetan Languages and Linguistics, Singapore.

<sup>2</sup> Formerly <ä>

<sup>3</sup> Formerly <ü>

Laver, John. 1994. Principles of phonetics. Great Britain: Cambridge University Press.

Matisoff, James A. 2003. Handbook of Proto-Tibeto-Burman. Los Angeles: University of California Press.

Naga Survey Team. 2006. A sociolinguistic survey of Makuri, Para, and Long Phuri Naga in Layshi Township, Myanmar. unpublished manuscript.

Saul, Jamie. 2005. The Naga of Burma: Their festivals, customs and way of life. Bangkok: Orchid Press.

## Appendix A: Word List

<b>NATURE</b>	
<b>Sky and Weather</b>	
cloud	lə <sup>n</sup> pwá
moon	k <sup>h</sup> ə <sup>n</sup> tu
rain	tsò
<b>Land and Water</b>	
fire	<sup>n</sup> pì
forest	rwap <sup>h</sup> í
gold	eə <sup>n</sup> tá
river	t <sup>h</sup> ə <sup>r</sup> àci
road	lwàtsì
silver	táka
water	cì
<b>ANIMALS</b>	
<b>Mammals (Domestic)</b>	
cat	<sup>n</sup> pjí <sup>n</sup> pji
dog	təví
pig	təwə
<b>Mammals (Wild)</b>	
bear	təwe
buffalo	ts <sup>h</sup> ək <sup>h</sup> əji
elephant	Sú
porcupine	ləkì
rat	pəzi
<b>Birds, Fish, Miscellaneous</b>	
fish (type)	rè
shrimp	kó
<b>Insects</b>	
ant	ts <sup>h</sup> éts <sup>h</sup> é
fly	Pé
mosquito	lítata
snail	k <sup>h</sup> ə <sup>n</sup> tu
spider	γìɔ
<b>Animal parts, Products, Calls</b>	
call (goat)	rí
chicken stomach	tayé
elephant tusk	súxa
feather	ta <sup>n</sup> p <sup>h</sup> í
horn	ləteə
<b>ARTIFACTS</b>	
<b>Cooking and Eating Equipment</b>	
pestle	ləzə
plate	p <sup>h</sup> í
pot	p <sup>h</sup> í
wooden mortar	ts <sup>h</sup> ò

<b>Basketry, Cloth, Clothing</b>	
basket	p <sup>h</sup> we
blanket	te <sup>h</sup> we
pants	ári
sarong	á <sup>n</sup> ci
<b>Buildings and their parts, Furniture</b>	
bamboo house	ci
door	te <sup>h</sup> ó
floor cover	ák <sup>h</sup> wá
floor	tútú
house	τóζó
mat	p <sup>h</sup> í
roof	ταγá
window	te <sup>h</sup> ə̀tə̀p <sup>h</sup> ə̀p <sup>h</sup> ə̀
<b>Miscellaneous Artifacts</b>	
bamboo toy	sit <sup>h</sup> wát <sup>h</sup> wá
drum	pùzùzù
ring	k <sup>h</sup> wót <sup>h</sup> é
slingshot	víp <sup>h</sup> é
comb	τ <sup>h</sup> wə̀t <sup>h</sup> wá
hand grenade	pú
paper	lé
radio	kwákíkí
<b>VERBS</b>	
afraid	tílə
angry	jípwélə
answer	tewa
ascend	ku
bake	p <sup>h</sup> ə̀lə
believe	τ <sup>h</sup> áteələ
bind together	k <sup>h</sup> i
carry	lwé
chop	te <sup>h</sup> ə̀
come	ralə
correct	lwələ
count	c <sup>h</sup> i mə̀teələ
cut (tumor)	t <sup>h</sup> wələ
cut (wood)	ts <sup>h</sup> wàp <sup>h</sup> e
dance	tselə
deep	ts <sup>h</sup> ə̀
difficult	ts <sup>h</sup> ílə
do	ts <sup>h</sup> a
dry by sun	p <sup>h</sup> u
eat	tsalə
enter	yalə
explode	piəa
fit	cwə
flick	tu
flow	lálə
fly	zélə
follow	kwe
go up	te <sup>h</sup> wá
go	fí

go	ɣá
go	<sup>n</sup> kí
good	kəralə
guard	hwə
kick	məcilə
kill	jasələ
know	mətə <sup>h</sup> ələ
make a hole	p <sup>f</sup> hələ
pinned down	kwələ
plant	lólə
pour/strain	cólə
reserve	ke
rotten	tseβə
sell	zwələ
severed	ts <sup>h</sup> ə sja
sew	k <sup>h</sup> wólə
sharp	tswá
shave	ts <sup>h</sup> ilə
shoot	cələ
short	məc <sup>h</sup> ilə
skinny	tələ
sleep	zə
speak	ɾwa
split	hwə
stand	ɛwələ
swallow	məzitolə
swell	pwe
talk	ɾəzu ɾwalə
throw	wíc <sup>h</sup> ələ
tie together	ári
tie	t <sup>h</sup> ilə
to hurt	ts <sup>h</sup> alə
to hate	məjjilə
to love	məsilə
wash (hair)	ts <sup>h</sup> e
wear	éitə
weave	ɾilə
weep	twələ
whistle	hwíhwíts <sup>h</sup> alə
winnow	hwelə
wipe	<sup>n</sup> pfələ
<b>PLANTS</b>	
bamboo (type)	p <sup>h</sup> ú
bamboo shoot	sí
bamboo	áɣa
cane/rattan	ɾərí
coconut	k <sup>h</sup> osusù
firewood	sò
ginger	ɛə
grass	rwá
leaf	sòɣà
mushroom	tewè
paddy rice	ázá



paddy rice	p <sup>h</sup> ù
pine tree	kisò
thorn	ləsi
<b>FOODS</b>	
apple	sòpwèpwèsù
cooked rice	tswà
liquor	làxó
papaya	sáp <sup>h</sup> ɔsù
type of spice	p <sup>h</sup> áp <sup>h</sup> a
<b>BODY PARTS</b>	
armpit	xitó
breast	<sup>n</sup> ci
buttocks	pfəte <sup>h</sup> í
cheek	<sup>n</sup> kutsí
chin	mək <sup>h</sup> á
ear	<sup>n</sup> ta
ear	<sup>n</sup> tá
excrement	c <sup>h</sup> ó
eye	<sup>n</sup> tsətsí
eyebrow	<sup>n</sup> tsətə <sup>n</sup> pfí
eyelid	<sup>n</sup> tsəpfí
face	tsilù
flesh	ɛá
forehead	cé
hair	kú <sup>n</sup> pfí
hand	k <sup>h</sup> wó
heart	k <sup>h</sup> əra
heel	məcí
intestines	rítu
knee	məc <sup>h</sup> ó
leg	lí
liver	məsè
mouth	<sup>n</sup> tswè
navel	pəjə
nose	<sup>n</sup> tápá
rib	t <sup>h</sup> èrì
saliva	mək <sup>h</sup> áci
thigh	p <sup>h</sup> í
tooth	xa
<b>PEOPLE</b>	
<b>Pronouns</b>	
1SG	à
1SG POSS	a
2SG	ɲə
<b>Age, Gender, Occupational terms</b>	
female teacher	swatsí
male teacher	swapa
<b>Kinship terms</b>	
father	apa
mother	atsì
son-in-law	a <sup>n</sup> pupa

<b>NOUNS, abstract/miscellaneous</b>	
answer	zuk <sup>h</sup> wá
class	jaɸət <sup>h</sup> e
enemy	rəpa
festival	pwé
name	<sup>n</sup> tsó
promise	hjahji
<b>TIME EXPRESSIONS</b>	
Sunday	<sup>n</sup> pári
year	pwè
yesterday	<sup>n</sup> cəe
<b>QUANTIFIERS</b>	
ten	təra
many	hoúeahə
many	ɾatitì
some	k <sup>h</sup> ərá
<b>NON-VERBAL ATTRIBUTIVES</b>	
blunt	ewáya
crispy	zəya
delirious	tùtùzizí
fat	jòjoha
green	ɾapəci
hard	t <sup>h</sup> áya
light	təyə
long	eələ
rough	swəswəya
round	wə <sup>n</sup> pəya
scattered	tépəya
shiny	pjáya
smooth	pjəpjoha
various	ɾamára
wet	p <sup>h</sup> jáya
drying leaves	zəya
loosely	xexéha
scolding manner	t <sup>h</sup> ə <sup>h</sup> t <sup>h</sup> əya
<b>FUNCTIONS WORDS AND AFFIXES</b>	
<b>Questions words</b>	
when	kwátiho
<b>Noun Suffix</b>	
plural	-rə
<b>Verb Suffixes</b>	
“do not V”	ma- V -βa
“just V”	-hwi
“said that”	βeði
end of sentence	-ði
“if so”	ðahi
future tense	-je
present tense	-lə
question	-lə
reported speech	-hei
verb plural	- <sup>n</sup> ce

<b>Demonstratives</b>	
this	há
<b>Exclamations</b>	
agree	teaná
before starting work	hoó hoó
right! OK!	te <sup>h</sup> oó
to work together	həloó
when angry (men)	anə anə
when angry	pəi
when disappointed	wəi
when feeling cold	səi səi
yes	teamə

### Appendix B: Glossed Text in Phonological and Orthographic Representation

The first line shows the phonological transcriptions, followed by the orthographic representation, gloss, and a free translation. The story is called “As sweet as banana”.

- 1      *taɣuti*            *ˈtsi*      *kʰəkɔ*                      *τᾱví*      *kʰə́*      *lu*      *-le*      *ði*  
taguti            ntzü      khä      kaw      tä´vü´      khä´      lule            tdi  
long ago man      one      LOC      dog      one      live      - REAL            EVID  
“It is told that long ago there lived a dog with a man.”
- 2      *ˈtsirə*      *teə*      *lāsù*      *ɣətɔ*                      *là*      *ˈpfi tu*      *lwa*      *kùpə*      *βé*  
ntzüürä`      jä`      la`sù`      ga´      taw      la`      mpvü`du lwa      ku`pä      be  
man      DIST      banana      go      cut      come      shelf                      LOC ascend      PERF  
“The man cut down a banana and put it on a shelf in the kitchen.”
- 3      *τᾱvílə*                      *teə*      *ˈkì*      *pəpé*  
tä´vü´      lä      jä`      nkü`      päpe´  
dog      A                      DIST      see      EMPH  
“The dog saw it.”
- 4      *taci*      *ˈpfitu*      *lwa*      *matʰəkù*                      *lejɔ*      *ta*      *pwəpa*      *ɛárá*  
taqi      mpvü`du lwa      ma - dhäku`      le yaw      ta      pwäpa      sha´rá´  
3SG      shelf      LOC      NEG – go.up      able      3SG      friend      monkey  
  
*ɣa*      *tsə*      *lá*  
ga      tzä      la  
go      call      REAL  
“The dog couldn’t reach the shelf, so he asked his friend the monkey”
- 5      *a*      *zə*      *pfiɸpa*      *malui*                      *nə*      *latsetsè*      *kù*      *kʰù*      *kʰa*  
a      zhaw`      pvüba      ma lu-ti                      nyä      lätzetze`      ku`      khu`      kha  
my      house      owner      not be.present-time      2SG      quickly      go.up take      drop  
  
*tsitɛ*                      *tsajé*  
tzi-je                      tza      ye´  
1DU-COM                      eat      IRR  
“Before my house owner returns, you climb up quickly and we shall eat (the banana) together.”



- 14     *tea*     *híjá*     *ra*  
           *ja`*     *hi`ya´*     *ra*  
           this     if     come  
           “So, follow me.”
- 15     *səpfiho*             *ya*     *ajà*             *matə̀kù*             *mətə̀hə*  
           *saw`pvü´haw*     *ya*     *a`*     *ya`*     *ma*     - *däku`*     *mäcä*  
           tree     LOC     TOP     1SG     FOC     NEG     - climb     know  
           “I can’t climb the tree.”
- 16     *teajə*             *nə*     *tʰəkù*             *sá*     *àlə*             *nə*  
           *jayaw*             *nyä*     *dhä´*     *ku`*     *sä´*     *a`*     *lä*     *nyä*  
           because.of.this     2SG     up     go.up     and     1SG     A     2SG  
  
           *tə̀hətə̀hə*             *hwə*  
           *cä*     - *cä´*     *whä*  
           talk     talk     - like  
           “So that you climb up and do as I tell you.”
- 17     *éarə*     *taji*     *məsi*     *talə̀tsetsəkù*  
           *sha`rä´*     *tayi*     *mäsi*     *talätzetze`*     *ku`*  
           monkey     happy             quick             go.up  
           “The monkey was very happy and climbed up very fast.”
- 18     *kù*     *ˀcihi*             *tə̀vi*     *lə*     *sə*     *mətələ*             *tʰaya*     *tsʰà*  
           *ku`*     *nqi´*     *hi*     *tä`vü´*     *lä*     *saw`*     *mädälaw´*     *dhaga*     *tsha`*  
           go up     arrive     when     dog     A     tree     hold     firm     do  
  
           *βasə*             *nələ*             *tsetsè*     *lə*     *resèsè*  
           *bä*     *sä,*     *nyä*     - *lä*     *tzetze`*     *lä*     *re*     *se`se`*  
           PERF     and     2SG     - A     quick     beat     quick     do LOC  
  
           *tsʰa*     *hó*     *ða*     *tə̀həlè*  
           *tsha*     *haw´*     *tda*     *cä*     - *le´*  
           like     so     talk     - REAL  
           “When he reached the top, the dog said, hold the tree and hit the drum vigorously.”
- 19     *teá*     *ti*             *éarə*     *teə*     *tə̀vi*     *lə*     *ta*     *tə̀hətə̀hə*  
           *ja`ti*             *sha`rä´*     *jä*     *tä`vü´*     *lä`*     *ta*     *cä*     - *cä´*  
           like this             monkey     DIST     dog     A     3SG     talk     - talk  
  
           *hwə*     *ləré*  
           *whä*     *läre*  
           like.this     beat  
           “Then the monkey hit (the drum) like the dog said.”
- 20     *tealə̀rejə*             *tajiti*     *rələ*             *pə̀ti*  
           *Ja*     *läre*     *yaw*     *tayidi´*     - *rä`*     *lä*     *pä`ti*  
           Like.this     beat     when     bee     - PL     A     sting  
           “When he did this the bees stung him.”

- 21    *teá*    *ti*    *τάνί*    *teə*    *τaji məsi*    *ta*    *k<sup>h</sup>wá*    *τəτə*  
       *ja´*    *ti*    *tá´vü´*    *jä`*    *tayi mäsi*    *takhwä´*    *tätaw`*  
       like.this    time    dog    DIST    happy    3SG    hand    clap  
       “Then the dog was very happy and clapped his paws.”
- 22    *teà*    *τάνί*    *lə*    *εάρə*    *εu*    *ɲələ*       *tsatsa*  
       *ja`*    *tá´vü´*    *lä`*    *sha´rá´*    *shu,*    *nyä*    - *lä*    *tza*    - *tza*  
       like.this    dog    A    monkey    P    2SG    - A    eat    - eat
- làsú*    *hwə*    *<sup>n</sup>tsilè*       *ða*    *te<sup>h</sup>əβə*       *pəγa*  
       *la`su`*    *whä*    *ntzü*    - *le`*    *tda*    *cä*    - *bä*    *pä*    - *ga*  
       banana    like    sweet    - question    like so    talk    PERF    believe    - IRR
- hwe*    *ði*  
       *whe*    *tdi´*  
       PERF    EVID  
       “Then the dog asked him, is it as sweet as eating a banana? (it is believed to be told)”.

**Abbreviations key**

1DU	First person dual	FOC	Focus
1SG	First person singular	IRR	Irrealis
2SG	Second person singular	LOC	Locative
3SG	Third Person singular	NZ	Nominalizer
A	Agent	P	Patient
ATTR	Attributive	PERF	Perfective
COM	Comitative	PL	Plural
DIST	Distal	PROX	Proximal
EMPH	Emphasis	REAL	Realis
EVID	Evidential	TOP	Topic

**Appendix C: Evidence of Contrast**

Evidence of contrast in identical or near-identical environment is provided for the following suspicious pairs.

**C.1 Minimal pairs for consonants**

/p <sup>h</sup> / - /p/	/p <sup>h</sup> ú/ ‘type of bamboo’ /p <sup>h</sup> í/ ‘mat’ /p <sup>h</sup> e/ ‘land dividing paddy fields’	/pú/ ‘hand grenade’ /pí/ ‘handle’ N /pe/ ‘fly’ N
/ <sup>m</sup> p/ - /p/	/ <sup>n</sup> pə <sup>n</sup> pəha/ ‘carelessly’ / <sup>n</sup> pwé/ ‘to decay’ /ta <sup>n</sup> pá/ ‘near’	/pəpəha/ ‘habitually’ /pwé/ ‘festival’ / <sup>n</sup> tàpá/ ‘nose’
/p <sup>h</sup> f/ - /pf/	/ta <sup>n</sup> pfí/ ‘feather’ /p <sup>h</sup> é <sup>l</sup> ə/ ‘make a hole’ /səp <sup>h</sup> fí/ ‘back’	/tapfí/ ‘skin’ /p <sup>h</sup> é <sup>t</sup> ei/ ‘buttocks’ /səp <sup>h</sup> fí/ ‘tree’
/ <sup>n</sup> pf/ - /pf/	/ <sup>n</sup> pfí/ ‘be full’ / <sup>n</sup> pfə/ ‘goat’	/p <sup>h</sup> í <sup>s</sup> əyáya/ ‘charming’ /p <sup>h</sup> é <sup>t</sup> ei/ ‘buttocks’
/p <sup>h</sup> f/ - /f/	/p <sup>h</sup> fí/ ‘pot’	/fí/ ‘go’
/p <sup>h</sup> f/ - /p <sup>h</sup> /	/p <sup>h</sup> fí/ ‘plate’	/p <sup>h</sup> í/ ‘thigh’
/pf/ - /v/	/p <sup>h</sup> í <sup>s</sup> əyáya/ ‘charming’	/víyaβə/ ‘the worst is over’ (expression)
/f/ - /v/	/fí/ ‘go’ /fíriha/ ‘go quickly’	/víyaβə/ ‘the worst is over’ (expression) /vìru/ ‘gibbon’
/β/ - /w/	/βeði/ ‘is said that’	/wé/ ‘govern’

/tʰ/ - /t/	/tʰəraci/ ‘river’ /tʰəteələ/ ‘believe’ /tʰətʰəɣa/ ‘in a scolding manner’	/təri/ ‘cane/rattan’ /təteətə/ ‘last fruits’ /tətəha/ ‘habitually lighting’ (a fire)
ⁿt/ - /t/	ⁿta/ ‘ear’ ⁿtari/ ‘night’ ⁿtolə/ ‘grind’	/ta/ ‘to hold’ /tari/ ‘date’ /tolə/ ‘put’ (in)
/tʰ/ - /t/	/tʰilə/ ‘to tie’ /tʰó/ ‘head louse’ /tʰo/ ‘alive’	/tílə/ ‘afraid’ /tələ/ ‘skinny’ /tó/ ‘big bamboo basket for paddy rice’
/t/ - /t/	/taɣà/ ‘roof’ (house) /tilə/ ‘weave’ (cloth) /tələ/ ‘to light’ (fire)	/təɣa/ ‘spread out/sparse/thin’ /tílə/ ‘afraid’ /tələ/ ‘skinny’
/tsʰ/ - /ts/	/tsʰalə/ ‘hurt’ /tsʰətsi/ ‘sugarcane’ /tsʰétsʰé/ ‘ant’	/tsalə/ ‘eat’ /tsətsi/ ‘cockroach’ /átsétsè/ ‘dance’ N
ⁿts/ - /ts/	ⁿtsó/ ‘name’ ⁿtsi/ ‘knife’ ⁿtsətsi/ ‘eye’	/tsó/ ‘rain’ /tsi/ ‘pole’ /tsətsi/ ‘cockroach’
/c/ - /tɕ/	/cələ/ ‘feed’ /licwé/ ‘socks’ /ci/ ‘water’	/tɕələ/ ‘give’ /tɕwè/ ‘mushroom’ /tɕi/ ‘definitely’
/cʰ/ - /tɕʰ/	/cʰó/ ‘excrement’ /macʰó/ ‘knee’ /tsəcʰə/ ‘call’	/tɕʰó/ ‘door’ /mətɕʰó/ ‘know’ /tɕʰwətɕʰó/ ‘lift and take out’ (soil)
/cʰ/ - /c/	/cʰó/ ‘excrement’ /taⁿtə cʰe/ ‘describes farming on a slope’ /cʰi mətəèlə/ ‘count’	/cələ/ ‘feed’ /cé/ ‘forehead’ /ci atərələ/ ‘thirsty’
/kʰ/ - /k/	/kʰəra/ ‘heart’ /kʰosúsù/ ‘coconut’ /kʰwələ/ ‘sew’	/kəralə/ ‘good’ /kó/ ‘shrimp’ /kwələ/ ‘follow slowly from behind’
ⁿk/ - /k/	ⁿkà/ ‘peacock’ ⁿkwə/ ‘take care’ (of someone) /təⁿka/ ‘fish’	/ka/ ‘go down’ (ladder/mountain) /kwə/ ‘which one?’ /təka/ ‘what’
/k/ - /c/	/kələ/ ‘push’ /kó/ ‘shrimp’ ⁿkwə/ ‘take care’ (of someone)	/cé/ ‘forehead’ /cólə/ ‘pour/strain’ /ləⁿcwə/ ‘gums’
/kʰ/ - /cʰ/	/kʰó/ ‘one’ /kʰi/ ‘bind together’ /ləkʰó/ ‘shadow’	/cʰó/ ‘excrement’ /cʰi mətəèlə/ ‘count’ /ləcʰólə/ ‘shiver’
ⁿc/ - /c/	ⁿci/ ‘breast’ ⁿcəe/ ‘yesterday’ ⁿcwələ/ ‘borrow/rent’	/ci/ ‘temporary bamboo house’ /cəe/ ‘to strain/throw out’ (water) /cwələ/ ‘describes things that fit together’
/s/ - /z/	/səɣa/ ‘quiet, calm’ (personality) /sə/ ‘firewood’	/zəɣa/ ‘describes drying leaves’ /zəɣa/ ‘crispy’
/ɕ/ - /z/	/ɕá/ ‘flesh’ /ɕələ/ ‘long’ /ɕilə/ ‘pull’	/zálə/ ‘drink’ /zələ/ ‘sleep’ /zi/ ‘cucumber’
/x/ - /ɣ/	/xa/ ‘tooth’ /xilə/ ‘to plow’ /xólú/ ‘flood water rising’	/ɣá/ ‘go’ /ɣilə/ ‘to grill’ /ɣólə/ ‘to clap’ (hands)
/x/ - /kʰ/	/xa/ ‘tooth’ /xexéha/ ‘loosely’ /xilə/ ‘to plow’	/kʰálə/ ‘bitter’ /kʰe/ ‘to open’ /kʰi/ ‘bind together’
/h/ - /x/	/há/ ‘this’ /hə/ ‘we’	/xa/ ‘tooth’ /xólú/ ‘flood water rising’

	/βəlúhi/ ‘that’s why’	/lə̀lùxi/ ‘ploughing’
/ɾ/ - /ɽ/	/ri/ ‘you’ (plural) /rólə/ ‘sow/scatter seeds’	/r̥i/ ‘call of a mountain goat’ /r̥óɾə/ ‘type of bird’
/ɾ/ - /l/	/ralə/ ‘come’ /rəpa/ ‘enemy’ /ri/ ‘you’ (plural)	/lalə/ ‘flow’ /ləpələ/ ‘thin’ /li/ ‘leg’
/m/ - /n/	/teamə/ ‘yes/correct’	/anə anə/ ‘male expression when sorry’
/n/ - /ɲ/	/anə anə/ ‘male expression when sorry’	/ɲə/ ‘you’ (sg)

## C.2 Near-minimal sets for vowels

/i/ - /e/ - /ei/	/k <sup>h</sup> i/ ‘bind together’ /ci/ ‘temporary bamboo house’ /li/ ‘leg’	/k <sup>h</sup> e/ ‘to open’ /cé/ ‘forehead’ /lé/ ‘paper’	/rahəi/ ‘He came’ quotative /təkaləi/ ‘express a thought’ (writing style)
/i/ - /ə/ - /a/	/atsi/ ‘mother’ /ləsi/ ‘thorn’ /təɣi/ ‘frog’	/tə <sup>h</sup> ə/ ‘door’ /ləsə/ ‘shout’ /ɣələ/ ‘boil’	/tə <sup>h</sup> á/ ‘now’ /ɣalə/ ‘enter’
/u/ - /ɔ/ - /ou/	/təzú/ ‘speak’ /sú/ ‘elephant’ /ku/ ‘go up’	/təzə/ ‘house’ /sə/ ‘firewood’ /kə/ ‘shrimp’	/tə <sup>h</sup> oo/ ‘Right!/OK!’ /hoə hoə/ ‘Call before the work starts’

## C.3 Minimal sets for tone

	Low Tone	Mid Tone	High Tone
/i/	/ci/ ‘water’ /t <sup>h</sup> ilə/ ‘carry’ /mæ <sup>h</sup> flə/ ‘short’ (length)	/ci/ ‘temporary bamboo house’ /t <sup>h</sup> ilə/ ‘wash’ (plates, vegetables) /k <sup>h</sup> əc <sup>h</sup> i/ ‘mustard plant’	/a <sup>n</sup> cípa/ ‘younger brother’ /t <sup>h</sup> ilə/ ‘to tie’ /mæ <sup>h</sup> ilə/ ‘kick’
/e/	/pwé/ ‘festival’ /n <sup>h</sup> péha/ ‘not at all’ /taɣé/ ‘chicken stomach’	/pwelə/ ‘swollen’ - taɣe/ ‘bright’	/pwè/ ‘year’ /n <sup>h</sup> péha/ ‘in a straight line’ -
/i/	/atsi/ ‘mother’ /p <sup>h</sup> i/ ‘pot’ /vəri/ ‘gibbon’	/ta <sup>n</sup> cítsi/ ‘second’ /p <sup>h</sup> i/ ‘plate’ /tari/ ‘six’/təɣi/ ‘frog’	/tətsítsi/ ‘those types’ - -
/ə/	/ləsə/ ‘go down’ (slope) /mə <sup>n</sup> cə/ ‘hog’ /p <sup>h</sup> jə/ ‘sand’	/ləsə/ ‘shout’ /cələ/ ‘long’/mə <sup>n</sup> cə/ ‘snot’ /p <sup>h</sup> jələ/ ‘to hit’	/rəc <sup>h</sup> ə/ ‘untie’ /cələ/ ‘to beat’ /pwələ/ ‘run’
/a/	- /n <sup>h</sup> ta/ ‘village’ /n <sup>h</sup> twə/ ‘head basket string’	/təká/ ‘sickle’ /n <sup>h</sup> ta/ ‘ear’ /n <sup>h</sup> twə/ ‘to slice/cut’ (vegetables)	təká/ ‘silver’ - /n <sup>h</sup> pwá/ ‘to catch’ (w. trap)
/u/	/p <sup>h</sup> u/ ‘paddy rice’ /kúri/ ‘head’ /atəú/ ‘sibling-in-law’	/p <sup>h</sup> u/ ‘dry by sun’ /át <sup>h</sup> su/ ‘put’ (onto) /təu/ ‘point’	/p <sup>h</sup> ú/ ‘type of bamboo’ kútá/ ‘when’
/ɔ/	/ts <sup>h</sup> ə/ ‘wooden mortar f. pounding rice’ /rólə/ ‘sow/scatter seeds’ /kə/ ‘to’	/ts <sup>h</sup> ələ/ ‘deep’ - /rələ/ ‘arrest’	/n <sup>h</sup> tə <sup>n</sup> tə/ ‘gong’ - /kə/ ‘shrimp’



## Appendix D – Distribution Charts

Table D.1: Consonants distribution, ordered according to place of articulation

	i	e	ə	ɨ	u	ɔ	a	ɛi	ou
m	-	-	+	-	-	-	+	-	-
<sup>n</sup> p	+	+	-	+	-	+	+	-	-
p	+	+	+	+	+	+	+	+	-
p <sup>h</sup>	+	+	+	+	+	+	+	-	-
w	+	+	+	-	-	-	+	+	-
β	-	+	+	-	-	-	+	-	+
<sup>n</sup> pf	-	-	+	+	-	-	-	-	-
pf	-	-	+	+	-	-	-	-	-
pf <sup>h</sup>	-	-	+	+	-	-	-	-	-
f	-	-	-	+	-	-	-	-	-
v	-	-	-	+	-	-	-	-	-
ð	+	-	-	-	-	-	+	-	-
<sup>n</sup> τ	+	+	+	-	+	+	+	-	-
τ	+	-	+	-	+	+	+	-	-
τ <sup>h</sup>	-	+	+	-	+	-	+	-	-
t <sup>h</sup>	+	+	+	+	+	+	+	-	-
n	-	-	+	-	-	-	+	-	-
t	+	+	+	+	+	+	+	-	-
<sup>n</sup> ts	-	-	+	+	-	+	-	-	-
ts	+	+	+	+	+	+	+	-	-
ts <sup>h</sup>	+	+	+	+	+	+	+	-	-
s	+	+	+	+	+	+	+	+	-
z	-	-	+	-	-	+	+	-	-
r	+	+	+	+	+	+	+	-	-
r̥	+	+	-	-	-	+	+	-	-
l	+	+	+	-	+	+	+	+	+
ɛ	+	+	+	-	+	+	+	-	-
z	+	+	+	-	+	+	+	-	-
tɛ	+	-	+	-	+	+	+	-	-
tɛ <sup>h</sup>	+	+	+	-	+	+	+	-	+
ɲ	-	-	+	-	-	-	-	-	-
<sup>n</sup> c	+	+	+	-	-	+	+	-	-
c	+	+	+	-	-	+	-	-	-
c <sup>h</sup>	+	+	+	-	-	-	+	-	-
j	+	+	+	-	-	+	+	-	-
<sup>n</sup> k	+	+	+	+	+	+	+	-	+
k	+	+	+	+	+	+	+	-	-
k <sup>h</sup>	+	+	+	+	+	+	+	-	-
x	+	+	+	+	+	+	+	-	-
ɣ	+	+	+	+	+	+	+	-	-
h	+	+	+	-	-	+	+	+	+

**Table D.2:** Consonant cluster and prenasalized consonant distribution

	i	e	ə	ɨ	u	ɔ	a	ɛi	ou
pw	-	+	+	-	-	-	+	-	-
p <sup>h</sup> w	-	+	-	-	-	-	-	-	-
ɾw	-	-	-	-	-	-	+	-	-
ɾ <sup>h</sup> w	-	-	+	-	-	-	+	-	-
t <sup>h</sup> w	-	-	+	-	-	-	+	-	-
tw	-	+	+	-	-	-	-	-	-
kw	-	+	+	-	-	-	+	-	-
k <sup>h</sup> w	-	+	+	-	-	-	+	-	-
cw	-	-	+	-	-	-	-	-	-
ts <sup>h</sup> w	-	-	-	-	-	-	+	-	-
tsw	-	-	-	-	-	-	+	-	-
te <sup>h</sup> w	-	+	+	-	-	-	+	-	-
tɛw	-	+	-	-	-	-	+	-	-
sw	-	-	+	-	-	-	+	-	-
ɛw	-	+	+	-	-	-	+	-	-
zw	-	+	+	-	-	-	+	-	-
hw	+	+	+	-	-	-	-	-	-
rw	-	-	-	-	-	-	+	-	-
lw	-	+	+	-	-	-	+	-	-
pj	+	+	+	-	-	+	+	-	-
p <sup>h</sup> j	-	+	+	-	-	+	+	-	-
sj	-	-	-	-	-	-	+	-	-
hj	+	-	-	-	-	-	+	-	-
<sup>n</sup> pw	-	+	+	-	-	-	+	-	-
<sup>n</sup> ɾw	-	-	-	-	-	-	+	-	-
<sup>n</sup> tsw	-	+	+	-	-	-	-	-	-
<sup>n</sup> cw	-	+	+	-	-	-	-	-	-
<sup>n</sup> kw	-	+	+	-	-	-	-	-	-
<sup>n</sup> pj	+	+	-	-	+	-	+	-	-

---

**Reviewed:** Received 26 August 2022, revised text accepted 05 October 2022, published 01 December 2022

**Editors:** Editor-In-Chief Dr Mark Alves | Managing Eds. Dr Paul Sidwell, Dr Matthias Jenny, Dr. Kenneth van Bik, Dr Sigrid Lew