

EAST TUSOM: A PHONETIC AND PHONOLOGICAL SKETCH OF A LARGELY UNDOCUMENTED TANGKHULIC LANGUAGE

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East Tusom is a Tibeto-Burman language of Manipur, India, belonging to the Tangkhulic group. While it shares some innovations with the other Tangkhulic languages, it differs markedly from “Standard Tangkhul” (which is based on the speech of Ukhrul town). Past documentation is limited to a small set of hastily transcribed forms in a comparative reconstruction of Tangkhulic rhymes (Mortensen & Miller 2013; Mortensen 2012). This paper presents the first substantial sketch of an aspect of the language: its (descriptive) phonetics and phonology. The data are based on recordings of an extensive wordlist (730 items) and one short text, all from one fluent native speaker in her mid-twenties. We present the phonetic inventory of East Tusom and a phonemicization, with exhaustive examples. We also present an overview of the major phonological patterns and generalizations in the language. Of special interest are a “placeless nasal” that is realized as nasalization on the preceding vowel unless it is followed by a consonant and numerous plosive-fricative clusters (where the fricative is roughly homorganic with the following vowel) that have developed from historical aspirated plosives. A complete wordlist, organized by gloss and semantic field, is provided as appendices.

phonetics; phonology; clusters; placeless nasal; assimilation; language
documentation; Tangkhulic

INTRODUCTION

The East Tusom Language

The topic of this paper is the phonetics and phonology of an endangered Tibeto-Burman language spoken in Tusom village, Ukhrul District, Manipur State, India, perhaps in surrounding villages, and by families who have left the area. The location of Tusom village relative to other locations in north-eastern Manipur is given in Figure 1. This village, and the associated language variety, is called “East Tusom” in this paper to distinguish it from another village called Tusom that is also located in Ukhrul district. The precise number of speakers is not known, although there are believed to be less than 1,000.

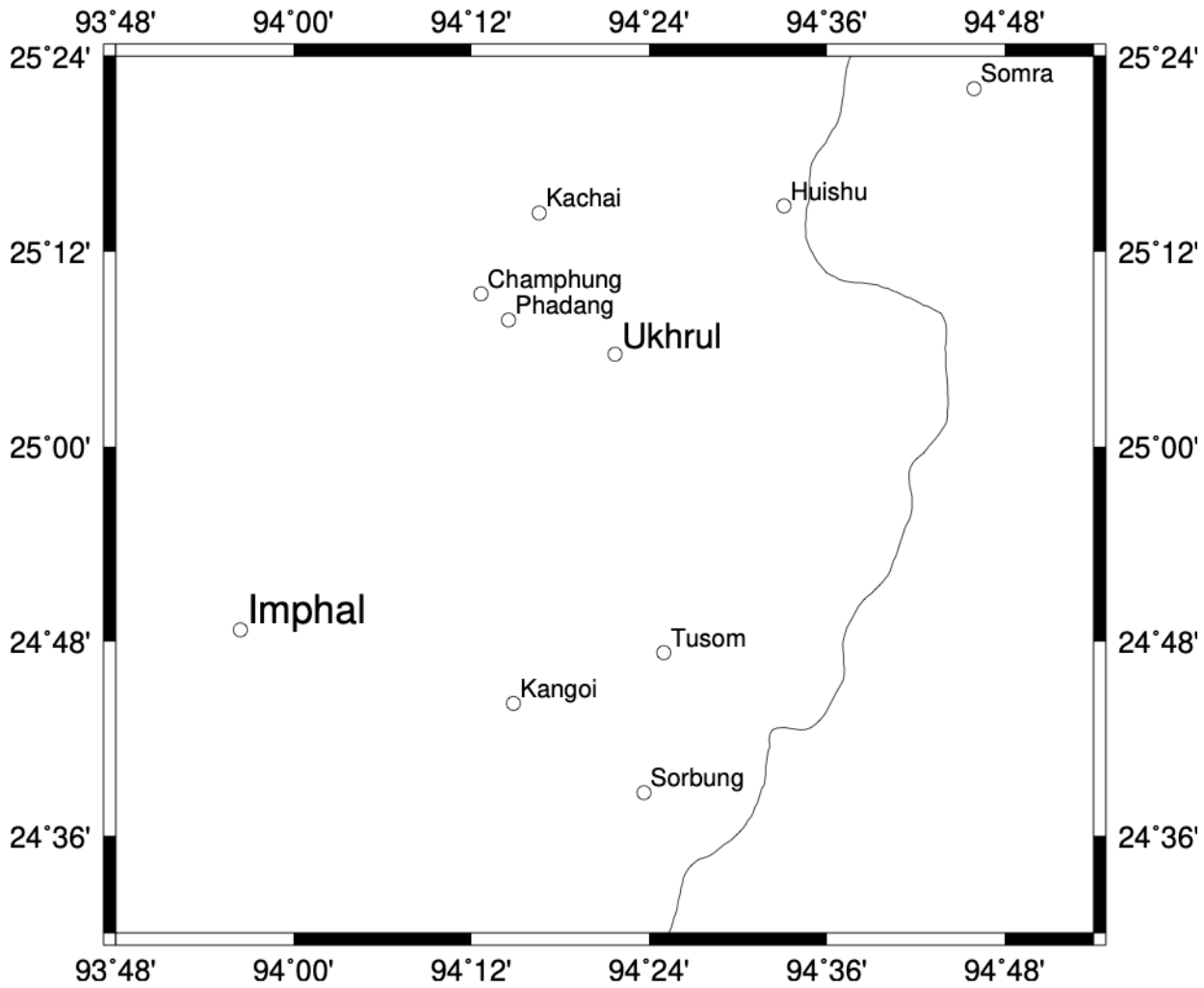


Figure 1: Map of northeastern Manipur showing the location of Tusom village

It is difficult to overstate the linguistic diversity of northeast Manipur, especially Ukhrul district. There is a Tangkhul saying that the region has “one tribe, 90 villages, and 90 dialects,” where “dialect” is best understood as “language.” While most of the people in Ukhrul district consider themselves to be part of one ethnic group, the Tangkhul Nagas, the languages they speak appear to be drawn from multiple different groups within Tibeto-Burman. The most prominent language in the district, Standard Tangkhul (Pettigrew 1979; Arokianathan 1987; Ahum 1997)—a lingua franca based on the speech of Ukhrul village—is part of a group that has been called “Tangkhulic” (Mortensen & Miller 2013). Many, but not all, of the Tangkhul languages described by early investigators like Brown (1837) and McCollough (1859), as well as recent investigators like Tokchom (2011) also belong to this group. These languages differ markedly in phonology, morphology, lexicon, and even syntax. The Sorbung language, spoken in the southern part of Ukhrul district, appears not to belong to Tangkhulic at all and to be close to the Kuki-Chin branch of Tibeto-Burman (Mortensen & Keogh 2011) ¹. Recent investigation in northern Ukhrul district, too, has uncovered “Tangkhul” languages

¹ Sorbung may be close to Kabrang Tangkhul, which was described by Takhellambam (2014).

that do not fit neatly into the Tangkhulic group, such as Suansu². Most of these languages have not been documented at all, let alone documented well, and there is evidence that these languages are of considerable typological interest, particularly with reference to phonology and morphology.

The only prior published data from Tusom are a small set of imperfectly transcribed forms used to support comparative historical arguments in Mortensen and Miller (2013) and Mortensen (2012).³ These are provided without any synchronic analysis or any general descriptive statements. The goal of this paper is to provide a comprehensive report on the data set from which these smaller sets were sampled and to describe, to the extent possible given the materials available, the phonetic inventory, phonological units, and phonological generalizations of East Tusom. The data set is admittedly limited. It consists mostly of somewhat noisy recordings of wordlist data transcribed by the current authors after the recordings were made. However, it is the only data on this language that is currently available and should be of interest not just to synchronic phonologists and phonological typologists, but also to comparative linguists trying to understand the linguistic history of the Tibeto-Burman languages of the India-Burma borderlands.

East Tusom and Tangkhulic

Earlier work has identified a number of shared innovations, phonological and morphological, that serve as criteria for membership in the Tangkhulic group as defined by Mortensen (2003). These include the affixation of certain lexical prefixes in particular nouns and verbs, the affixation of the nominalizing prefix *kə-*/*kʰə-* in the citation forms of all verbs, and the PTB **s-* > **tʰ-*, PTB **ts-* > **s-* chain shift (also shared with Kuki-Chin). All of these appear to have occurred in the history of East Tusom, marking it as Tangkhulic.

However, East Tusom is highly innovative, especially phonologically. It has undergone dramatic changes since the Proto-Tangkhulic period. Most of the rhyme contrasts that existed in Proto-Tangkhulic have been neutralized. The only remaining codas (in native vocabulary) are glottal stop (marginal) and a nasal “archiphoneme”, which we analyse as underlyingly placeless. The onset inventory has, in contrast, become much richer. Phonetically, at least, it includes a profusion of plosive-fricative clusters, a few of which can be analysed phonologically as affricates and most of which cannot (because they are not homorganic). As we will show below, these largely appear to have developed from earlier aspirated plosives whose aspirated intervals—coloured by the following vowel—have been reinterpreted as fricatives.

² For data from this language, see <https://zenodo.org/record/3383006#.YE0eF9wo9PY>.

³ A version of these data was also included in the STEDT database (Matisoff 2015).

MATERIALS AND METHODS

Speaker

The speaker, who was a native, proficient, female speaker of East Tusom in her twenties, was not raised in Tusom village but grew up speaking Tusom as her home language and during frequent visits to her grandparents (who continued to live in Tusom). She grew up in Imphal, the capital of Manipur, and spoke Meithei (Manipuri) outside of the home, as well as English and Standard Tangkhul. There is some evidence that her lexicon was influenced by these other languages. However, her phonology seems to be very different from her L2s. She was located through a network of Tangkhul theology students studying in the United States. The first author carried out elicitation and recording in summer of 2004.

Materials

Elicitation was based on an extensive wordlist (730 items) intended originally for comparative purposes. It was designed to include a wide range of basic vocabulary as well as cultural items specific to Northeast India and Burma. No systematic effort was made to elicit utterances more complex than a single word, but many of the elicited items appear to be phrases. A short text, not provided here, was also collected, based upon the author's recollection of childhood visits to Tusom village.

Elicitation Techniques

The wordlist was collected using a standard bilingual elicitation protocol. First, the first author gave a word from the wordlist in English. The speaker responded by translating the word in East Tusom. The author then repeated the word until the speaker was satisfied, at which point they typed a transcription of the East Tusom item into the SIL Field Linguist's Toolbox software application. After each tranche of items, the author made a recording. The author said each English word in the tranche, after which the speaker gave her translation into the target language three times.

Recording Equipment

Recordings were made using a laptop computer and the Audacity software package. The speaker wore an inexpensive lavalier microphone with a wired connection to the analog microphone port of the computer. The resulting recordings were somewhat noisy but are acceptable for some basic acoustic analysis.

Transcription Methodology

Transcriptions were manually extracted from the Toolbox files and added to Praat TextGrids, aligned with the corresponding utterances (Boersma & Weenink 2020). One utterance type (with three tokens) was placed in a single interval to make transcriptions easier to maintain. However, intervals were created for each

token and a Praat script was written to populate these intervals with the transcription for the type, except when a particular token was audibly different. In these cases, the transcription of each token was inserted in the TextGrid manually. The transcriptions were then corrected in multiple passes. First, the first author made a complete pass, correcting errors. They then made a partial pass, correcting transcriptions of tone. The second author then made a global pass, ensuring that uniform conventions were applied throughout the corpus. Finally, individual hypotheses about the phonetics and phonology of the language were tested by querying the corpus with a Python script and examining the results instrumentally. This allowed us to determine, for example, that East Tusom does in fact have [b] and [d] in its segment inventory—unlike most other documented Tangkhulic languages—but does not appear to have [g].

PHONETICS

The following section is a concise treatment of the descriptive and articulatory phonetics of East Tusom. Our goal, at this juncture, is to document each of the phones that occurs in our phonetic transcription of the Tusom data. This transcription is narrow enough that it captures a fair amount of subphonemic variation but is broad enough that repetitions of the same word are assigned the same transcription despite minor phonetic differences. It is not our goal, in this part of the paper, to discuss contrastive phonological units. Instead, we seek to catalogue and exemplify phones.

Consonant Phones

We identified 29 consonant phones in Tusom, as shown in Table 1. There are six different places of articulation if labiodental and bilabial places of articulation are grouped together as “labial” and palatal and palato-alveolar are grouped together as “palatal”. There are an especially large number of alveolar phones. In particular, there are instances of both alveolar trills ([r] and [r̥]) and alveolar approximants ([ɹ] and [ɹ̥]) that are auditorily similar to the “bunched r” of American English.

| | Labial | Alveolar | Palatal | Velar | Uvular | Glottal |
|-------------------------------|----------------|----------------|---------|----------------|--------|---------|
| Plosive (voiced) | b | d | | | | |
| Plosive (voiceless) | p | t | | k | | ʔ |
| Plosive (voiceless aspirated) | p ^h | t ^h | | k ^h | | |
| Nasal Stop | m | n | ɲ | ŋ | | |
| Fricative (voiced) | v | z | ʒ | | | |
| Fricative (voiceless) | f | s | ɕ | x | χ | h |
| Lateral Fricative | | ɬ | | | | |
| Trill (voiced) | | r | | | | |
| Trill (voiceless) | | ɾ | | | | |
| Approximant (voiced) | | ɹ | | | | |
| Approximant (voiceless) | | ɻ | j | | | |
| Lateral Approximant | | l | | | | |

Table 1: Consonant phones of East Tusom

Plosives

Examples of the nine plosive phones are given in Table 2 below.

| | | | | | | |
|-------------------|---------------------------|-----------------|------------------------------|-------------|--------------------------------------|-----------------|
| [b] | <i>bûə</i> | ‘bat’ | <i>kábíe</i> | ‘defecate’ | <i>bótì</i> | ‘buttocks’ |
| [d] | <i>keídû</i> | ‘phlegm’ | <i>dúmpvúlé</i> | ‘snail’ | <i>ʔəkədə̀</i> | ‘palate’ |
| [p] | <i>pátû</i> | ‘forehead’ | <i>ʔápi</i> | ‘father’ | <i>ʔásámpá</i> | ‘right hand’ |
| [t] | <i>títá</i> | ‘chameleon’ | <i>táŋk^həmá</i> | ‘dark’ | <i>ʔítá</i> | ‘older sister’ |
| [k] | <i>kó</i> | ‘river’ | <i>kəzúúə</i> | ‘rain’ | <i>kfiú</i> | ‘village/state’ |
| [ʔ] | <i>ʔimà</i> | ‘older brother’ | <i>ʔánú</i> | ‘mother’ | <i>ʔa</i> | ‘1 SG’ |
| [p ^h] | <i>p^hə̀lùŋ</i> | ‘termite’ | <i>p^hlákə̀sxá</i> | ‘swallow’ | <i>kə̀p^hri</i> | ‘beautiful’ |
| [t ^h] | <i>t^húmpá</i> | ‘plant’ | <i>kə̀t^hú</i> | ‘sour’ | <i>mít^hyn⁴</i> | ‘mithun’ |
| [k ^h] | <i>k^hámpxù</i> | ‘rash (n.)’ | <i>ʔùk^hùe</i> | ‘intestine’ | <i>k^háŋkeí</i> | ‘cough (v.)’ |

Table 2: Examples of East Tusom plosives

Of these, [b] and [d] are quite rare, but have pronounced negative voice onset time, distinguishing them from the more common [p] and [t]. A voiced velar plosive [g] does not seem to exist. This type of gap is common in the world’s languages (Ohala 1983; Maddieson 2013) and is also found in many Kuki-Chin languages, as well as Proto-Tangkhulic as reconstructed by Mortensen and Miller (2013).

Nasal Stops

Table 3 shows examples of each of the four Tusom nasal stops.

⁴ This is a loanword, possibly from English.

| | | | | | | |
|-----|----------------|----------|---------------------------|------------|-------------------------|---------|
| [m] | <i>mù</i> | ‘person’ | <i>nàmpúat</i> | ‘smooth’ | <i>k^hàmé</i> | ‘wrong’ |
| [n] | <i>nósuìlè</i> | ‘dove’ | <i>k^hánný</i> | ‘laugh’ | <i>k^hàná</i> | ‘hit’ |
| [ɲ] | <i>ɲúɲùe</i> | ‘pus’ | <i>k^háɲúe</i> | ‘slippery’ | | |
| [ŋ] | <i>ɲàlá</i> | ‘soil’ | <i>k^háɲkɛí</i> | ‘cough’ | <i>sá-ɲò</i> | ‘bear’ |

Table 3: Examples of Tusom nasal stop phones

Of these phones, [m], [n]. and [ɲ] are all reasonably common. The palatal nasal stop [ɲ] is very rare and occurs in only two items within our corpus.

Fricatives

East Tusom has a large number of fricative phones, which are listed in Table 4 below.

| | | | | | | |
|-----|----------------|---------------|---------------|------------|-----------------------------|------------------|
| [v] | <i>ɲisúvé</i> | ‘character’ | <i>xúpviù</i> | ‘sow (n.)’ | <i>sákviù</i> | ‘porcupine’ |
| [z] | <i>zùə</i> | ‘cooked rice’ | <i>kəzì</i> | ‘eat’ | <i>záɲkù</i> | ‘year’ |
| [ʒ] | <i>zìló</i> | ‘Come!’ | <i>mýzè</i> | ‘come’ | <i>k^hámázì</i> | ‘accept’ |
| [f] | <i>ɲàmfiù</i> | ‘fox’ | <i>kfiù</i> | ‘village’ | <i>mápfytsù</i> | ‘tear (n.)’ |
| [s] | <i>síɲi</i> | ‘fish’ | <i>ɲùnsú</i> | ‘blood’ | <i>kàsxiù</i> | ‘open’ |
| [ɕ] | <i>ɛí</i> | ‘animal’ | <i>múɛí</i> | ‘eyeball’ | <i>tɛúɲk^hámà</i> | ‘many’ |
| [x] | <i>xú</i> | ‘pig’ | <i>ɲùxú</i> | ‘skin’ | <i>ɲùkxú</i> | ‘foot’ |
| [χ] | <i>ɲəχámpí</i> | ‘chief’ | <i>kəχá</i> | ‘red’ | <i>tχá</i> | ‘bean’ |
| [h] | <i>hókàpé</i> | ‘fart (v.)’ | <i>ɛihè</i> | ‘eight’ | <i>méhé</i> | ‘leech’ |
| [ɬ] | <i>kóhí</i> | shadow | <i>kəhí</i> | ‘far’ | <i>ɲip^hlie</i> | ‘umbilical cord’ |

Table 4: Examples of Tusom fricative phones

Of these, the lateral fricative [ɬ] is exceptionally uncommon, occurring in only four items. The others are all more common. Of special note are the palato-alveolar fricatives. It was not possible to perform a palatographic or ultrasound study at the time the data were collected. However, from the acoustic impression, it appears that they are produced by creating a constriction between the front of the tongue and the alveolar ridge.

As should be apparent from the examples, several of the fricative phones have very restricted distributions. Below, we will show that the number of fricative phonemes is somewhat smaller than the number of fricative phones identified here.

Trills and Approximants

The trills and approximants are shown in Table 5.

| | | | | | | |
|------|----------------------------|-------------------|---------------------------|-------------------|---------------|-------------|
| [r] | <i>râ</i> | ‘land or country’ | <i>káprijè</i> | ‘fly (v.)’ | <i>kómbôr</i> | ‘blanket’ |
| [ʀ] | <i>kəɲú</i> | ‘heavy’ | <i>míɲúə</i> | ‘skin blemish’ | <i>kákɲú</i> | ‘spin (v.)’ |
| [ɹ] | <i>ɲàmfiù</i> | ‘fox’ | <i>ɲúe</i> | ‘war’ | <i>bòɛ́</i> | ‘shirt’ |
| [ɹ̥] | <i>ɲùɲùə</i> | ‘flea’ | <i>ɲùk^hɲuè</i> | ‘intestine’ | | |
| [l] | <i>lókáte^hy</i> | ‘deceive’ | <i>k^hàlú</i> | ‘buy’ | <i>màliá</i> | ‘four’ |

Table 5: Examples of Tusom trill and approximant phones

The auditory impression of [ɪ] is rather like that of American English [ɪ]. As will be noted below, the approximants seem to be in free variation with the trills.

Vowel Phones

The monophthong inventory of East Tusom is shown in Table 6. Notably, there are nasalized phones corresponding to each oral vowel, though some of these are marginal. There are four high vowels, counting only the oral phones and not counting their nasalized counterparts, but only three mid vowels.

| | Front | | Central | Back | |
|------|-----------|---------|---------|-----------|---------|
| | unrounded | rounded | | unrounded | rounded |
| High | i ĭ | y ỹ | | u ũ | u ũ |
| Mid | e ě | | ə ẽ | | o õ |
| Low | (æ̃) | | a ă | | |

Table 6: Monophthongal vowels of East Tusom

With the exception of [æ̃], the vowel inventory is symmetrical. The vowel [æ̃] was only found in one form and seems to be marginal, even as a narrow transcription of the vowel sound in question. It is therefore parenthesized. Examples of the monophthongs are given in Table 7.

| | | | | | | |
|------|------------|-----------------|------------|---------------------|------------|----------------|
| [a] | â | ‘1sg’ | râ | ‘land/country’ | má | ‘fire’ |
| [e] | méhê | ‘leech’ | séléntsý | ‘sweat’ | ɔimé | ‘price’ |
| [i] | ɛí | ‘animal’ | tɛí | ‘necklace’ | pɛiɲijá | ‘five’ |
| [o] | kòmpé | ‘duck’ | kətsô | ‘cry (v.)’ | bôɔ̃ | ‘toad’ |
| [u] | xú | ‘pig’ | kəbũ | ‘sit on eggs (v.)’ | pʰə̀lũɲ | ‘termite’ |
| [ʉ] | kfú | ‘village/state’ | sútxũə | ‘bamboo’ | mə̀rĩnũ | ‘orphan’ |
| [y] | ýsádó | ‘routinely’ | mítʰýn | ‘mithun’ | kə̀ɛ̀ỹ | ‘decay (v.)’ |
| [ə] | kʰə̀mázi | ‘accept (v.)’ | kátá | ‘slow’ | kátʰũə | ‘new’ |
| [æ̃] | mæ̃ɲkʰə̀li | ‘catch (v.)’ | (marginal) | | | |
| [ã] | kʰắ-fú | ‘steal (v.)’ | kə̀χắ | ‘red’ | kʰə̀kə̀bằ | ‘choose (v.)’ |
| [ẽ] | ɔáhě | ‘curry’ | ɔimé | ‘price’ | kə̀ké | ‘cross’ |
| [ĩ] | ɛĩ | ‘song’ | kə̀ɛ́ĩɲ | ‘clever/smart’ | kʰə̀ɲáɛ́ĩ | ‘frost’ |
| [õ] | kóľi | ‘shadow’ | kə̀kʰõ | ‘bark’ | kə̀kχõ | ‘crow (v.)’ |
| [ũ] | lũɲkúə | ‘stone’ | kʰə̀rũ | ‘add together (v.)’ | kádũ | ‘descend (v.)’ |
| [ũ̃] | tʰũ̃kʰõ | ‘pestle’ | (marginal) | | | |
| [ỹ] | kʰằkằzỹ | ‘follow’ | (marginal) | | | |

Table 7: Examples of Tusom monophthong phones

| | | | | | | |
|------|------------|-------------------|----------|---------------------|---------|------------------|
| [uə] | ʔùə | ‘chicken’ | kʰəŋkúə | ‘strong’ | ʌəʔùə | ‘pheasant’ |
| [ie] | kɛie | ‘knife’ | kʰámàliə | ‘forget (v.)’ | ʔúphʰie | ‘navel’ |
| [iə] | ʔimíəpà | ‘front’ | kíəkàɛi | ‘respect’ | | |
| [uə] | búə | ‘bat’ | ɲúə | ‘war’ | kʰəŋúə | ‘wait’ |
| [ue] | sákúə | ‘horse’ | xúejě | ‘ginger’ | kʰəlúə | ‘finish’ |
| [ui] | kxùí | ‘bee’ | ʔùxúí | ‘skin’ | kàxúí | ‘late’ |
| [ue] | súəntità | ‘house lizard’ | ʔùkʰúə | ‘intestine’ | ʔəxúə | ‘near’ |
| [uo] | lùə | ‘talk (v.)’ | ʔúlùə | ‘speech / words’ | ʔúlùə | ‘mute / dumb’ |
| | kʰámàlùə | | | | ʔàkàsú | |
| [yi] | kʰókʰəl̥yí | ‘roll (v.)’ | | | | |
| [au] | jàú | ‘sheep’ | | | | |
| [oi] | tɛákói | ‘dance | | | | |
| | kàsəl̥í | (v.)’ | | | | |

Table 8: Examples of Tusom phonetic diphthongs/vowel sequences

A total of 13 vowel sequences occur in the data (Table 8). Some of these are clearly diphthongs. Others occur so rarely that they may simply result from the elision of intervocalic consonants. A complete list of the vowel sequences that we believe to be phonemic are given in Table 14 below.

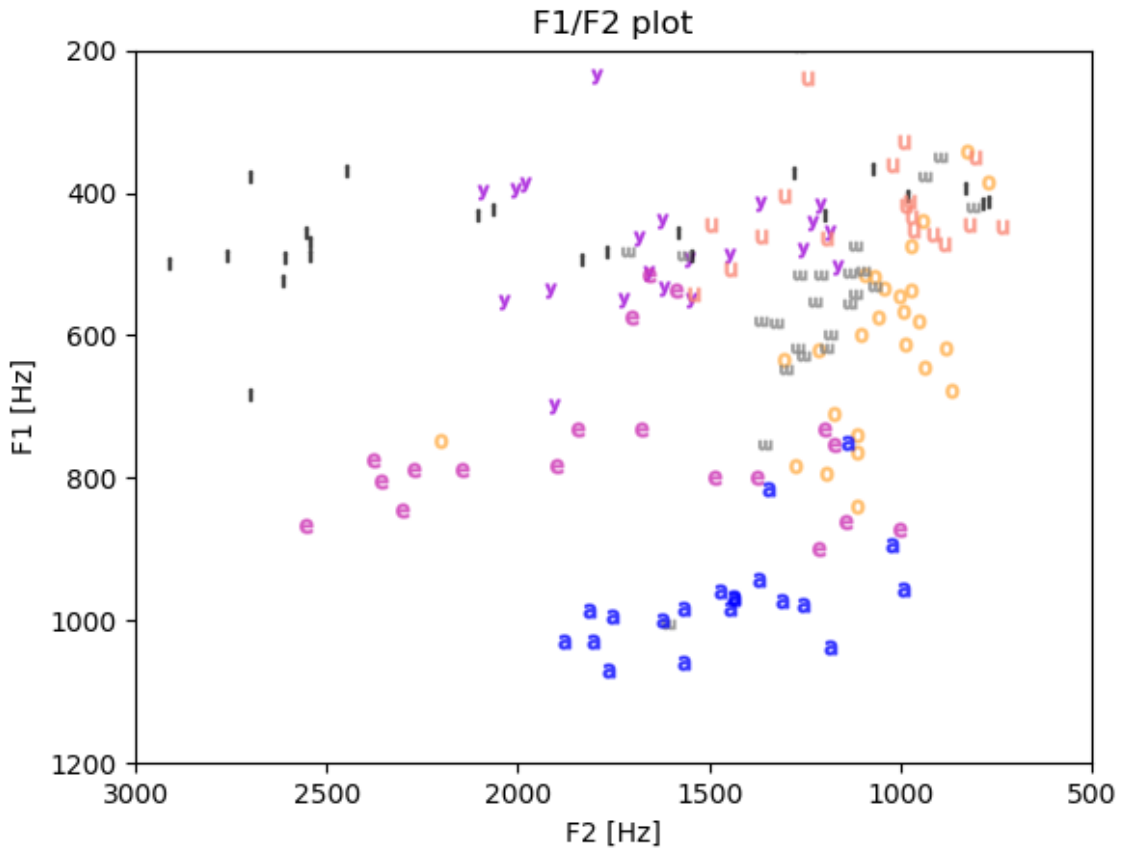


Figure 2: Formant plot of vowels (20 tokens/type) of East Tusom

In order to obtain a clearer picture of the vowel space in East Tusom, we plotted 20 tokens of each vowel phone (excluding [æ] and [ə]) by their first and second formants. This resulted in a plot similar to the IPA vowel chart, with high front vowels at the top left and low back vowels at the bottom right. 20 examples of each vowel segment were manually labeled then extracted using a Praat script (Boersma & Weenink 2020; version 6.1.10). After being isolated, each segment was turned into a formant object using the Burg method (Time Step = 0.01, Max Formants = 5, Max Formant (Hz) = 5500, Window Length = 0.025, Preemphasis = 50). From these objects, F1 and F2 measurements were taken using the “Hertz Linear” method at the midpoint of the segment.

A vowel phone we have transcribed as [ə] occurs quite often in the dataset, but we chose not to include it on this formant chart. We used [ə] to indicate all very short, unstressed vowels that were not clearly [i], [u], or [ʊ]. While we have not yet had time to investigate this topic in detail, it appears that the quality of the vowels in minor (unstressed) syllables is strongly influenced by the vowel in the following stressed syllable. As a result, [ə] vowels occur across a large part of the formant space and their presence in the plot was judged to be unhelpful and uninformative. Furthermore, to the extent that these vowels form a coherent phonetic category, it may be somewhat higher in the vowel space than IPA [ə] (it may be [i]). The exemplar clouds for each vowel in Figure 2 are quite diffuse and show a great deal of overlap. Part of this is due to noise in the recordings, which interfered with the operation of the formant extraction algorithm.

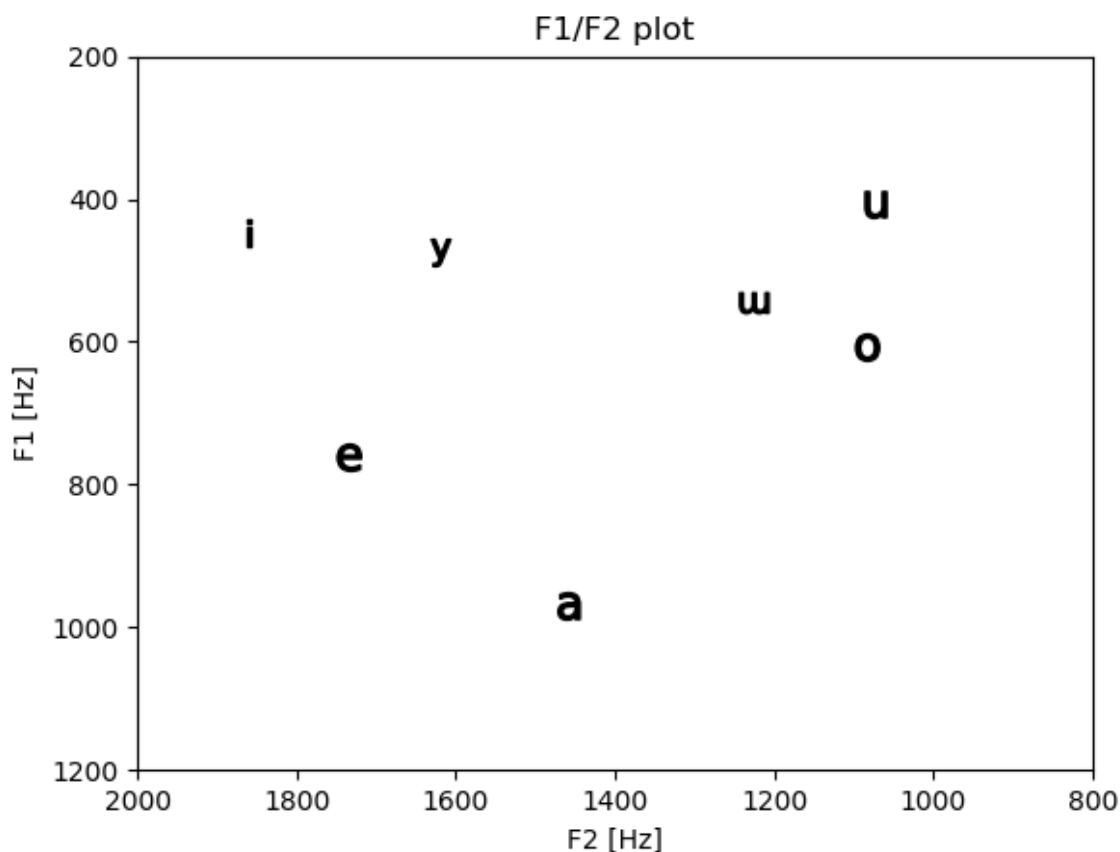


Figure 3: Mean F1 and F2 for East Tusom vowel phones

A plot of mean F1 and F2 values for each vowel is given in Figure 3. These provide a much clearer picture of the Tusom vowel space. To create average F2×F1 values for each vowel, the mean F1 and F2 values of each vowel quality were taken using the `mean` function of Pandas (McKinney 2010; the pandas development team 2020) on the database of vowels and quality measurements, then plotted in the same way as Figure 2.

Phonetics of Tone

While tone is inherently a phonological construct, it also has to be addressed in its phonetic aspect. Of course, an almost limitless variety of pitch contours occur in Tusom words, phrases, and sentences, but there are three salient patterns on which we will build our phonological analysis of tone in East Tusom: a high contour, a low contour, and a falling contour.

In reality, all three of these patterns actually involve falling contours most of the time (at least in our data). This is largely due to the interaction between tone and intonation in Tusom. The local tonal contours are superimposed over a broader declining intonational contour. This is very likely to be an artifact of the conditions under which the data was recorded (i.e., without a carrier phrase to control intonation). As a result, it is difficult to tell whether this pattern of declination generalizes to the language generally.

Plots of the three tones in East Tusom are given in Figure 4 below.

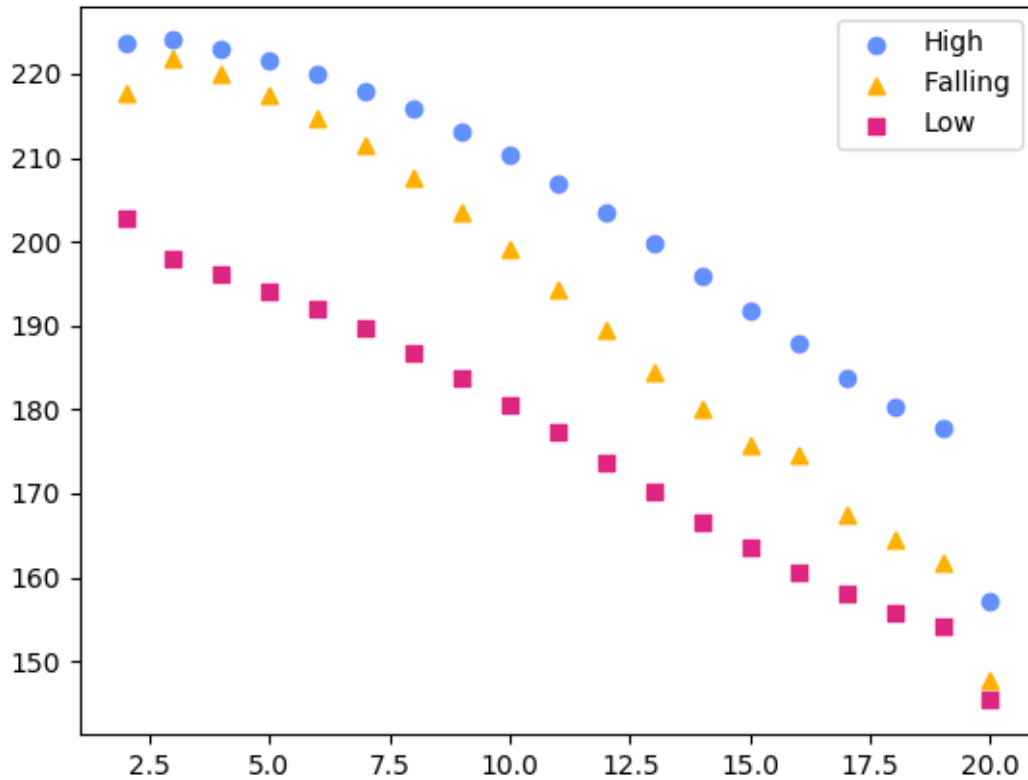


Figure 4: Plots of the three tones in East Tusom (averaged over X tokens per type and sampled at 1 second intervals)

100 instances of vowels labeled as [ɿ] “high”, [ɿ] “low”, or [ɿ] “falling” were converted into Pitch objects using the Parselmouth interface to the Praat API (Jadoul, Thompson & Boer 2018). Pitch objects were stored as a list of frames and measurements taken at a given quantile of each vowel token. For the purposes of finding the average tone curve, F0 measurements were taken at 5% intervals. Because some tokens were too short to be measured accurately in 5% quantiles, only tokens with 20 or more frames were used. When this data is plotted, it reveals how the F0 in a vowel changes over time⁵. To create the average curve for each toneme, the mean value for every frame was taken and plotted. There are artifacts in the final frame of many of these tokens. This is likely due to Praat’s autocorrelation method which uses the value of the following datapoint to perform the correlation. Artifacts from Praat’s autocorrelation method led to unpredictable results in the last frame of many tokens due to the lack of a following frame.

Based on these data, we propose describing the three tones as [ɿ] “high”, [ɿ] “low”, and [ɿ] “falling”.

⁵ As a reviewer notes, a notable limitation of this sort of analysis is that it does not preserve differences in absolute duration between tones, a subject for further investigation.

PHONOLOGY

The sound system of Tusom consists of a rich inventory of onsets including a large number of clusters, a reasonably rich inventory of vowel nuclei with a modest number of possible rhymes, three tones, and a confounded system of final stress and vowel length. There is a (perhaps unproductive) laryngeal dissimilation in the onsets of prefixes. There is some allophonic variation in the realization of fricatives and there is at least one simple tone rule. The nasal coda segment displays place assimilation and coalescence with the preceding vowel.

Phonological Inventory

The inventory of consonant phonemes that can occur in onsets is given in Table 9:

| | <i>Labial</i> | <i>Alveolar</i> | <i>Palatal</i> | <i>Velar</i> | <i>Uvular</i> | <i>Glottal</i> |
|---------------------------------|---------------|-----------------|----------------|--------------|---------------|----------------|
| Plosive (voiced) | b | d | | | | |
| Plosive (voiceless) | p | t | | k | | ʔ |
| Nasal Stop | m | n | ɲ | ŋ | | |
| Fricative (voiced) | v | z | ʒ | | | |
| Fricative (voiceless) | | s | ɕ | x | | h |
| Trill (voiced) | | r | | | | |
| Trill (voiceless) | | ɾ | | | | |
| Approximant (voiced) | | | j | | | |
| Lateral Approximant (voiceless) | | ɭ | | | | |
| Lateral Approximant (voiced) | | l | | | | |

Table 9: Consonant phonemes

The vowel nuclei are presented in Table 10:

| | <i>Front</i> | | <i>Central</i> | <i>Back</i> | |
|--------|------------------|----------------|----------------|------------------|----------------|
| | <i>unrounded</i> | <i>rounded</i> | | <i>unrounded</i> | <i>rounded</i> |
| High i | | y | | ɯ | u |
| Mid e | | | ə | | o |
| Low | | | a | | |

Table 10: Vowel phonemes (monophthongs)

There are eight nuclei. Nasal vowels are analysed as a sequence of a vowel nucleus and the nasal archiphoneme //N//. All diphthongs consist of two vowels drawn from this set in sequence.

A more detailed analysis of the phonological inventories, presented in terms of possible onsets and rhymes, will be provided below.

Phoneme Summary

The six plosive phones all appear to represent distinct phonemes. The same is true of the four nasal phones. There is an accidental gap in the voiced velar plosive, a very common gap cross-linguistically, as mentioned earlier (Ohala 1983; Maddieson 2013). Apart from this gap, there is a three-way laryngeal contrast in plosives (voiced, voiceless, voiceless aspirated). This is not unusual for the area. As will be seen below, and for language-internal reasons, we analyse the aspirated stops as sequences of a voiceless stop and /h/. The situation with the place of articulation of fricatives is more complicated, as will be shown below. The voiced fricative phones each correspond to a contrastive phoneme. There is reason to believe that the alveolar, and alveopalatal segments represent phonemic contrasts. However, the voiceless velar and uvular fricatives appear to be allophones of one phoneme, as do the voiceless labiodental and glottal fricatives. There appear to be only two rhotic phonemes, one voiced and one voiceless. The alveolar trills are in free variation with the alveolar approximants—different repetitions of a word, in our data, frequently vary only with respect to the manner of a rhotic segment.

Syllable Structure

In native vocabulary, the East Tusom syllable has the following structure:

$$C_1(C_2)(C_3)V_1(V_2)(N)$$

Where: C_1 is any consonant phoneme; C_2 is the phoneme /h/; which can be realized a various fricatives or aspiration; C_3 is /r/ or /l/; V_1 is any vowel nucleus; V_2 is an offglide (one of the vowel phonemes /i/, /u/, /e/, /ə/, or /o/, which are realized in this position as [j], [w], [ɛ], [ə], and [ɔ] in this position); and N is a placeless nasal. Syllables may also consist only of a (syllabic) placeless nasal.

An example of a maximal syllable is /pruəN/ in *kápruəN* ‘needle.’ There are no onsetless syllables: A glottal stop will be epenthesized to provide an otherwise vowel-initial syllable with an onset. In marginal cases, the N slot may be filled by /ʔ/ (as in *ʔúkxúmájéʔ* ‘toeprint’). In loanwords, it may also be filled by /r/ (as in *kómbôr* ‘blanket’).

Stress and Weight

East Tusom, like other Tangkhulic languages, has non-contrastive stress that is predictable from weight and morphological factors (which are confounded). There are no stress or weight alternations in our data (but two short syllables sometimes coalesce to form a long syllable). Except in loanwords, morphemes are all monosyllabic (or occasionally, subsyllabic). Roots are simply long (bimoraic) and stressed while prefixes are short (monomoraic) and unstressed⁶. Because this difference is completely predictable, it is not represented in our transcriptions⁷. Only four vowels (/ə/, /i/, /u/, and /u/) occur in unstressed prefix syllables. Suffixes

⁶ There is at least one exception to this generalization, described below, when the nominalizing prefix occurs before the nasal prefix /N-/.
⁷ However, interpreting the transcriptions does require the reader to recognize roots as roots.

(but not auxiliary verbs, which sometimes have a suffix-like presentation) are short and unstressed as well, as are particles. The general pattern for words in isolation is /L'H/ (iambic) or—for nominalized verbs with lexical prefixes—/LL'H/ (anapestic). Examples are shown in (1) and (2), respectively:

- (1) a. ʔì. 'sì 'flesh'
 b. ʔú. 'kûə 'head'
 (2) a. kʰə.ŋə 'lô 'to run'
 b. kʰə.mə. 'zì 'to accept'

There is no restriction on having multiple stressed syllables (roots) occur contiguously. This is actually quite common in (compound) nouns and verbs.

Tones

As mentioned above in the section on the phonetics of tone, there are three contrasting tones in East Tusom (3–5):

- (3) a. ɛì 'cow'
 b. ɛí 'animal'
 c. ɛî 'song'
 (4) a. káte^hùə 'to dig'
 b. káte^húə 'to be sick'
 c. mákate^húə 'burning'
 (5) a. kàtxúə 'to be full'
 b. txùə 'oil'
 c. kàtxúə 'to be awake'

Once one abstracts away from the phonetics of the tones (all are phonetically falling in our data, probably because of the way in which they were elicited), the tone system becomes quite simple: there is a high tone (H), a low tone (L), and a falling tone (HL)⁸. All three tones occur freely in stressed syllables, but only high and low tones occur on affixes and particles.

There is one simple and well-motivated tone rule: HL → H / _T (a falling tone is “simplified” to a high tone non-finally, as shown in examples (6) and (7)):

- (6) a. ʔù.mû 'eye'
 b. mú.búe 'eye sand' (lit. 'eye shit')
 c. mú.ɛí 'eyelash' (lit. 'eye hair')
 d. mú.khùe 'eyebrow'
 (7) a. ʔə.txā 'fruit'
 b. ʔə.txá.rîê 'a variety of fruit'

The definition of “non-final” is somewhat complicated, however. The process always fails to apply utterance-finally but it sometimes applies within an utterance (presumably when the following syllable is part of the same prosodic word as the one bearing the underlying HL tone). We have not yet worked out the exact criteria

⁸ A reviewer suggests that the [V] tone could better be analyzed as a mid tone, since, for most of its duration, it is higher than L but lower than H. We agree that this is one possible analysis. However, we choose to analyze it as HL because the pitch excursion is much greater than for either of the other two tones and, once the pitch declination is normalized out of the pitch plots, [V] has a clear trajectory from the top of the range to the bottom. Thus, it seems to us to have two targets, rather than one.

for prosodic wordhood in East Tusom, but we have noted that it does not always align neatly with morphological wordhood.

We propose the following analysis based on cross-linguistic facts: Contour tones take longer to realize *ceteris paribus* than level tones (Ohala & Ewan 1973); therefore, they are more likely to be borne by hosts that are long in duration⁹. Tusom affixes and particles are all short in duration, so they are inferior hosts, and, in fact, the HL tone is not found there. However, it is also not found in non-final long syllables. This is because final syllables—across languages—are phonetically lengthened (Lindblom & Karin 1973; Klatt 1973). This tendency is prominent in Tusom. It is only these lengthened final syllables that are long enough to support the Tusom HL tone. This line of reasoning builds on earlier typological work, on many different languages, by Gordon (2001) and Zhang (2002). One way of understanding this pattern is in terms of phonologization: speakers failed to reach their articulatory targets for falling tones on syllables that were not very long more often than on those that are. This difference was phonologized as a tonal alternation.

Onsets

In many Tangkhulic languages, including the Ukhul-based lingua franca, there is a dissimilatory pattern in prefixes whereby stop-initial prefixes only surface with aspirated onsets preceding roots or prefixes with voiced onsets and surface with unaspirated onsets elsewhere (Arokianathan 1987; Mortensen 2003; Shosted 2007; Gopal 2016). In East Tusom, the residue of this pattern exists, though it has been rendered opaque by various changes and no longer appears to be fully productive. Taking as an example the nominalizing prefix *kə-/kʰə-* and the homophonous lexical prefix, here is a summary of the environment in which each alternant occurs¹⁰:

- (8) Before voiceless obstruents, [kə] usually occurs:
- | | |
|-----------------------|-------------------------------|
| a. <i>kápa</i> | ‘to be born’ |
| b. <i>kátó</i> | ‘to weave’ |
| c. <i>kápruə̌</i> | ‘needle’ |
| d. <i>kápsuə̌</i> | ‘medicine’ |
| e. <i>kəsúutχà</i> | ‘goosebump’ |
| f. <i>kátʰuə̌</i> | ‘clean’ |
| g. <i>kəpʰrí</i> | ‘beautiful’ |
| h. <i>ʔəniù kəpʰó</i> | ‘to be pregnant (with child)’ |
| i. <i>ʔəkχá kəsui</i> | ‘to breath (breath)’ |

⁹ A reviewer points out that some languages have very short contour tones, noting the case of Burmese. Hmong also has a very short, abruptly falling tone. Such cases clearly do exist. The argument made here is a statistical one: in aggregate, contour tones are *more likely* to appear on hosts with a long duration than on hosts with a short duration.

¹⁰ Below, aspirated /k/ will be analysed as the cluster /kh/ but for clarity, /kʰ/ is used here. As a reviewer notes, the patterns illustrated here become rather unusual when it is assumed that there is an alternation between /kh/ and /k/, since the deletion of the /h/ would be conditioned on the properties of a following but non-local consonant. We answer that languages often develop “unnatural” alternations from a combination of historical developments, and this would be an instance of that sort.

- j. *kàɛĩŋ* ‘to be clever/smart’
 k. *kʰámó kàxúi* ‘to scratch (an itch)’
 l. *níŋ kàtɛʰuǎ* ‘to want’
- (9) Before voiceless sonorants, [kə] also seems to occur
 a. *kàɾí* ‘daughter-in-law’
- (10) Before voiced fricatives, [kə] usually occurs, but see below
 a. *ʔànsíú kàzì* ‘to menstruate’
 b. *kàzúútχà* ‘mole’
- (11) [kə] also occurs before voiced stops
 a. *kábíe* ‘to defecate’
 b. *ʔúúkádu* ‘corner’
 c. *kádu* ‘to descend’
 d. *nǎŋ kàdí* ‘to get lower’
- (12) In some cases, [kə] even occurs before voiced sonorants, though this is exceptional
 a. *kàluàí* ‘cup’
 b. *ʔúúkáluǎ* ‘spleen’
- (13) Before nasals, [kʰə] always occurs
 a. *kʰóŋər* ‘to snore’
 b. *kʰámələ* ‘to spit up’
 c. *màɛé kʰəmuə* ‘to whistle’
 d. *ʔàkχá kʰəmuú* ‘to blow (breath)’
 e. *kʰəmé* ‘to be incorrect’
 f. *kʰənuə* ‘to be low’
- (14) This includes cases where *kə-* forms a single syllable with the lexical prefix *N-* (discussed below)
 a. *kʰánùtú* ‘to meet’
 b. *kʰáŋkeí* ‘to cough’
- (15) Before voiced approximants, [kʰə] usually occurs
 a. *kʰəlǔ* ‘to be warm’
 b. *kʰəlúŋǎ* ‘eagle’
 c. *kʰəlà* ‘to exist’
 d. *kʰəlue* ‘to finish’
 e. *kǒŋ kʰəly* ‘to fall’
 f. *kʰəlí* ‘to take’
 g. *kʰərú* ‘to add together’
 h. *kázuuǎ kʰərú* ‘to be raining (rain)’
- (16) [kʰə] sometimes occurs before voiced fricatives.
 a. *kʰəzý* ‘to sell’
- (17) In sequences where the nominalizer occurs before the lexical prefix *kə-*, the nominalizer is always [kʰə]
 a. *kʰəkàtsà* ‘to be cold’
 b. *kʰəkàpɛí* ‘to slap’
 c. *kʰəkàpsú* ‘to hit’
 d. *kʰəkátù* ‘to shiver’
 e. *kʰəkʰənù* ‘to shake something’
 f. *kʰəkàbǎ* ‘to choose’

A consideration of the data makes it impossible to deny that there is a statistical tendency towards aspiration (1) when there is a following voiced sonorant or (2) when there is a following prefix. It may be possible to rationalize many of the exceptions on historical grounds, but it is probably best to simply treat the pattern

as somewhat lexicalized and avoid positing a highly abstract synchronic phonology.

There are some interesting occurrence restrictions between voiceless fricatives and following vowels in East Tusom. A summary of these restrictions is given in Table 11, where X indicates that the fricative-vowel sequence is attested.

| | <i>i</i> | <i>y</i> | <i>u</i> | <i>u</i> | <i>e</i> | <i>o</i> | <i>a</i> |
|---|----------|----------|----------|----------|----------|----------|----------|
| f | — | — | X | — | — | — | — |
| s | X | X | X | X | X | X | X |
| ɕ | X | X | X | X | X | — | X |
| x | — | — | X | X | — | X | sX |
| χ | — | — | — | — | — | — | X |
| h | X | — | tX | X | X | X | X |

Table 11: Occurrence of voiceless fricative-vowel sequences in East Tusom. Attestation is indicated by “X”. “sX” indicates that the sequence is only attested after [s].

From Table 11, it is evident that [f] is in complementary distribution with [h] and that [χ] is in complementary distribution with [x]. These four phones must constitute two phonemes, which we will call /h/ and /x/, after the allophones with the least restricted distribution. Examples illustrating the distribution of [h], [f], [x], and [χ] are given in Table 12.

| | | |
|-----|----------|-----------------|
| [h] | -hí | ‘nom’ |
| | méhé | ‘leech’ |
| | hó kàpé | ‘to fart’ |
| | kʰáŋáhá | ‘to look’ |
| [f] | rámfiú | ‘fox’ |
| | kfiú | ‘village/state’ |
| | ʔùkfiú | ‘forearm’ |
| [x] | xó | ‘boil’ |
| | xú | ‘pig’ |
| | kxiú | ‘grasshopper’ |
| | kàsxú | ‘to be open’ |
| | kʰákàsxá | ‘to be shy’ |
| [χ] | χá | ‘be red’ |
| | ʔàpχátχá | ‘thigh’ |
| | ʔàkχá | ‘breath’ |
| | ʔáχánnú | ‘queen’ |

Table 12: Distributions of four fricatives

With a couple of possible exceptions, the phone [f] occurs only before [u]¹¹; [h], never occurs before [u] (unless preceded by /t/) but does occur before [i], [e], [o], and [a]¹². It is also the case that aspirated stops do not occur before [u], and this will be important to an argument presented below. The relationship between [h] and [f] is a straightforward case—[h] and [f] are allophones of a phoneme /h/. The situation with [x] and [χ] is somewhat more complicated. [χ] only occurs before

¹¹

¹² A reviewer notes a related pattern in Lisu. There, /f/ occurs only before high back vowels.

[a]. [x] never occurs before [a] unless preceded by [s]. [χ] never occurs after [s]. Consequently, the distribution of [x] and [χ] is complementary even if the environments are somewhat unnatural. Neither [x] nor [χ] occur before front vowels, suggesting a historical change in which /x/ palatalized before [i], [e], and possibly [y].

Two reviewers point to a pair of interesting facts. First, in many languages of the region, [s] and [ɕ] or [ʃ] are in free variation. This is true, for example, in Monsang (Konnerth 2018; Monsang & Veikho 2018), a Kuki-Chin language of Manipur. Second, our consultant gave [ʔisí] for ‘flesh’ and [ɕí] for ‘animal’ despite the fact that ‘flesh’ and ‘animal’ are usually represented as the same morpheme in Tangkhulic languages (< proto-Tangkhulic *sa). This suggests that there may either be free variation, or a conditioned alternation, between [s] and [ɕ] and that they may not be in contrast. These are interesting observations. However, in our data, there appear to be no instances of the same item occurring with both [s] and [ɕ] (with the exception of ‘flesh’-‘animal’), so we do not believe there is sufficient evidence to establish the existence of alternation or variation between these two phones. More data are needed to resolve this question.

Each of the consonant phonemes shown in Table 9 can serve as the onset of a syllable. However, East Tusom also allows a surprising variety of onset clusters (when compared to its Tangkhulic sister languages). The most numerous of these are the stop-fricative clusters. By way of analogy, we group the affricates with these sequences (rather than treating them as unit phonemes) but we recognize that an alternative analysis is possible.

Diachronically, many of these clusters come from aspirated stops (see Table 13).

| <i>Proto-Tangkhulic</i> | <i>East Tusom</i> | <i>Other Tangkhulic</i> | <i>Gloss</i> |
|-------------------------|------------------------------------|--|---------------|
| *p ^h it | <i>k^hakəpsu</i> | Ukhrul <i>kəŋəp^hit</i> | ‘to hit’ |
| *p ^h a | <i>kəpɕi</i> | Ukhrul <i>kəp^ha</i> , Kachai <i>kəp^hu</i> , Huishu <i>kəp^he</i> | ‘to seek’ |
| *p ^h ej | <i>ʔəp^hatxa</i> ‘thigh’ | Ukhrul <i>ʔəp^hej</i> , Kachai <i>ʔəp^hi</i> , Huishu <i>ʔəp^hu</i> | ‘foot/leg’ |
| *k ^h u:l | <i>kfu</i> | Ukhrul <i>k^hu</i> , C. Tangkhul <i>k^hui</i> | ‘village’ |
| *k ^h a | <i>mókɕi</i> | Ukhrul <i>mək^ha</i> , Kachai <i>mək^hu</i> , Huishu <i>ʔamək^he</i> | ‘chin’ |
| *k ^h ow | <i>k^háŋkxùə</i> | Ukhrul <i>k^həmək^how</i> , Huishu <i>kəmək^how</i> | ‘to be dirty’ |

Table 13: Examples of East Tusom stop-fricative clusters reflecting Proto-Tangkhulic aspirated stops

The aspiration has been reinterpreted as a voiceless fricative that is homorganic (roughly speaking) with the following vowel. It is tempting to analyse this “aspiration” as a phoneme /H/ that is realized as different fricatives depending on its context. For example, /H/ would become [ɸ] before [i] and [x] before [u]. This would yield a simple and phonologically compelling analysis of the stop-voiceless fricative clusters. However, this analysis is up against two obstacles, one illusory and one formidable.

Outside the context of clusters, [ɸ] occurs in environments other than before [i] (for example, before [a]). As we have already seen, these instances of [ɸ] must be seen as realizations of a phoneme /ɸ/. Thus, some instances of /ɸ/ would have to come from /ɸ/ and some would come from /H/. To solve this problem, we would simply label /H/ as //H//, an archiphoneme, a phonological object used to represent an underspecified segment.

But this does not solve the deeper problem, which is that the place of the fricative is not entirely predictable from the (synchronic) quality of the following vowel. For example, in Table 13, the forms *k^hakəpsu* ‘to hit’ and *kfu* ‘village’ are given, each with an emergent fricative preceding the vowel [u]. The fricatives, however, differ in place of articulation. Given the comparative data, it is apparent what has happened: in ‘to hit’, the aspiration preceded a high front vowel whereas in ‘village’ it preceded a high back vowel. It would be possible, we suppose, to give these data a very abstract synchronic analysis in which there were vowel distinctions that were totally neutralized except with regard to their effect on preceding //H//. Such an analysis would capture the diachronic facts of this pattern. However, it seems to us very unlikely that a learner of this language would be presented with adequate data to reconstruct this analysis. As a result, we have rejected the analysis with archiphonemic //H// and accepted a more synchronically grounded, if less colourful, approach.

We take a compromise position: aspirated stops are analysed, phonemically, as a sequence of stops + /h/. In this way, all of the reflexes of Proto-Tangkhu aspirates are treated as stop-fricative clusters and the symmetry and simplicity of the inventory are maintained. /h/ occurs in clusters with /p/, /t/, and /k/, just like the voiceless fricatives due (modulo some gaps, which are likely accidental). The affricates /ts/ and /tɸ/, too, are just special instances of stop-fricative clusters.

| | <i>p</i> | <i>t</i> | <i>k</i> | <i>b</i> | <i>d</i> | <i>g</i> |
|----|----------|----------|----------|----------|----------|----------|
| f | [pf] | — | [kf] | — | — | — |
| s | ps | ts | — | — | — | — |
| ɸ | pɸ | tɸ | kɸ | — | — | — |
| x | px | tx | kx | — | — | — |
| χ | [pχ] | [tχ] | [kχ] | — | — | — |
| h | ph | th | kh | — | — | — |
| v | pɸ | — | kɸ | bɸ | — | — |
| z | pz | — | — | bz | — | — |
| z̥ | — | — | — | — | — | — |

Table 14: Stop-fricative clusters. Clusters in square brackets exist only as allophonic variants.

This glosses over one difficulty: unlike the other clusters, there are aspirated equivalents of /ts/ and /tɕ/ (/tsh/ and /tɕh/). These would have to be analysed as /tsh/ and /tɕh/, which is awkward (they would be stop-fricative-fricative clusters). This is one argument in favour of treating the affricates as unit phonemes (/ts/, /tsh/, /tɕ/, and /tɕh/). On the other hand, doing so would erode the symmetry of the inventory of clusters.

There are also /sx/, /ɕx/, and /ɬx/ clusters in East Tusom. The remaining onset clusters in the language are stop-liquid clusters. These are /pl/, /pr/, /tr/, /kl/, and /kr/. While less unusual, from an areal perspective, than the stop-fricative clusters, these are unusual within modern Tangkhulic languages, in most of which clusters of this type have been simplified to singleton stops (Mortensen 2003).

Rhymes

The rhyme inventory of East Tusom is not as rich as other Tangkhulic languages like Ukhul Tangkhul (Mortensen & Miller 2013; Pettigrew 1979; Ahum 1997), due to the fact that most codas distinctions have been eliminated. However, Tusom has a relatively large number of vowel nuclei (eight) and is relatively rich in diphthongs, all of which consist of a nucleus followed by an offglide. The rhymes of East Tusom are presented in Table 15:

| <i>∅</i> | <i>i</i> | <i>u</i> | <i>e</i> | <i>ə</i> | <i>o</i> | <i>N</i> | <i>əN</i> |
|----------|----------|----------|----------|----------|----------|----------|-----------|
| i | — | — | ie | iə | — | iN | — |
| y | yi | — | — | — | — | yN | — |
| u | — | — | ue | uə | — | uN | uəN |
| u | — | — | ue | uə | (uo) | uN | uəN |
| e | — | — | — | — | — | eN | — |
| ə | — | — | — | — | — | əN | — |
| o | oi | — | — | — | — | oN | — |
| a | — | (au) | — | — | — | aN | — |

Table 15: East Tusom rhymes. Each column contains rhymes with a particular offglide or coda (shown as a header in italics)

In addition to the rhymes shown there, there is an additional, marginal, rhyme attested in the data: *eʔ*. In East Tusom, there are two underlying codas (in native vocabulary). One is /-ʔ/, which occurs in a very small number of items like -*jéʔ* ‘(finger or toe) print’. The other is a nasal /N/ which we are analyzing here as a placeless archiphoneme. When it occurs before an obstruent, it surfaces with the place of articulation of that obstruent. Otherwise, it surfaces as nasalization, on the preceding vowel:

- (18) a. /râN/ ‘land’ → [râ] ‘land/country’
 b. /râN-uə/ ‘land-pheasant’ → [râʔuə] ‘pheasant’
 c. /râN-pvù/ ‘land-spirit’ → [rámpvù] ‘ghost’
 d. /râN-hú/ ‘land-canine’ → [rámfú] ‘fox’

The argument for this analysis is simple: there is no contrast between vowels that are nasalized and those that are followed by a nasal stop. Among nasal stop

codas, there is no contrast in place of articulation. Therefore, the presence of nasalization and the presence of the nasal codas /m/, /n/, and /ŋ/ can all be represented as one underlying segment. We choose an archiphonemic representation for this segment, since some of its realizations (/m/, /n/, and /ŋ/) are phonemically distinct in other contexts. The decision to invoke archiphonemes may seem retrograde to some, but it is done with calculated purpose: it renders it unnecessary to choose an underlying representation among the surface realizations (and there seems to be limited evidence to distinguish between /m/, /n/, and /ŋ/, the most obvious candidates). Furthermore, the archiphonemic approach is broadly consistent with the theoretically catholic, structuralist assumptions that have been embraced in this paper.

The placeless nasal is involved in an interesting type of coalescence (mentioned above): When the nominalizing prefix *khə-* occurs before the lexical prefix *N-*, the two syllables typically coalesce to form a single syllable /kʰáN/, as shown in Table 16.

| <i>Underlying Representation</i> | <i>Surface Representation</i> | <i>Gloss</i> |
|----------------------------------|-------------------------------|-------------------|
| kʰə-N-pxù | kʰámpxù | ‘rash’ |
| kʰə-N-zû | kʰánzû | ‘wrinkle’ |
| kʰə-N-tû | kʰántû | ‘to meet’ |
| kʰə-N-kéí | kʰánkéí | ‘to cough’ |
| kʰə-N-kú | kʰánkú | ‘to roast/to dry’ |
| kʰə-N-kxùə | kʰánkxùə | ‘to be dirty’ |
| kʰə-mé | kʰəmé | ‘to be incorrect’ |
| kʰə-kə-peí | kʰəkəpeí | ‘to slap’ |
| kʰə-kə-psú | kʰəkəpsú | ‘to hit’ |

Table 16: The nominalizing prefix before the nasal prefix N- (first partition) and elsewhere (second partition).

The tone of this syllable is always /H/ and the syllable’s duration is considerably longer than that of the nominalizing prefix in other environments. The pattern is remarkable because, elsewhere, the phonological patterns of Tusom seem to conspire to keep morpheme boundaries aligned with syllable boundaries. While we will not present a theoretical analysis here, we suggest that this pattern has interesting typological implications and should be examined in future work.

CONCLUSION

Tusom phonetics and phonology are far richer than can be addressed with a single article, particularly given the limited data with which we had to work.

However, we feel that we have been able to demonstrate several interesting properties of the language that will be of interest both to comparativists and to phonological typologists. From a comparative standpoint, the phonology of East Tusom is considerably more complicated than other Tangkhulic languages that have been documented, like Standard/Ukhrul Tangkhul, Kachai, and Huishu. This complexity is reflected in the size of inventories, the complexity of allophonic distributions, and the number of morphophonological alternations. The development of plosive-fricative clusters from aspirated plosives is also interesting and the interaction between diachronic developments and the synchronic distribution of plosives and fricatives is worthy of note. The tone patterns are typologically notable, not because they are unusual, but because they illustrate a common kind of relationship—between tone and duration. The placeless nasal archiphoneme, too, is a segment that has parallels elsewhere in the world. However, its exact behaviour in Tusom, surfacing as nasalization when there is no target for assimilation, seems somewhat uncommon.

We hope that we and future researchers can build upon this work in two ways: First, there is clearly far more work to do on East Tusom that can only be completed through field trips to Tusom village. The collection, transcription, and analysis of a significant corpus of texts would test many of the claims made here, as would paradigmatic elicitation. Beyond that, we hope that this paper helps emphasize the internal diversity of the Tangkhulic languages and stimulates research on other varieties.

ACKNOWLEDGEMENTS

Support for initial data collection was provided by a Graduate Division Summer Grant from the University of California, Berkeley. The Language Technologies Institute at Carnegie Mellon University supported the transcription and analysis of the data. We are grateful to our two reviewers for their insightful and constructive comments. We would also like to thank Larry Hyman for discussion of the tonal phonology.

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APPENDIX A: WORDLIST BY GLOSS

The following list consists of phonetic and phonemic transcriptions of all of the words in our dataset, sorted by gloss. The phonemic transcriptions follow the phonemicization described in the paper with two exceptions: aspirated stops and affricates are indicated with /^h/ rather than /h/ and /ts/ and /tɕ/ are transcribed as /ts/ and /tɕ/.

| Gloss | Phonetic Trans. | Phonemic Trans. |
|--------------|-----------------------|-----------------------|
| 1DU | ʔóná | ʔóná |
| 1PL | ʔórû | ʔórû |
| 1SG | â | â |
| 2DU | nina | nina |
| 2DU | níná | nínáN |
| 2SG | nâ | nâN |
| 3DU | íná | íná |
| 3SG | ʔómú | ʔómú |
| 3SG | ʔómú | ʔómú |
| able | sùlikəsó | sùlikəsó |
| accept (v.) | k ^h ámézì | k ^h ámézì |
| Adam's apple | ʔùk ^h útɕà | ʔùk ^h útɕà |

| | | |
|------------------------|--------------------------------|---------------------------------|
| add together | k ^h áru | k ^h óruN |
| adopt (v.) | kákà | kákà |
| adult | sùntúàtá | sùNtúàtá |
| amniotic fluid | ʔùsàlútsý | ʔùsàlútsý |
| alive, to be (v.) | káʔùǎ | káʔùǎ |
| angry | ʔúmàlùŋ kású | ʔúmàlùN kású |
| animal | éí | éí |
| ankle | kxúmù | kxúmù |
| ankle bone | ʔùkxúmù nè ʔàrùkúǎ | ʔùkxúmù nè ʔàrùkúǎ |
| ant | láiípi | láiípi |
| anus | bótikfù | bótikfù |
| arm | ʔùpùǎ | ʔùpùǎN |
| armpit | sùtúǎkúi | sùtúǎkúi |
| arrive (v.) | váŋkədí | váNkədí |
| arrow | mələt ^h ũǎ | mələt ^h ũǎN |
| ascend/climb (v.) | kíkí | kíkí |
| aunt, older paternal | ʔánú | ʔánú |
| aunt, wife of father's | | |
| younger brother | ʔànùkətúǎ | ʔànùkətúǎ |
| aunt, wife of older | | |
| paternal uncle | ʔànùt ^h ũǎ | ʔànùt ^h ũǎ |
| awake, to be (v.) | kətxũǎ | kətxũǎ |
| axe | nəèi | nəèi |
| baby | ʔəŋá | ʔəŋá |
| back | mákǎ | mákòN |
| back (of something) | ʔùk ^h ənúpà | ʔùk ^h ənúpà |
| backbone | mákórù | mákóNrù |
| bad character | ʔisúvéné ʔà kəp ^h í | ʔisúvénéN ʔà kəp ^h í |
| bad character | ʔisúvén səkətəi | ʔisúvénéN səkətəi |
| bamboo | sútxũǎ | sútxũǎN |
| banana | ʔámétxâ | ʔámétxâ |
| bark | kák ^h ǎ | kák ^h òN |
| bat | búǎ | búǎ |
| bathe (v.) | sùkùtə ^h ũǎ | sùkùtə ^h ũǎ |
| beak of bird | ʔikúts ^h ú | ʔikúts ^h ú |
| bean | txâ | txâ |
| bear | səŋǎ | səŋòN |
| beard | móèi ʔùdúǎ | móèi ʔùdúǎ |
| beautiful | kəp ^h í | kəp ^h í |
| bee | kxúi | kxúi |
| behind | ʔùk ^h ənúpà | ʔùk ^h ənúpà |
| belly | ʔùpú | ʔùpú |
| bicep | ʔúkíútxâ | ʔúkíútxâ |
| big | k ^h əteù | k ^h əteù |
| big toe | ʔùkxúlèmpvú | ʔùkxúlèNp ^h vú |
| bile | kák ^h ítá ñtsú | kák ^h ítá Ñtsú |
| bird | ʔintí | ʔiNtí |
| bird egg | ʔintítsý | ʔiNtítsý |
| bite | k ^h âŋká | k ^h âNká |

| | | |
|----------------------------|-----------------------------|--------------------------------|
| bitter | kák ^h í | kák ^h í |
| black | kózuí | kózuí |
| blanket | kómbôr | kóN b ôr |
| blanket | kóŋkù | kóN k ù |
| bleed | ʔùñsú kəsú | ʔùN s ú kəsú |
| blemish on skin | mìŋúə | mìŋúə N |
| blind | ʔúmúk ^h əmù | ʔúmúk ^h əmù |
| blind, be | ʔákətxá | ʔákətxá |
| blink (v.) | ʔəmú k ^h əkəsxú | ʔəmú k ^h əkəsxú |
| blood | ùñsú | ùN s ú |
| blood vessel | ʔùñsú sámpvù | ʔùN s ú sáN p vù |
| blow | mùéúe k ^h əməéúe | mùéúe k ^h əməéúe |
| blow (v.) | ʔəkxá k ^h əmú | ʔəkxá k ^h əmú |
| blow snot (v.) | ʔənəxǒ kəsú | ʔənəxǒ kəsú |
| blow the nose (v.) | ʔinəí kəsú | ʔinəí kəsú |
| body | ʔisí | ʔisí |
| body louse | kəteí | kəteí |
| boil (v.) | káxǒ | káxǒ N |
| bone | ʔərúkúə | ʔərúkúə |
| born, be | kápà | kápà |
| borrow | k ^h ásəpvù | k ^h ásəpvù |
| bosom | ʔimíepà | ʔimíepà |
| bracelet | kǒsǔə | kóN s ùə N |
| brain | ʔúkúədú | ʔúkúədú |
| break | tsúkəkíe | tsúkəkíe |
| break (v.) | tákəduə | tákəduə |
| break out (v.) | sùt ^h íkəsú | sùt ^h íkəsú |
| breast | ʔúzú | ʔúzú |
| breast milk | ʔózútsú | ʔózútsú |
| breastbone | ʔúmólǔ ʔúrúkúə | ʔúmólǔ N ʔúrúkúə |
| breath | ʔəkxá | ʔəkxá |
| breathe (v.) | ʔəkxá kəsú | ʔəkxá kəsú |
| brother-in-law | k ^h əmúə | k ^h əmúə |
| brother, father's younger | ʔàpíkətúə | ʔàpíkətúə |
| brother, older of female | ʔimà | ʔimà |
| brother, older of male | ʔùmápí | ʔùmápí |
| brother, younger of female | ʔíkətúəpí | ʔíkətúəpí |
| brother, younger of male | ʔíkətúəpí | ʔíkətúəpí |
| brush teeth (v.) | ʔíeí k ^h əkəsú | ʔíeí k ^h əkəsú |
| buffalo | sólý | sólý |
| burn/on fire, be | mákəí | mákəí |
| burning | mákəte ^h úə | mákəte ^h úə |
| burst (v.) | ʔùmbú? kəkíe | ʔùN b ú? kəkíe |
| buttocks | bóti | bóti |
| buy | k ^h əlú | k ^h əlú |
| calf | ʔùkxútxâ | ʔùkxútxâ |
| call | kóxú | kóxú |
| carry | kək ^h úə | kək ^h úə N |
| carry on head | kátǒ | kátǒ N |

| | | |
|---------------------|---------------------|---------------------|
| cartilage | ʔəŋkà rùrù | ʔəNkà rùrù |
| castrated pig | xú ʔúəkətúəɛiəkòtsá | xú ʔúəkətúəɛiəkòtsá |
| cat | lámù | lámù |
| catfish | nákə.ɪá | nákə.ɪá |
| catch | mæŋkʰəli | mæNkʰəli |
| caterpillar | ʔúkùə | ʔúkùə |
| cattle | ɛi | ɛi |
| chameleon | títá | títáN |
| chase (v.) | kəzɪŋá | kəzɪŋá |
| chest | ʔúmólù | ʔúmólùN |
| chest hair | ʔùmə̀lù ʔíɛi | ʔùmə̀lùN ʔíɛi |
| chicken | ʔùə | ʔùə |
| chief | ʔəχámpî | ʔəχáNpî |
| child | ʔəŋá | ʔəŋá |
| child | ʔínù | ʔínù |
| child of chief | ʔəxàsúmé ʔùnù | ʔəxàNsúmé ʔùnù |
| chili pepper | sútχá | sútχá |
| chin | mókɛi | mókɛi |
| choose (v.) | kʰəkəbà | kʰəkəbàN |
| clean | kátʰùə | kátʰùəN |
| clear | kʰántʰùə | kʰáNtʰùəN |
| clever/smart | kəéiŋ | kəéiN |
| closed | késxù | késxùN |
| cloth | psû | psû |
| clothing | psúntɛʰi | psúNtɛʰi |
| cloud | mýzè | mýzè |
| cold | kʰəkə̀tsà | kʰəkə̀tsà |
| comb | ŋ̀tsú | ŋ̀tsú |
| comb (of a rooster) | ʔùəkə̀tò | ʔùəkə̀tòN |
| come (v.) | kəzɪ | kəzɪ |
| come back (v.) | ŋəlévəló | ŋəlévəlNló |
| Come! (imperative) | zɪló | zɪló |
| comparative degree | kʰəmə | kʰəmə |
| conceive | ʔúnú kəpʰò | ʔúnú kəpʰòN |
| cook (v.) | kəχò | kəχòN |
| cooked rice | zùə | zùə |
| cooking pot | zúʔò | zúʔòN |
| copulate | kókúe | kókúe |
| corner | ʔùkədú | ʔùkədú |
| correct | kʰántʰò | kʰáNtʰòN |
| cough | kʰəŋkɛi | kʰáNkɛi |
| cowlick | ʔùkúə̀tùə | ʔùkúə̀tùəN |
| crab | kɛiəpvû | kɛiəpvû |
| crawl (v.) | kʰámpû | kʰáNpû |
| creator | kʰəsíli ʔikə̀pvù | kʰəsíli ʔikə̀pvù |
| crippled/lame | ʔúxú ʔəkʰə̀lá | ʔúxú ʔəkʰə̀lá |
| crooked | kʰəŋkùe | kʰáNkùe |
| cross | kəkè | kəkèN |
| crow (v.) | kəkχò | kəkχòN |

| | | |
|----------------------|----------------|----------------|
| crown (of head) | kúədùǎ | kúədùǎ |
| crush chilis (v.) | sítχá kʰəní | sítχá kʰəní |
| crush paddy (v.) | súpúə kəsý | súpúə kəsý |
| cry (v.) | kətsô | kətsô |
| cup | kəlùəí | kəlùəí |
| curry | ʔáhě | ʔáhéN |
| cut meat (v.) | ʔómieʔ kʰəkàdé | ʔómieʔ kʰəkàdé |
| cut wood (v.) | kəká | kəká |
| cut wood (v.) | mətʰýŋ kəká | mətʰýN kəká |
| dance (v.) | kómé kəsəlí | kómé kəsəlí |
| dance (v.) | teákói kəsəlí | teákói kəsəlí |
| dance (v.) | teákúe kəsəlí | teákúe kəsəlí |
| dark | táŋkʰəmā | táNkʰəmā |
| daughter-in-law | kəŋí | kəŋí |
| day | násxǔ | násxùN |
| deaf | níkəxú | níkəxú |
| decay | kəey | kəey |
| deceive | ló kətəʰý | ló kətəʰý |
| deep | kətʰú | kətʰú |
| defecate | kábíe | kábíe |
| descend (v.) | kádǔ | kádúN |
| die (v.) | kətsʰù | kətsʰù |
| difficult | kʰəlùə | kʰəlùə |
| dig | kətəʰùə | kətəʰùə |
| dig a hole | ŋəlá kətəʰùə | ŋəlá kətəʰùə |
| dirty | kʰáŋkxùə | kʰáNkxùə |
| do (v.) | kʰəsəlì | kʰəsəlì |
| dog tooth | ʔý ʔíei | ʔý ʔíei |
| domestic animal | súəí | súəNéi |
| dove | nósùlè | nóNsùlè |
| dream (n) | məsxómpà | məsxóNpà |
| dream (v) | kʰəsámè | kʰəsámè |
| drink (v.) | kʰəmǎ | kʰəmàN |
| drive (v.) | kətʰùə | kətʰùə |
| drive animals (v.) | kəzúŋǎ | kəzúŋǎN |
| dry | kətχǔə | kətxúəN |
| duck | kòmpé | kòNpé |
| eagle | kʰəlúŋǎ | kʰəlúŋǎN |
| ear | ʔikʰəní | ʔikʰəní |
| ear canal | ʔikʰəníkǔ | ʔikʰəníkǔ |
| early in the morning | ntʰúlúə̀tò | Ntʰúlúə̀tò |
| earring | ʔəkʰənìtʰǔə | ʔəkʰənìtʰǔəN |
| earwax | ʔikʰəníbíe | ʔikʰəníbíe |
| easy | kʰəlíe | kʰəlíe |
| eat (v.) | kəzì | kəzì |
| eel | síŋípʰǔ | síŋípʰǔ |
| egg | ʔùətsý | ʔùətsý |
| eight | éihè | éihè |
| elephant | éikádà | éikádà |

| | | |
|-------------------|---------------------------------------|---------------------------------------|
| eleven | trílàtē ^h ē | trílàtē ^h ē |
| enemy | nəhákə̀sú | nəhákə̀sú |
| enter (v.) | kázá | kázáN |
| exchange | k ^h ánsý | k ^h áNsý |
| exist (v.) | k ^h ólà | k ^h ólà |
| exit (v.) | kəsú | kəsú |
| expect (v.) | k ^h ótēihḗ | k ^h ótēihéN |
| external mouth | mólù | mólù |
| eye | ʔùmû | ʔùmû |
| eye sand | múúbíe | múúbíe |
| eyeball | múútē ^h î | múútē ^h î |
| eyebrow | múúxùə | múúxùə |
| eyelash | múúeí | múúeí |
| face | ʔimíe | ʔimíe |
| facial hair | móeí | móeí |
| fall (v.) | kóŋk ^h əl̀y | kóNk ^h əl̀y |
| family | ʔùntē ^h úk ^h fû | ʔùNtē ^h úk ^h fû |
| far | kə̀lí | kə̀lí |
| fart | hókə̀pé | hókə̀pé |
| fast | kət ^h úə | kət ^h úə |
| fat | ʔùtxû | ʔùtxû |
| fat (v.) | k ^h ótēù | k ^h ótēù |
| father | ʔápî | ʔápî |
| fathom | lám | lám |
| fear (v.) | kə̀tsù | kə̀tsù |
| feather of bird | ʔintí jè eí | ʔiNtí jè eí |
| feces | ʔibíe | ʔibíe |
| feel in the heart | túə k ^h ámə̀rùə | túə k ^h ámə̀rùə |
| female pig | xúp ^h vù | xúp ^h vù |
| few | dúə ^h kə̀má | dúə ^h kə̀má |
| fifty | sómpeìŋíhé | sóNpeìŋíhé |
| fin | síŋíŋtsû | síŋíNtsû |
| fine | mə̀súnnúnnúʔə̀ | mə̀súnnúnnúʔə̀ |
| finger | ʔùkfúmmə̀rúə | ʔùkfúmmə̀rúəN |
| fingernail | k ^h fúnn̄tsû | k ^h fúN̄tsû |
| fingerprint | ʔùkfúmmə̀jéʔ | ʔùkfúmmə̀jéʔ |
| finish (v.) | k ^h ólùe | k ^h ólùe |
| fire | má | má |
| fish | síŋî | síŋî |
| fish eggs | síŋítsý | síŋítsý |
| fists | ʔùkfúmmə̀sxûə̀ | ʔùkfúmmə̀sxûə̀N |
| fit | pəkə̀zí | pəkə̀zí |
| five | peìŋíjə̀ | peìŋíjə̀ |
| flea | ʔùṽuə̀ | ʔùṽuə̀ |
| flesh | ʔisí | ʔisí |
| flower | ʔùpúə̀ | ʔùpúə̀ |
| fly (v.) | kə̀príjè | kə̀príjè |
| follow | k ^h əkə̀zý | k ^h əkə̀zýN |
| fontanel | eílù | eílù |

| | | |
|----------------------------|----------------|----------------|
| foot | ʔùkxû | ʔùkxû |
| foot/leg | ʔùkxû | ʔùkxû |
| footprint | kxútsò | kxútsòN |
| forearm | ʔùkfû | ʔùkfû |
| forehead | pátû | pátû |
| forget (v.) | kʰáməlié | kʰáməlié |
| four | məliá | məliá |
| fox | ɹámfú | ɹàNfú |
| freckle | záluəkəsû | záluəkəsû |
| freshwater eel | ɲieprû | ɲieprûN |
| friend | ipʰɾíli | ipʰɾíli |
| frighten (v.) | kʰəntsú | kʰəNtsú |
| frog | keiefû | keiefû |
| front (of something) | ʔimíəpà | ʔimíəpà |
| frost | kʰəŋəí | kʰəŋəíN |
| fruit | ʔətɣâ | ʔətɣâ |
| fruit variety | ʔətɣárie | ʔətɣárie |
| fry (v.) | kʰəŋûə | kʰəŋûə |
| full | kətxúə | kətxúə |
| full/complete | məpún kəpʰá | məpúnN kəpʰá |
| get higher and higher (v.) | teuə kiki | teuə kiki |
| get lower (v.) | nəŋ kədí | nəN kədí |
| get up | kəthúə | kəthúə |
| ghost | ɹámpvù | ɹàNpɹvù |
| giant grasshopper | kxúprô | kxúprôN |
| ginger | xúejě | xúejěN |
| give (v.) | kəpzú | kəpzú |
| give birth | ʔənu kəpá | ʔənu kəpá |
| gizzard | ʔuə ndùe | ʔuə Nduə |
| goat | mákʰəri | mákʰəri |
| God | pɹùsxúə | pɹùsxúəN |
| good (morally) | ʔisúvéŋ kəpʰɾí | ʔisúvéN kəpʰɾí |
| goosebump | kəsútɣà | kəsútɣà |
| grandchild | kátsýnú | kátsýnú |
| grandmother | ʔəpzú | ʔəpzú |
| grasshopper | kxû | kxû |
| green | kʰántúə | kʰáNtúə |
| grind (v.) | súpúə kətə | súpúə kətə |
| grown daughter | ʔənúŋəlínú | ʔənúŋəlínú |
| grown son | ʔənúŋəlúnpi | ʔənúŋəlúnpi |
| grown son | ʔənúŋəlúntà | ʔənúŋəlúntà |
| gaur | báŋgôɹ | báNgôr |
| guest | ʔùkfúpî | ʔùkfúpî |
| gums | ʔieiɟə ʔutú | ʔieiɟə ʔutúN |
| hair of the body | ʔisíeí | ʔisíeí |
| hair of the head | ʔùkúəí | ʔùkúəí |
| hand span | kʰáp | kʰáp |
| hard | kʰəŋká | kʰəNká |
| hat | kʰəŋkù | kʰəNkù |

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|-----------------------------|---|---|
| head | ʔúkûə | ʔúkûə |
| head basket | bâ | bâN |
| headlouse | ʔúk ^h úəʔûə | ʔúk ^h úəʔûəN |
| hear (v.) | kətxâ | kətxâ |
| heart | ʔùmə̀lû | ʔùmə̀lûN |
| heavy | kəʔrú | kəʔrú |
| help (v.) | k ^h əŋə̀tə ^h ón | k ^h əŋə̀tə ^h ón |
| help (v.) | mátəŋkə̀pá | mátəNkə̀páN |
| hen | ʔùəpvù | ʔùəpvù |
| hide (oneself) (v.) | ʔùntə̀y | ʔùNtə̀y |
| hide (something) (v.) | k ^h ántə̀y ^h | k ^h áNtə̀y ^h |
| high | kátə̀hùə | kátə̀hùə |
| hip bone | bótítxà | bótítxà |
| hit (target) | k ^h əná | k ^h əná |
| hit (v.) | k ^h əkə̀psú | k ^h əkə̀psú |
| hold in mouth (v.) | k ^h əmò | k ^h əmòN |
| honey | kxùitsýkûə | kxùitsýkûə |
| horn (of an animal) | ʔə̀ntsú | ʔə̀Ntsú |
| horse | sókûe | sókûe |
| host | ʔùkə̀pvù | ʔùkə̀pvù |
| hot | kə̀ei | kə̀ei |
| house | sûə | sûəN |
| house lizard | súentítá | súeNtítáN |
| housefly | mə̀eíný | mə̀eíný |
| hunchback | mákò kə̀bù | mákòN kə̀bùN |
| hungry for rice, to be (v.) | zú kətə̀hê | zú kətə̀hê |
| hunt (v.) | ei kəkúə | ei kəkúə |
| hurt | tsúk ^h əná | tsúk ^h əná |
| husband | ʔútisxá | ʔútisxáN |
| husked rice | zúsxùə | zúsxùəN |
| In front of | ʔimíəpà | ʔimíəpà |
| incorrect/wrong | k ^h əmé | k ^h əmé |
| intestine | ʔúk ^h ɿ̀ue | ʔúk ^h ɿ̀ue |
| itch | kxùmûə | kxùmûə |
| joint | k ^h ántý | k ^h áNtý |
| just right temp | k ^h ózá ʔà kə̀ei | k ^h ózá ʔà kə̀ei |
| kick (v.) | k ^h əkət ^h á | k ^h əkət ^h á |
| kick the foot (v.) | k ^h ò kət ^h a | k ^h ò kət ^h a |
| kidney | ŋkátxà | Nkátxà |
| kill (v.) | tákət ^h é | tákət ^h é |
| kiss (v.) | k ^h ámə̀zù | k ^h ámə̀zù |
| knead clay with feet (v.) | ŋólá kə̀tsò | ŋólá kə̀tsòN |
| knee | kxútsù | kxútsù |
| knife | keie | keie |
| land/country | râ | râN |
| large intestine | ʔúk ^h ɿ̀ue k ^h átə̀húpi | ʔúk ^h ɿ̀ue k ^h átə̀húpi |
| late | kə̀xúi | kə̀xúi |
| laugh | k ^h ánný | k ^h ánný |
| lay eggs (v.) | ʔintítsý k ^h àntsý | ʔiNtítsý k ^h àNtsý |

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|----------------------------|------------------------------------|------------------------------------|
| leaf | ʔínəɛí | ʔínəɛí |
| leather | ʔámìe ʔùhùì | ʔámìe ʔùhùì |
| leech | méhê | méhê |
| leech | tìmp ^h â | tìNp ^h â |
| left hand | ʔəpəpá | ʔəpəpá |
| leg hair | ʔùkxúɛì | ʔùkxúɛì |
| lend | lísónê | lísónê |
| leprous | p ^h áɾèkəteúə | p ^h áɾèkəteúə |
| lick (v.) | k ^h ámólúə | k ^h ámólúə |
| lift | kək ^h úə | kək ^h úəN |
| lift up | k ^h əŋkəkí | k ^h əNkəkí |
| light | kóxù | kóxù |
| light | k ^h əmpw̃ə | k ^h əNp̃w̃əN |
| lightning | kəzúə k ^h əŋəɛè | kəzúəN k ^h əŋəɛè |
| like | ní kət̃ ^h úə | níN kət̃ ^h úə |
| limp | ʔúkxú kəéúe | ʔúkxú kəéúe |
| lion | kəzúŋkfû | kəzúNkfû |
| lip | mósxù | mósxù |
| liquor | ts̃ỹ | ts̃ỹ |
| little baby | ʔəŋá ʔónù | ʔəŋá ʔónù |
| little baby (affectionate) | ʔəŋənú | ʔəŋənú |
| little finger | ʔùkfúɫèntì | ʔùkfúɫèNtì |
| little toe | ʔùkxúɫèntì | ʔùkxúɫèNtì |
| liver | nt̃ ^h ú | Ñts ^h ú |
| long | kəsúə | kəsúəN |
| look (v.) | k ^h əŋəhá | k ^h əŋəháN |
| loose | k ^h ənt̃ ^h ú | k ^h əNt̃ ^h ú |
| lost | k ^h əmw̃ə | k ^h əmw̃əN |
| low | k ^h ənəxúə | k ^h ənəxúəN |
| low | k ^h ənúə | k ^h ənúə |
| low | nikəxúə | nikəxúəN |
| lower back | mákò ʔùdúə | mákòN ʔùdúə |
| lower body | ʔísí ʔìdúmpá | ʔísí ʔìdúNpá |
| lower jaw | mókəì ʔùdúə | mókəì ʔùdúə |
| lower lip | mósxù ʔùdúə | mósxù ʔùdúə |
| lung | ʔùt̃ ^h ú | ʔùt̃ ^h ú |
| male pig | xúpî | xúpî |
| man | nímpî | níNpî |
| many | t̃éúmmà | t̃éúmmà |
| many | t̃éúŋk ^h əmə | t̃éúNk ^h əmə |
| marrow | ʔúkətsúə | ʔúkətsúəN |
| mattock | joɾpá | joɾpá |
| meat | ʔámìe | ʔámìe |
| medicine | kəpsúə | kəpsúəN |
| meet | k ^h ənt̃ú | k ^h əÑt̃ú |
| menstruate | ʔənsúkəzì | ʔəNsúkəzì |
| milk | ɛ̃ts̃ú | ɛ̃ts̃ú |
| mind | ʔúnw̃ə | ʔúnw̃əN |
| missing legs | ʔúkxú kət̃úe | ʔúkxú kət̃úe |

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| mithun | mít ^h ŷn | mít ^h ŷn |
| mock | ʔùnýkàsúə | ʔùnýkàsúə |
| molar | ʔíeíkò | ʔíeíkòN |
| mole | kəzúútχà | kəzúútχà |
| mole | kəzúútχà | kəzúútχà |
| monkey | názò | názòN |
| month | kátēúə | kátēúəN |
| moon | kátēúə | kátēúəN |
| more than | tēúŋ k ^h əmə | tēúN k ^h əmə |
| morning | ənt ^h úpà | ənt ^h úpà |
| mortar | súkúə | súkúə |
| mosquito | éítēúə | éítēúə |
| mother | ʔánû | ʔánûN |
| mouse | məzŷ | məzŷ |
| moustache | móei ʔùdû | móei ʔùdûN |
| mountain | kəp ^h ùŋ | kəp ^h ùŋ |
| mouth | ʔuuk ^h əmə | ʔuuk ^h əmə |
| mucus | éidú | éidú |
| mute/dumb | ʔúluə ʔàkàsú | ʔúluə ʔàkàsú |
| name | ʔúmúə | ʔúmúəN |
| narrow | k ^h əməxúə | k ^h əməxúəN |
| naughty, be (v.) | k ^h ákəkɾu | k ^h ákəkɾu |
| navel | ʔúp ^h lie | ʔúp ^h lie |
| near | ʔəxúe | ʔəxúe |
| necklace | tēi | tēi |
| needle | kəprúə | kəprúəN |
| nest | ʔintít ^h ú | ʔintít ^h ú |
| new | kát ^h úə | kát ^h úə |
| night | ráei | ráei |
| nine | éókúhé | éókúhé |
| nipple | ʔúzútχà | ʔúzútχà |
| nose | ʔinəei | ʔinəei |
| nose bridge | ʔinəeítχà | ʔinəeítχà |
| nose hair | ʔinəei jə ʔiei | ʔinəei jə ʔiei |
| nostril | ʔinəeíkfiú | ʔinəeíkfiú |
| not fine | məsumúnú ʔá tsùʔé | məsumúnú ʔá tsùʔé |
| not heavy | ʔá kəɾú | ʔá kəɾú |
| not high | ʔà kətē ^h úə | ʔà kətē ^h úə |
| not sharp | ʔá k ^h əməxúə | ʔá k ^h əməxúəN |
| numb, be | kát ^h ú | kát ^h ú |
| nurse/suckle | ʔúzùtsŷ k ^h əmə | ʔúzùtsŷ k ^h əmə |
| oil | txùə | txùə |
| old | ŋəxú | ŋəxúNi |
| old | tùəkətsá | tùəkətsáN |
| one | ʔātē ^h ie | ʔātē ^h ie |
| one hundred | məeíhə | məeíhə |
| one thousand | ləsxúə ʔətē ^h e | ləsxúəN ʔətē ^h e |
| open | kəsxú | kəsxú |

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| open mouth (v.) | ʔək ^h úúmú kəkə | ʔək ^h úúmú kəkə |
| orphan | mə́rínù | mə́rínù |
| palate | ʔəkədǎ | ʔəkədàN |
| palm | ʔùk ^h fúúmǎzì | ʔùk ^h fúúmǎzì |
| pants | k ^h óŋkǎiô | k ^h óNkǎrô |
| paternal grandfather | ʔàpvú | ʔàpvú |
| penis | ʔəsxǎ | ʔəsxàN |
| person | mù | mù |
| perspiration | sélén ^h tsý | sélén ^h Ntsý |
| pestle | t ^h ú ^h k ^h ô | t ^h ú ^h Nk ^h ôN |
| pheasant | ǎʔùə | ràNʔùə |
| phlegm | kéidû | kéidû |
| pig | xû | xû |
| pimple | sùt ^h í | sùt ^h í |
| plant | t ^h úmpá | t ^h úNpá |
| porcupine | sákvû | sákvû |
| pot | ʔô | ʔôN |
| pound (rice) (v.) | səp ^h úə kəsý | səp ^h úə kəsý |
| pregnant, be | ʔənù kəp ^h ô | ʔənù kəp ^h ôN |
| price | ʔimé | ʔiméN |
| produce | tə ^h úmàŋkəxá | tə ^h úmàNkəxá |
| pupil/iris | ʔəmú jè kəzû | ʔəmú jè kəzû |
| pus | ʔúŋùe | ʔúŋùe |
| put (v.) | kəfù | kəfù |
| queen | ʔəxánnû | ʔəxánnû |
| rain | kəzúə | kəzúəN |
| raining | kəzúə k ^h ərû | kəzúəN k ^h ərû |
| rash | k ^h ámpxù | k ^h áNpxù |
| red | kəxǎ | kəxàN |
| release (v.) | k ^h əsǎdú | k ^h əsǎdú |
| respect | kíə kəèi | kíə kəèi |
| ribcage | ʔú ^h rúə ^h t ^h ù | ʔú ^h rúə ^h t ^h ùN |
| rice basket | lû | lû |
| rice husking basket | záŋkú | záNkú |
| rice plant | zúpǎ | zúpàN |
| right side | ʔəsǎpá | ʔəsǎNpá |
| ripe | k ^h ómúə | k ^h ómúəN |
| river | kô | kóN |
| roast/dry (v.) | k ^h áŋkú | k ^h áNkú |
| roll | k ^h ók ^h ǎlyi | k ^h ók ^h ǎlyi |
| rooster | ʔùəpí | ʔùəpí |
| root | ʔəkəzúə | ʔəkəzúəN |
| rope | ʔəŋû | ʔəŋû |
| rot | kəèy | kəèy |
| rough | tàxúxù | tàxúxù |
| round | ʔətǎ | ʔətàN |
| routinely | ʔýsádó | ʔýsádó |
| rub (v.) | k ^h ómúə | k ^h ómúə |
| run (v.) | k ^h əŋǎlô | k ^h əŋǎlôN |

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| saliva | mətsýtsý | mətsýtsý |
| salt | mətsú | mətsú |
| scab | ʔùxúik ^h àntsâ | ʔùxúik ^h àNtsâ |
| scales (of fish) | síní ʔùlxû | síní ʔùlxû |
| scalp | ʔùkúə jè ʔùxúi | ʔùkúə jè ʔùxúi |
| scoop out | súk ^h əli | súk ^h əli |
| scratch | k ^h ótákù | k ^h ótákù |
| scratch an itch | kəxúi | kəxúi |
| scratch an itch | k ^h ómó kəxúi | k ^h ómó kəxúi |
| see (v.) | kətxâ | kətxâ |
| seed | ʔite ^h î | ʔite ^h î |
| seek/search (v.) | kəpɛi | kəpɛi |
| sell | k ^h əzý | k ^h əzý |
| seven | sùnəhè | sùnəhè |
| sew (v.) | psú kətrùə | psú kətrùə |
| shadow | kóŋi | kóNŋi |
| shake something | k ^h ók ^h ənù | k ^h ók ^h ənù |
| shallow | ʔəkət ^h ú | ʔəkət ^h ú |
| sharp | k ^h əməexúə | k ^h əməexúəN |
| sharpen knife (v.) | kɛie k ^h ákətí | kɛie k ^h ákətí |
| sheep | jəu | jəu |
| shirt | bò.ɛ́ | bòréN |
| shiver | k ^h əkátù | k ^h əkátù |
| shoot | kəkúə | kəkúə |
| short | kəsú | kəsú |
| shoulder/arm | ʔùbùə | ʔùbùəN |
| shout | k ^h átsəxà | k ^h átsəxà |
| shrew | ʔute ^h ibòrà | ʔute ^h ibòrà |
| shy/ashamed | k ^h ákəsxá | k ^h ákəsxá |
| sick, be | kəte ^h úə | kəte ^h úə |
| sing (v.) | ɛi kəɛi | ɛi kəɛi |
| sister-in-law | ʔúmùə | ʔúmùə |
| sister, older | ʔítâ | ʔítâ |
| sister, older (of female) | ʔítâ | ʔítâ |
| sister, older (of male) | ʔítâ | ʔítâ |
| sister, younger (of female) | ʔùkədúə̀nù | ʔùkədúə̀nù |
| sister, younger (of male) | ʔəzúə̀pnú | ʔəzúə̀pnú |
| sit (v.) | k ^h ánzý | k ^h áNzý |
| sit on eggs (v.) | kəbû | kəbûN |
| six | trúhè | trúhè |
| skin | ʔùxúi | ʔùxúi |
| skinny | kəkò | kəkòN |
| skull | ʔùkúə̀jè ə̀rùkúə̀ | ʔùkúə̀jè ə̀rùkúə̀ |
| sky | kəzúə̀ | kəzúə̀N |
| slap (v.) | k ^h əkəpɛi | k ^h əkəpɛi |
| sleep (v.) | kəbzú | kəbzú |
| slingshot | súkílû | súkílûN |
| slippery | k ^h əɲúe | k ^h əɲúe |
| slow | kətá | kətá |

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| small intestine | kátúəpí ʔùkʰrùe | kátúəpí ʔùkʰrùe |
| small | kótúə | kótúə |
| smell bad | ɛúkʰənà | ɛúkʰənàN |
| smell/sniff (v.) | kʰənò | kʰənòN |
| smile (v.) | kʰánnỳ | kʰáNnỳ |
| smoke | mákfû | mákfû |
| smooth | nàmpúə | nàNpúə |
| snail | dúmpvúlə | dúNpɹvúlə |
| snail | zálwŋə̌ | zálwŋə̌N |
| snake | ɹútà | ɹútàN |
| sneeze | hákátsú | hákátsú |
| snore | kʰəŋə | kʰəŋə |
| snot | ʔənəxò | ʔənəxòN |
| soak (v.) | kʰəntsù | kʰəNtsù |
| socks | ʔòkxùmòtə́há | ʔòkxùmòtə́há |
| soft | təpʰəpʰè | təpʰəpʰè |
| soil | ŋə̀lá | ŋə̀lá |
| sole | ʔúkxúmə̀zî | ʔúkxúmə̀zî |
| song | ɛ́i | ɛ́iN |
| sour | kətʰú | kətʰú |
| sparrow | kóśépɹù | kóNśépɹù |
| spear | zá | zá |
| spin (v.) | kákɹù | kákɹù |
| spine | mákò ʔùrùkùə | mákòN ʔùrùkùə |
| spit (v.) | mùtsýtsý kəmùsxú | mùtsýtsý kəmùsxú |
| spit up | kʰəmələ́ | kʰəmələ́ |
| spleen | ʔípíepʰù | ʔípíepʰùN |
| spleen | ʔúkəlúə | ʔúkəlúəN |
| squirrel | kʰlâ | kʰlâ |
| stammer (v.) | ʔàkχá kàdá | ʔàkχá kàdá |
| stand (v.) | kʰəŋəlúə | kʰəŋəlúəN |
| star | sípítéhúə̀lê | sípítéhúə̀Nlê |
| start (v.) | kə́xúə | kə́xúə |
| stay (v.) | kə̀bò | kə̀bòN |
| steal (v.) | kʰá́fú | kʰáNfú |
| stick (v.) | kʰánná | kʰáNná |
| sticks for weaving | títxúə | títxúəN |
| stink | nòŋkəsúə | nòNkəsúə |
| stomach | ʔùpʰú | ʔùpʰú |
| stone | lũŋkúə | lũNkúə |
| straight | ŋəlúsxúə̀ | ŋəlúsxúə̀N |
| strong | kʰə̀nkúə | kʰə̀Nkúə |
| student | káténù | káténù |
| stupid | máŋkʰómúə | máNkʰómúə |
| suck | kʰómózuə̀ | kʰómózuə̀N |
| sun | zámmù | záNmù |
| swallow | pʰlákə̀sxâ | pʰlákə̀sxâN |
| sweet | kəsùə | kəsùəN |
| swell | kə̀pû | kə̀pû |

| | | |
|----------------------------|-------------------------------------|---|
| tail | ʔúk ^h ómâ | ʔúk ^h ómâ |
| tail bone | bótik ^h ómá | bótik ^h ómá |
| take (v.) | k ^h əlí | k ^h əlí |
| talk (v.) | ʔəlùə k ^h óməlùə | ʔəlùə k ^h óməlùə |
| talk (v.) | lùo k ^h óməlùo | lùo k ^h óməlùo |
| tall | kásxũə | kásxũəN |
| teacher | ʔòtē ^h á | ʔòtē ^h á |
| tear (n.) | mápfùtsù | Náphùtsù |
| tempt | páeỹ | páeỹ |
| ten | tríhé | tríhé |
| ten thousand | làsxũəNtríhè | làsxũəNtríhè |
| termite | p ^h ólùŋ | p ^h ólùŋ |
| thick | kəeí | kəeí |
| thigh | ʔəpxátxâ | ʔəpxátxâ |
| thighbone | ʔəpxátxâ jè ʔúrukûə | ʔəpxátxâ jè ʔúrukûə |
| thin | ʔá kəeí | ʔá kəeí |
| think (v.) | k ^h əp ^h ónũə | k ^h əp ^h ónũəN |
| thirsty, to be (v.) | ʔùntsý máŋkíŋié | ʔùNtsý máNkíŋié |
| thirteen | trílékàt ^h óhé | trílékàt ^h óNhé |
| thirty | sóŋkàt ^h úhé | sóNkàt ^h úNhéN |
| thorn | kòsê | kòNsê |
| three | kátxó | kátxóN |
| throat | ʔùk ^h ũ | ʔùk ^h ũ |
| throat way | ʔùk ^h ũ sámpvù | ʔùk ^h ũ sáNp ^h vù |
| thumb | ʔùk ^h fúlèmpvù | ʔùk ^h fúlèNp ^h vù |
| thunder | kázũə kək ^h ò | kázũəN kək ^h òN |
| tickle | k ^h ònt ^h órũ | k ^h òNt ^h órũ |
| tie (v.) | k ^h ánsù | k ^h áNsù |
| tight | k ^h əŋázũə | k ^h əŋázũəN |
| toad | bòŋò | bòŋòN |
| toast (v.) | k ^h əkxĩ | k ^h ək ^h ĩ |
| toe | ʔùkxúmèrũə | ʔùkxúmèrũəN |
| toenail | kxúntsù | kxúNtsù |
| toeprint | ʔúkxúmájé? | ʔúkxúmájé? |
| tongs | t ^h úəkò | t ^h úəNkòN |
| tongue | ʔiməli | ʔiməli |
| tooth | ʔíei | ʔíei |
| touch (v.) | tsú k ^h ánnà | tsú k ^h ánnà |
| tree | t ^h úmpá | t ^h úNpá |
| twelve | trílék ^h əná | trílék ^h əná |
| twenty | məkùhé | məkùhéN |
| twist/squeeze (v.) | k ^h ásxàrá | k ^h ásxàrá |
| two | k ^h ánâ | k ^h ánâ |
| ugly/bad | ʔəkəp ^h ĩ | ʔəkəp ^h ĩ |
| umbilical cord | ʔip ^h lie | ʔip ^h lie |
| uncle, husband of father's | | |
| older sister | ʔàpvũ | ʔàpvũ |
| uncle, older paternal | ʔápít ^h ũə | ʔápít ^h ũə |
| underarm hair | sùtúəkúieí | sùtúəkúieí |

| | | |
|-------------------|-----------------------------|------------------------------|
| unhusked rice | súp ^h ûə | súp ^h ûə |
| untie (v.) | k ^h ákli | k ^h ákli |
| upper back | mákò ʔùdú | mákòN ʔùdúN |
| upper body | ʔisi ʔidúmpá | ʔisi ʔidúNpá |
| upper lip | mósxù ʔùdú | mósxù ʔùdúN |
| urinate | záŋ kəpì | záN kəpì |
| urine | zám pítsý | záN pítsý |
| uterus | núbó | núbóN |
| vagina | ʔieie | ʔieie |
| valley | támpá | táNpá |
| very cold | kəsxûə | kəsxûə |
| village/state | kfû | kfû |
| vines | k ^h əŋərə | k ^h əŋərə |
| voice | ʔùk ^h ŕú | ʔùk ^h ŕú |
| vomit | məlu ʔəkəsà | məlu ʔəkəsàN |
| vomit (v.) | kəməlu | kəməlu |
| wait | k ^h əŋûə | k ^h əŋûə |
| walk (v.) | kəzé | kəzé |
| want (v.) | k ^h əmi | k ^h əmi |
| want (v.) | nɪŋkətə ^h ûə | nɪNkətə ^h ûəN |
| want to eat (v.) | zík ^h íŋie | zík ^h íŋiNe |
| war | ɹûe | ɹûe |
| warm | k ^h əlû | k ^h əlûN |
| wart | ʔùlùə | ʔùlùə |
| wash clothes (v.) | psú kəsý | psú kəsý |
| wash hands (v.) | ʔùkfúkətə ^h ŷ | ʔùkhúkətə ^h ŷ |
| wash legs(v.) | òkú kəprû | òkú kəprû |
| water | ntsý | Ñtsý |
| water pot | ntsýʔô | ntsýʔôN |
| weak | k ^h əŋəzè | k ^h əŋəzè |
| wean | kəzûə | kəzûə |
| weave | kətó | kətó |
| weave | tíkətó | tíkətó |
| weave (v.) | psú kətô | psú kətôN |
| wet | kózú | kózú |
| whistle | məeék ^h əmùə | məeék ^h əmùə |
| white | k ^h əŋùə | k ^h əŋùə |
| white of the eye | ʔəmú jè kxùŋò | ʔəmú jè kxùŋò |
| widow | pnúmənô | pnúmənô |
| wife | ʔùpùtá | ʔùpùtá |
| wind | mùeue | mùeue |
| wing | ntə ^h ûə | Ñtə ^h ûəN |
| wing of bird | intí jè ntə ^h ûə | iÑtí jè Ntə ^h ûəN |
| wither | k ^h əŋəxù | k ^h əŋəxù |
| without legs, be | ʔùkxúkətúə | ʔùkxúkətúə |
| woman | nùmpvù | nùNpvù |
| words/speech | ʔúlùə | ʔúlùə |
| wrinkle | k ^h ánzû | k ^h ánzû |
| yawn (v.) | hō mieie | hō mieie |

| | | |
|--------|--------------------------|--------------------------|
| year | záŋkù | záNkùN |
| yellow | táliúmàtē ^h ù | táliúmàtē ^h ù |

APPENDIX B: WORDLIST BY SEMANTIC FIELD

This appendix follows the same conventions as Appendix A but is organized according to a semantic ontology.

ENTITIES

Living Entities

Animals

| | | |
|-------------------|--------------------|--------------------|
| animal | ɛí | ɛí |
| ant | láɛíṙî | láɛíṙî |
| bat | bûə | bûə |
| bear | səŋð | səŋðN |
| bee | kxùì | kxùì |
| bird | ʔintî | ʔiNtî |
| body louse | kə̌tɛî | kə̌tɛî |
| buffalo | səly | səly |
| | xú | xú |
| castrated pig | ʔúkə́túəɛìə̀kə́tsá | ʔúkə́túəɛìə̀kə́tsá |
| cat | lámùì | lámùì |
| catfish | nákə̀ɪâ | nákə̀râ |
| caterpillar | ʔúkùə | ʔúkùə |
| cattle | ɛì | ɛì |
| chameleon | títá | títáN |
| chicken | ʔùə | ʔùə |
| crab | keíepvû | keíepvû |
| domestic animal | súəɛí | súəNɛí |
| dove | nó̌sùlè | nó̌Nsùlè |
| duck | kòmpé | kòNpé |
| eagle | kʰəlúŋð̌ | kʰəlúŋð̌N |
| eel | síŋíṙṙùì | síŋíṙṙùì |
| elephant | ɛíkə̀dà | ɛíkə̀dà |
| female pig | xúpvùì | xúpvùì |
| fish | síŋî | síŋî |
| flea | ʔùṙùə | ʔùṙùə |
| fox | ɪámfú | ràNfú |
| freshwater eel | ŋlɛprù | ŋlɛprùN |
| frog | keíefû | keíefû |
| giant grasshopper | kxúprô | kxúprôN |
| goat | mákʰə̀rì | mákʰə̀rì |
| grasshopper | kxû | kxû |
| gaur | báŋgôɪ | báNgôɪ |

| | | |
|--------------|--------------------------|-------------------------|
| headlouse | ʔúk ^h úəŋũə | ʔúk ^h úəŋũəN |
| hen | ʔùəpvù | ʔùəpvù |
| honey | kxùitsỳkũə | kxùitsỳkũə |
| horse | sákũe | sákũe |
| house lizard | súentitá | súeNtitáN |
| housefly | màéinỳ | màéinỳ |
| leech | méhê | méhê |
| leech | tìmp ^h â | tìNp ^h â |
| tiger | kàzúŋkfû | kàzúNkfû |
| male pig | xúpî | xúpî |
| mattock | joŋpá | joŋpá |
| mithun | mít ^h ỳn | mít ^h ỳn |
| monkey | názò | názòN |
| mosquito | éiteũă | éiteũă |
| mouse | məzỳ | məzỳ |
| pheasant | ɿăʔũə | ràNʔũə |
| pig | xû | xû |
| porcupine | sákvnû | sákvnû |
| rooster | ʔùəpí | ʔùəpí |
| sheep | jâu | jâu |
| shrew | ʔùte ^h ibò.ɿà | ʔùte ^h ibòrà |
| snail | dúmpvúlè | dúNpvúlè |
| snail | zálwŋă | zálwŋəN |
| snake | ɿútă | rútàN |
| sparrow | kósépvù | kóNsépvù |
| squirrel | k ^h lâ | k ^h lâ |
| termite | p ^h əlùŋ | p ^h əlùŋ |
| toad | bòŋô | bòŋôN |

Plants

| | | |
|------------|--------|---------|
| bamboo | sútxũə | sútxũəN |
| plant | tʰúmpá | tʰúNpá |
| rice plant | zúpǎ | zúpàN |

Human body parts

| | | |
|-----------------|----------------|---------------|
| Adam's apple | ʔùkʰrútχà | ʔùkʰrútχà |
| amniotic fluid | ʔùsəlútsỳ | ʔùsəlútsỳ |
| ankle | kxúmù | kxúmù |
| | ʔùkxúmù nè | ʔùkxúmù nè |
| ankle bone | ʔərùkũə | ʔərùkũə |
| anus | bótikfù | bótikfù |
| arm | ʔùpũə | ʔùpũə |
| armpit | sùtúəkũi | sùtúəkũi |
| back | mákò | mákòN |
| backbone | mákóŋrù | mákóNrù |
| beard | móɛi ʔùdũə | móɛi ʔùdũə |
| belly | ʔùpũ | ʔùpũ |
| bicep | ʔúkʰfútχà | ʔúkʰfútχà |
| big toe | ʔùkxúlèmpvũ | ʔùkxúlèNpũ |
| bile | kákʰítχá ñtsũ | kákʰítχá Ñtsũ |
| blemish on skin | mìrũə | mìrũəN |
| blood | ũñsũ | ũNsũ |
| blood vessel | ʔùñsú sámrvũ | ʔùÑsú sáNrvũ |
| body | ʔisĩ | ʔisĩ |
| bone | ʔərùkũə | ʔərùkũə |
| bosom | ʔimíepà | ʔimíepà |
| brain | ʔùkũədũ | ʔùkũədũ |
| breast | ʔùzũ | ʔùzũ |
| breast milk | ʔózútsũ | ʔózútsũ |
| | | ʔúməlùN |
| breastbone | ʔúməlũ ʔúrúkũə | ʔúrúkũə |
| breath | ʔəkχá | ʔəkχá |
| buttocks | bóti | bóti |
| calf | ʔùkxútχà | ʔùkxútχà |
| cartilage | ʔəŋkà rùrũ | ʔəNkà rùrũ |
| chest | ʔúməlũ | ʔúməlùN |
| chest hair | ʔùməlũ ʔíɛi | ʔùməlùN ʔíɛi |
| chin | mókei | mókei |
| cowlick | ʔùkũə̀tũə | ʔùkũə̀tũəN |
| crown (of head) | kũədũə̀ | kũədũə̀ |
| ear | ʔikʰənĩ | ʔikʰənĩ |
| ear canal | ʔikʰəníkʰfũ | ʔikʰəníkʰfũ |
| earwax | ʔikʰəníbĩe | ʔikʰəníbĩe |
| external mouth | mólù | mólù |
| eye | ʔùmũ | ʔùmũ |
| eye sand | múbĩe | múbĩe |

| | | |
|------------------|--|--|
| eyeball | múte ^{hî} | múte ^{hî} |
| eyebrow | múkxùə | múkxùə |
| face | ʔimie | ʔimie |
| facial hair | móeì | móeì |
| fat | ʔùtxû | ʔùtxû |
| fathom | lám | lám |
| feces | ʔibie | ʔibie |
| finger | ʔùkfúumə̀rúə | ʔùkfúumə̀rúəN |
| finger nail | k ^h úntsû | k ^h úN ^{ts} û |
| finger print | ʔùkfúumə̀jé? | ʔùkfúumə̀jé? |
| fists | ʔùkfúumə̀sxûə̃ | ʔùkfúumə̀sxûə̃ |
| flesh | ʔisí | ʔisí |
| fontanel | eìlù | eìlù |
| foot | ʔùkxû | ʔùkxû |
| foot/leg | ʔùkxû | ʔùkxû |
| footprint | kxútsò | kxútsòN |
| forearm | ʔùkfû | ʔùkfû |
| forehead | pátû | pátû |
| freckle | záluukə̀sû | záluukə̀sû |
| goosebump | kə̀sútxà | kə̀sútxà |
| gums | ʔieijə̀ ʔwtú | ʔieijə̀ ʔwtúN |
| hair of the body | ʔisíeí | ʔisíeí |
| hair of the head | ʔùkúəeí | ʔùkúəeí |
| hand span | k ^h áp | k ^h áp |
| head | ʔúkúə | ʔúkúə |
| heart | ʔùmə̀lû | ʔùmə̀lùN |
| hip bone | bótityà | bótityà |
| intestine | ʔùk ^h ɾuə | ʔùk ^h ɾuə |
| itch | kxùmúə | kxùmúə |
| joint | k ^h ántý | k ^h áN ^{tý} |
| kidney | ɲkátçà | N ^k átçà |
| knee | kxútsû | kxútsû |
| large intestine | ʔùk ^h ɾuə k ^h áte ^h úpí | ʔùk ^h ɾuə k ^h áte ^h úpí |
| left hand | ʔəpə́pá | ʔəpə́pá |
| leg hair | ʔùkxúeì | ʔùkxúeì |
| lip | mósxù | mósxù |
| little finger | ʔùkfúulèntì | ʔùkfúulèN ^{tì} |
| little toe | ʔùkxúulèntî | ʔùkxúulèN ^{tî} |
| liver | nts ^h û | N ^{ts} ^h û |
| lower back | mákò ʔùdúə | mákòN ʔùdúə |
| lower body | ʔisí ʔidúmpá | ʔisí ʔidúNpá |
| lower jaw | mókeì ʔùdúə | mókeì ʔùdúə |
| lower lip | mósxù ʔùdúə | mósxù ʔùdúə |
| lung | ʔúte ^h û | ʔúte ^h û |
| marrow | ʔúkə̀tsú | ʔúkə̀tsú |
| marrow | ʔúkə̀tsúə | ʔúkə̀tsúəN |
| mind | ʔúnúə | ʔúnúəN |
| molar | ʔieíkò | ʔieíkòN |
| mole | kə̀zútyà | kə̀zútyà |

| | | |
|-----------------|-----------------------------------|-----------------------------------|
| mole | kàzútyà | kàzútyà |
| moustache | móei ʔùdû | móei ʔùdûN |
| mouth | ʔuk ^h ə mó | ʔuk ^h ə mó |
| mucus | keídú | keídú |
| navel | ʔúp ^h lie | ʔúp ^h lie |
| nipple | ʔùzútyà | ʔùzútyà |
| nose | ʔinə́í | ʔinə́í |
| nose bridge | ʔinə́ítyà | ʔinə́ítyà |
| nose hair | ʔinə́í jə ʔiéí | ʔinə́í jə ʔiéí |
| nostril | ʔinə́íkfú | ʔinə́íkfú |
| palate | ʔəkə́dǎ | ʔəkə́dǎN |
| palm | ʔùkfúúmǎzì | ʔùkfúúmǎzì |
| penis | ʔəsxǎ | ʔəsxǎN |
| perspiration | sélén̄tsý | sélén̄tsý |
| phlegm | keídú | keídú |
| pimple | sùt ^h í | sùt ^h í |
| pupil/iris | ʔəmújè kə́zû | ʔəmújè kə́zû |
| pus | ʔúp̄n̄ue | ʔúp̄n̄ue |
| rash | k ^h ámpxù | k ^h áNpxù |
| ribcage | ʔúrw̄ə́t ^h ù | ʔúrw̄ə́t ^h ùN |
| right hand | ʔəsǎ́pá | ʔəsǎ́Npá |
| saliva | mótsý̄tsý̄ | mótsý̄tsý̄ |
| scab | ʔùxúik ^h ǎ́ntsǎ́ | ʔùxúik ^h ǎ́N̄tsǎ́ |
| scalp | ʔùkúǎ jè ʔùxúi | ʔùkúǎ jè ʔùxúi |
| shoulder/arm | ʔùb̄w̄ə́ | ʔùb̄w̄ə́N |
| skin | ʔùxúi | ʔùxúi |
| skull | ʔùkúǎjè ər̄ùkúǎ | ʔùkúǎjè ər̄ùkúǎ |
| small intestine | kə́túǎpí ʔùk ^h ̄r̄w̄ie | kə́túǎpí ʔùk ^h ̄r̄w̄ie |
| snot | ʔənə́xǒ | ʔənə́xǒN |
| sole | ʔúkxúmǎzì | ʔúkxúmǎzì |
| spine | mákò ʔùrùkúǎ | mákòN ʔùrùkúǎ |
| spleen | íp̄ieṗ ^h ù | íp̄ieṗ ^h ùN |
| spleen | ʔúkəl̄w̄ə́ | ʔúkəl̄w̄ə́N |
| stomach | ʔùṗ ^h ú | ʔùṗ ^h ú |
| tail | ʔúk ^h ǎ́mǎ | ʔúk ^h ǎ́mǎ |
| tail bone | bótik ^h ǎ́mǎ | bótik ^h ǎ́mǎ |
| tear (n.) | máṗf̄w̄ītsù | Náṗh̄w̄ītsù |
| thigh | ʔəṗx̄átx̄ǎ | ʔəṗx̄átx̄ǎ |
| | ʔəṗx̄átx̄ǎ jè | ʔəṗx̄átx̄ǎ jè |
| thighbone | ʔúrw̄úkw̄ə́ | ʔúrw̄úkw̄ə́ |
| throat | ʔùk ^h ̄r̄ú | ʔùk ^h ̄r̄ú |
| throat way | ʔùk ^h ̄r̄ú sámpv̄ù | ʔùk ^h ̄r̄ú sáNpv̄ù |
| thumb | ʔùkf̄úw̄l̄èmpv̄ù | ʔùkf̄úw̄l̄èNpv̄ù |
| toe | ʔùkx̄úm̄ər̄w̄ī | ʔùkx̄úm̄ər̄w̄īN |
| toenail | kx̄ú̄n̄tsù | kx̄ú̄N̄tsù |
| toeprint | ʔúkx̄úm̄ǎ́jé? | ʔúkx̄úm̄ǎ́jé? |
| tongue | ʔimə́li | ʔimə́li |
| tooth | ʔiéí | ʔiéí |
| umbilical cord | ʔip ^h lie | ʔip ^h lie |

| | | |
|------------------|--------------|--------------|
| underarm hair | sùtútúəkúíeí | sùtútúəkúíeí |
| upper back | mákò ʔùdú | mákòN ʔùdúN |
| upper body | ʔisí ʔidúmpá | ʔisí ʔidúNpá |
| upper lip | mósxù ʔùdú | mósxù ʔùdúN |
| urine | zámpìtsý | záNpìtsý |
| uterus | núbó | núbóN |
| vagina | ʔicie | ʔicie |
| vomit | mèlú ʔèkèsà | mèlú ʔèkèsàN |
| wart | ʔùlùə | ʔùlùə |
| wean | kəzûə | kəzûə |
| white of the eye | ʔəmújè kxùŋò | ʔəmújè kxùŋò |
| wrinkle | kʰánzû | kʰánzû |

Animal/Plant body parts

| | | |
|---------------------|-----------------------------|------------------------------|
| bark | kák ^h ò | kák ^h òN |
| beak of bird | ʔikúts ^h ú | ʔikúts ^h ú |
| bird egg | ʔintítsý | ʔiNtítsý |
| comb (of a rooster) | ʔùəkàtò | ʔùəkàtòN |
| dog tooth | ʔý ʔíeì | ʔý ʔíeì |
| egg | ʔùətsý | ʔùətsý |
| feather of bird | ʔintí jè eì | ʔiNtí jè eì |
| fin | sínjín ^h sú | sínjín ^h sú |
| fish eggs | sínjítsý | sínjítsý |
| flower | ʔùpúə | ʔùpúə |
| fruit | ʔətxá | ʔətxá |
| fruit variety | ʔətxárie | ʔətxárie |
| gizzard | ʔùə ñdùe | ʔùə Ñdùe |
| horn (of an animal) | ʔəntsú | ʔəNtsú |
| husked rice | zúsxúə | zúsxúəN |
| leaf | ʔínəeì | ʔínəeì |
| nest | ʔintíts ^h ú | ʔiNtíts ^h ú |
| root | ʔəkázúə | ʔəkázúəN |
| scales (of fish) | sínjí ʔùlxú | sínjí ʔùlxú |
| seed | ʔite ^h í | ʔite ^h í |
| thorn | kòsê | kòNsê |
| tree | t ^h úmpá | t ^h úNpá |
| unhusked rice | súp ^h úə | súp ^h úə |
| vines | k ^h əŋərə | k ^h əŋərə |
| wing | ñte ^h úə | Ñte ^h úəN |
| wing of bird | intí jè ñte ^h úə | iNtí jè Ñte ^h úəN |

Natural Features

| | | |
|-----------|----------------------------|-----------------------------|
| cloud | mýzè | mýzè |
| day | násxùŋ | násxùŋ |
| fire | má | má |
| frost | k ^h əŋəeí | k ^h əŋəeíN |
| lightning | kázúə k ^h əŋəeè | kázúəN k ^h əŋəeè |
| month | kəteúə | kəteúəN |
| moon | kəteúə | kəteúəN |
| morning | ənt ^h úpà | əNt ^h úpà |
| mountain | káp ^h ùŋ | káp ^h ùŋ |
| night | ràeì | ràeì |
| rain | kázúə | kázúəN |
| raining | kázúə k ^h ərəú | kázúəN k ^h ərəú |
| river | kó | kóN |
| shadow | kólí | kóNlí |
| sky | kàzúə | kàzúəN |
| smoke | mákfú | mákfú |

| | | |
|---------|----------------------------|------------------------------|
| soil | ηə̀lâ | ηə̀lâ |
| star | sípíte ^h úə̀lê | sípíte ^h úə̀Nlê |
| stone | lũ̀ŋkúə̀ | lũ̀Nkúə̀ |
| sun | zá̃mù | záNmù |
| thunder | kózuúə̀ kək ^h ò | kózuúə̀N kək ^h òN |
| valley | támpá | táNpá |
| water | ñtsý | Ñtsý |
| wind | mùéúe | mùéúe |
| year | zá̃ŋkù | záNkùN |

*Human-made objects**Tools/Clothing*

| | | |
|---------------------|-------------------------|-------------------------|
| arrow | mələ́tʰũə | mələ́tʰũəN |
| axe | nə̀eì | nə̀eì |
| blanket | kómbôr | kóNbôr |
| blanket | kónkù | kóNkù |
| bracelet | kósũə | kóNsũəN |
| cloth | psũ | psũ |
| clothing | psúnte ^h i | psúNte ^h i |
| comb | ntsú | Ntsú |
| cooking pot | zúʔô | zúʔôN |
| cup | kəlùəeí | kəlùəeí |
| earring | ʔókʰənìtʰũə | ʔókʰənìtʰũəN |
| hat | kʰôŋkù | kʰôNkù |
| head basket | bã | bã |
| house | sũə | sũəN |
| knife | keie | keie |
| medicine | kópsũə | kópsũəN |
| mortar | súkúə | súkúə |
| needle | kəprũə | kəprũəN |
| pants | kʰôŋká.ɔ | kʰôNkəró |
| pestle | tʰúukʰô | tʰúNkʰôN |
| pot | ʔô | ʔôN |
| rice basket | lũ | lũ |
| rice husking basket | zákú | záNkú |
| rope | ʔəŋũ | ʔəŋũ |
| shirt | bò.ɛ́ | bòréN |
| slingshot | súkílũ | súkílũN |
| socks | òkxùmòte ^h á | òkxùmòte ^h á |
| spear | zà | zà |
| sticks for weaving | títxũə | títxũəN |
| tongs | tʰúəkò | tʰúəNkòN |
| water pot | nítsýʔô | nítsýʔôN |

Food

| | | |
|--------------|-------------|-------------|
| banana | ʔámétχâ | ʔámétχâ |
| bean | tχâ | tχâ |
| chili pepper | sútxâ | sútxâ |
| cooked rice | zũə | zũə |
| curry | ʔáhě | ʔáhéN |
| ginger | xúejě | xúejěN |
| leather | ʔámie ʔũhũi | ʔámie ʔũhũi |
| liquor | tsý | tsý |
| meat | ʔámie | ʔámie |
| milk | eĩtsũ | eĩtsũ |
| necklace | teĩ | teĩ |
| oil | txũə | txũə |

salt

mə̀tsú

mə̀tsú

*Social Entities**Social Constructs*

| | | |
|----------------|-------------|----------|
| chief | ḡámpî | ḡáNpî |
| | | ḡàNsúmé |
| child of chief | ḡàsúmé ḡùnù | ḡùnù |
| dream (n) | mésxômpà | mésxóNpà |
| land/country | râ | râN |
| name | ḡúmùə | ḡúmùəN |
| price | ḡimě | ḡiméN |
| queen | ḡánnû | ḡánnû |
| song | ěî | ěîN |
| student | káténù | káténù |
| teacher | ḡôṭěhá | ḡôṭěhá |
| village/state | kfû | kfû |
| war | ıûe | rûe |

Supernatural

| | | |
|---------|------------------------------|------------------------------|
| creator | k ^h ésíli ḡikópnù | k ^h ésíli ḡikópnù |
| ghost | ıámpnù | râNpnù |
| God | pnùsxúə | pnùsxúəN |

Family

| | | |
|------------------------------------|---------------------------------------|--|
| adult | sùntúətà | sùNtúətà |
| aunt, older paternal | ḡánû | ḡánû |
| aunt, wife of father's younger | | |
| brother | ḡànùkətûə | ḡànùkətûə |
| aunt, wife of older paternal uncle | ḡànùṭ ^h ûə | ḡànùṭ ^h ûə |
| baby | ḡəḡá | ḡəḡá |
| brother in law | k ^h ə́mûə | k ^h ə́mûə |
| brother, father's younger | ḡàpíkətûə | ḡàpíkətûə |
| brother, older of female | ḡimà | ḡimà |
| brother, older of male | ḡùmápi | ḡùmápi |
| brother, younger of female | ḡikətúəpi | ḡikətúəpi |
| brother, younger of male | ḡikətúəpi | ḡikətúəpi |
| child | ḡəḡá | ḡəḡá |
| child | ḡínù | ḡínù |
| daughter in law | kəḡí | kəḡí |
| enemy | nə́hákəsú | nə́hákəsú |
| family | ḡùnṭe ^h úk ^h fû | ḡùnNṭe ^h úk ^h fû |
| father | ḡápi | ḡápi |
| friend | ip ^h ríli | ip ^h ríli |
| grandchild | kátsýnù | kátsýnù |
| grandmother | ḡàpzú | ḡàpzú |
| grown daughter | ḡənúḡəlinú | ḡənúḡəlinú |
| grown son | ḡənùḡəlúnpi | ḡənùḡəlúNpi |
| grown son | ḡənùḡəlúntà | ḡənùḡəlúNtà |
| guest | ḡùk ^h fúpi | ḡùk ^h fúpi |

| | | |
|---|-----------------------|-----------------------|
| host | ʔùkə̀pɲù | ʔùkə̀pɲù |
| husband | ʔùtisxá | ʔùtisxáN |
| little baby | ʔə́ŋá ʔə́nù | ʔə́ŋá ʔə́nù |
| little baby, affectionate | ʔə́ŋə́nù | ʔə́ŋə́nù |
| man | nímpî | níNpî |
| mother | ʔánû | ʔánûN |
| orphan | mə́rínù | mə́rínù |
| paternal grandfather | ʔə̀pɲú | ʔə̀pɲú |
| person | mù | mù |
| sister in law | ʔúmùə | ʔúmùə |
| sister, older | ʔítâ | ʔítâ |
| sister, older of female | ʔítâ | ʔítâ |
| sister, older of male | ʔítâ | ʔítâ |
| sister, younger of female | ʔùkədúə̀nù | ʔùkədúə̀nù |
| sister, younger of male | ʔə́zúə̀pɲù | ʔə́zúə̀pɲù |
| uncle, husband of father's older sister | ʔə̀pɲù | ʔə̀pɲù |
| uncle, older paternal | ʔápit ^h ûə | ʔápit ^h ûə |
| widow | pɲúmənô | pɲúmənô |
| wife | ʔùpùtá | ʔùpùtá |
| woman | nùmpɲù | nùNpɲù |

Miscellaneous**Numbers**

| | | |
|--------------|----------------------------|-----------------------------|
| eight | ɛíhè | ɛíhè |
| eleven | trílàtɛ ^h è | trílàtɛ ^h è |
| fifty | sómpɛɪŋíhé | sóNpɛɪŋíhé |
| five | pɛɪŋíjǎ | pɛɪŋíjǎ |
| four | màliá | màliá |
| nine | ɛókúhé | ɛókúhé |
| one | ʔàtɛ ^h íe | ʔàtɛ ^h íe |
| one hundred | màɛíhè | màɛíhè |
| one thousand | lèsxũə ʔátɛ ^h e | lèsxũəN ʔátɛ ^h e |
| seven | sùnnáhè | sùnnáhè |
| six | trúhè | trúhè |
| ten | tríhé | tríhé |
| ten thousand | lèsxũətríhè | lèsxũəNtríhè |
| thirteen | trílékàt ^h óhé | trílékàt ^h óNhé |
| thirty | sóŋkàt ^h úhé | sóNkàt ^h úNhéN |
| three | kótxó | kótxóN |
| twelve | trílék ^h àná | trílék ^h àná |
| twenty | màkùhé | màkùhéN |
| twenty | màkùhé | màkùhéN |
| two | k ^h áná | k ^h áná |

Location/position terms

| | | |
|----------------------|------------------------|------------------------|
| back (of something) | ʔùk ^h ènúpà | ʔùk ^h ènúpà |
| behind | ʔùk ^h ènúpà | ʔùk ^h ènúpà |
| corner | ʔùkádú | ʔùkádú |
| front (of something) | ʔimíəpà | ʔimíəpà |
| in front of | ʔimíəpà | ʔimíəpà |
| right side | ʔəsápá | ʔəsáNpá |

Abstract nouns (misc)

| | | |
|--------------|---------------------|---------------------|
| voice | ʔùk ^h íú | ʔùk ^h íú |
| words/speech | ʔúlùo | ʔúlùo |

Predicates**Actions**

| | | |
|--------------|------------------------|------------------------|
| accept | k ^h ámóʒì | k ^h ámóʒì |
| add together | k ^h órù | k ^h órùN |
| adopt | kákà | kákà |
| arrive | vánkədí | váNkədí |
| ascend/climb | kíkí | kíkí |
| bathe | sùkùtɛ ^h úə | sùkùtɛ ^h úə |

| | | |
|--------------------|----------------------------|----------------------------|
| bite | k ^h âŋká | k ^h âNká |
| blink | ʔómú k ^h ákəsxú | ʔómú k ^h ákəsxú |
| blow | ʔəkɣá k ^h əmû | ʔəkɣá k ^h əmû |
| blow snot | ʔənəxǒ kəsû | ʔənəxǒ kəsû |
| blow the nose | ʔinəci kəsû | ʔinəci kəsû |
| boil | kəxǒ | kəxǒN |
| borrow | k ^h ásəpnû | k ^h ásəpnû |
| break | tsúkəkíe | tsúkəkíe |
| break | tákəduə | tákəduə |
| breathe | ʔəkɣá kəsûi | ʔəkɣá kəsûi |
| brush teeth | ʔiei k ^h əkəsú | ʔiei k ^h əkəsú |
| burst | ʔumbúʔkəkíe | ʔuNbúʔkəkíe |
| buy | k ^h əlú | k ^h əlú |
| call | kəxú | kəxú |
| carry | kək ^h úə | kək ^h úəN |
| carry on head | kətǒ | kətǒN |
| catch | mæŋk ^h ólì | mæNk ^h ólì |
| chase | kəziŋá | kəziŋá |
| choose | k ^h əkəbǎ | k ^h əkəbǎN |
| come | kəzi | kəzi |
| come back | ŋələválo | ŋələváNló |
| Come! (imperative) | ziló | ziló |
| conceive | ʔúnnúkəp ^h ǒ | ʔúnnúkəp ^h ǒN |
| cook | kəxǒ | kəxǒN |
| copulate | kókúe | kókúe |
| cough | k ^h áŋkei | k ^h áNkei |
| crawl | k ^h əmpû | k ^h əNpû |
| cross | kəké | kəkéN |
| cross | kəké | kəkéN |
| crow | kəkχǒ | kəkχǒN |
| crush chilis | sitɣá k ^h əní | sitɣá k ^h əní |
| crush paddy | súpúə kəsý | súpúə kəsý |
| cry | kətsǒ | kətsǒ |
| cut meat | ʔəmíeʔk ^h əkədə | ʔəmíeʔk ^h əkədə |
| cut wood | kəká | kəká |
| cut wood | mət ^h ýŋkəká | mət ^h ýNkəká |
| dance | kómékəsəlì | kóNmékəsəlì |
| dance | teákóikəsəlì | teákóikəsəlì |
| dance | teákúekəsəlì | teákúekəsəlì |
| decay | kəy | kəy |
| deceive | lókəte ^h ý | lókəte ^h ý |
| defecate | kəbíe | kəbíe |
| descend | kədû | kədûN |
| dig | kəte ^h ùə | kəte ^h ùə |
| dig a hole | ŋəlá kəte ^h ùə | ŋəlá kəte ^h ùə |
| do | k ^h əsəlì | k ^h əsəlì |
| dream (v.) | k ^h əsómè | k ^h əsómè |
| drink | k ^h əmǎ | k ^h əmǎN |
| drive | kət ^h ùə | kət ^h ùə |

| | | |
|----------------------|------------------|------------------|
| drive animals | kàzúŋâ | kàzúŋâN |
| eat | kəzî | kəzî |
| enter | kəzá | kəzáN |
| exchange | kʰánsý | kʰáNsý |
| exist | kʰəlá | kʰəlá |
| exit | kəsú | kəsú |
| expect | kʰə́tɛihé | kʰə́tɛihéN |
| fall | kóŋkʰə́lɔ̀ | kóNkʰə́lɔ̀ |
| fart | hókəpé | hókəpé |
| fear | kə́tsu | kə́tsu |
| feel in the heart | túəkʰə́màrùə | túəkʰə́màrùə |
| finish | kʰə́lùe | kʰə́lùe |
| fit | pəkə́zî | pəkə́zî |
| fly | kə́príjè | kə́príjè |
| fly | kə́príjè | kə́príjè |
| follow | kʰə́kə́zý | kʰə́kə́zýN |
| forget | kʰámə́lie | kʰámə́lie |
| frighten | kʰə́ntsú | kʰə́Ntsú |
| fry | kʰə́ŋúə | kʰə́ŋúə |
| get lower | nə́ŋkə́dí | nə́Nkə́dí |
| get up | kə́tʰúə | kə́tʰúə |
| give | kə́pzú | kə́pzú |
| give | kə́pzú | kə́pzú |
| give birth | ʔə́nùkə́pá | ʔə́nùkə́pá |
| grind | súpúə kətə́ | súpúə kətə́ |
| hear | kə́tɕá | kə́tɕá |
| help | kʰə́ŋə́tɛʰón | kʰə́ŋə́tɛʰón |
| help | mə́tɛ́ŋkə́pá | mə́tɛ́Nkə́páN |
| hide (oneself) | ʔùntɛ́y | ʔùNtɛ́y |
| hide (something) | kʰántɛʰý | kʰántɛʰý |
| hit (target) | kʰəná | kʰəná |
| hit | kʰəkə́psú | kʰəkə́psú |
| hold in mouth | kʰə́mò | kʰə́mòN |
| hunt | ɛ́ kəkúə | ɛ́ kəkúə |
| hurt | tsúukʰəná | tsúukʰəná |
| kick | kʰəkə́tʰá | kʰəkə́tʰá |
| kick the foot | kʰəkə́tʰa | kʰəkə́tʰa |
| kill | təkə́tʰé | təkə́tʰé |
| kiss | kʰámə́zú | kʰámə́zú |
| knead clay with feet | ŋə́lá kə́tsò | ŋə́lá kə́tsòN |
| laugh | kʰánný | kʰánný |
| lay eggs | ʔìntítsý kʰàntsý | ʔìNtítsý kʰàNtsý |
| lend | lísə́nê | lísə́nê |
| lick | kʰə́mə́lúə | kʰə́mə́lúə |
| lift | kə́kʰúə | kə́kʰúəN |
| lift up | kʰə́ŋkə́kí | kʰə́Nkə́kí |
| like | níkə́tɛʰúə | níkə́tɛʰúə |
| limp | ʔúkxúkə́ɛúe | ʔúkxúkə́ɛúe |
| look | kʰə́ŋə́há | kʰə́ŋə́háN |

| | | |
|-----------------|-------------------------------------|-------------------------------------|
| meet | k ^h ántû | k ^h áNtû |
| menstruate | ʔənsúkəzì | ʔəNsúkəzì |
| mock | ʔùnykəsúə | ʔùnykəsúə |
| nurse/suckle | ʔúzütsý k ^h ə́má | ʔúzütsý k ^h ə́má |
| open mouth | ʔək ^h úmú kəkə | ʔək ^h úmú kəkə |
| pound (rice) | səp ^h úəkəsý | səp ^h úəkəsý |
| produce | tɛ ^h úmàŋkə́χá | tɛ ^h úmàNkə́χá |
| put | kə́fù | kə́fù |
| release | k ^h ásidú | k ^h ásidú |
| respect | kíəkəɛi | kíəkəɛi |
| roast/dry | k ^h əŋkú | k ^h áNkú |
| roll | k ^h ók ^h əlýi | k ^h ók ^h əlýi |
| rot | kə̀ɛ̀y | kə̀ɛ̀y |
| rub | k ^h ə́múə | k ^h ə́múə |
| run | k ^h əŋəlɔ́ | k ^h əŋəlɔ́N |
| scoop out | súk ^h əlì | súk ^h əlì |
| scratch | k ^h ətəkù | k ^h ətəkù |
| scratch an itch | kə́xúi | kə́xúi |
| scratch an itch | k ^h ə́mó kə́xúi | k ^h ə́mó kə́xúi |
| seek/search | kə́pɛi | kə́pɛi |
| sell | k ^h ə́zy | k ^h ə́zy |
| sew | psú kə́trúə | psú kə́trúə |
| shake something | k ^h ək ^h ə́nù | k ^h ək ^h ə́nù |
| sharpen knife | keie k ^h əkətí | keie k ^h əkətí |
| shiver | k ^h əkətù | k ^h əkətù |
| shoot | kəkúə | kəkúə |
| shout | k ^h átsə́χà | k ^h átsə́χà |
| sing | ɛi kə́ɛi | ɛi kə́ɛi |
| sit | k ^h áanzý | k ^h áNzý |
| sit on eggs | kə̀bú | kə̀búN |
| slap | k ^h əkə́pɛi | k ^h əkə́pɛi |
| sleep | kə́bzú | kə́bzú |
| smell/sniff | k ^h ə́nɔ́ | k ^h ə́nɔ́N |
| smile | k ^h ány | k ^h ány |
| sneeze | háəkə́tsú | háəkə́tsú |
| snore | k ^h əŋə̀r | k ^h əŋə̀r |
| soak | k ^h ə́ntsù | k ^h ə́Ntsù |
| spin | kəkɾù | kəkɾù |
| spin | kəkɾù | kəkɾù |
| spit | mùitsýtsý | mùitsýtsý |
| spit up | kə́mùsxú | kə́mùsxú |
| stammer | k ^h ə́mələ́ | k ^h ə́mələ́ |
| stand | ʔəkχá kàdá | ʔəkχá kàdá |
| start | k ^h əŋəlúə | k ^h əŋəlúəN |
| stay | kə́xúə | kə́xúə |
| steal | kə̀bɔ́ | kə̀bɔ́N |
| steal | k ^h ə́fú | k ^h áNfú |
| steal | k ^h ə́fú | k ^h áNfú |
| stick | k ^h ánná | k ^h ánná |

| | | |
|---------------|----------------|----------------|
| stink | nòŋkàsúə | nòNkàsúə |
| suck | kʰámózuə | kʰámózuəN |
| swallow | pʰlákəsxâ | pʰlákəsxâN |
| swell | kəpû | kəpû |
| take | kʰəlí | kʰəlí |
| talk | lùo kʰáməlùo | lùo kʰáməlùo |
| talk | ʔəlùə kʰáməlùə | ʔəlùə kʰáməlùə |
| tempt | pəéy | pəéy |
| think | kʰəpʰənúə | kʰəpʰənúəN |
| tickle | kʰòntʰərû | kʰòNtʰərû |
| tie | kʰánsù | kʰáNsù |
| to die | kótsʰù | kótsʰù |
| to sleep | kəbzû | kəbzû |
| toast | kʰəkxɾì | kʰəkxɾì |
| touch | tsúkʰánà | tsúkʰánà |
| twist/squeeze | kʰásxàɹá | kʰásxàrá |
| untie | kʰákli | kʰákli |
| urinate | záŋkəpì | záNkəpì |
| vomit | káməlù | káməlù |
| wait | kʰəŋúə | kʰəŋúə |
| walk | kəzé | kəzé |
| want | kʰəmì | kʰəmì |
| want | níŋkətəʰúə | níNkətəʰúəN |
| want to eat | zíkʰíŋje | zíkʰíŋjeN |
| wash clothes | psú kəsý | psú kəsý |
| wash hands | ʔùkʰíukətəʰy | ʔùkʰíukətəʰy |
| wash legs | òkú kəpɾû | òkú kəpɾû |
| weave | kətó | kətó |
| weave | tíkətó | tíkətó |
| weave | psú kətô | psú kətôN |
| whistle | məéékʰəmùə | məéékʰəmùə |
| yawn | hõ mieie | hõ mieie |

States

| | | |
|-----------------------|--------------------|---------------------|
| able | sùlikàsó | sùlikàsó |
| angry | ʔúmàlùŋ kəsú | ʔúmàlùN kəsú |
| bad character | ʔisúvéné ʔà kəpʰrí | ʔisúvénéN ʔà kəpʰrí |
| bad character | ʔisúvén səkətəi | ʔisúvénéN səkətəi |
| beautiful | kəpʰrí | kəpʰrí |
| big | kʰətəʰù | kʰətəʰù |
| bitter | kəkʰí | kəkʰí |
| black | kózú | kózú |
| bleed | ʔùnsú kəsú | ʔùNsú kəsú |
| blind | ʔúmúkʰəmù | ʔúmúkʰəmù |
| blind, be | ʔákətɣá | ʔákətɣá |
| blow | mùéúe kʰəmàéúe | mùéúe kʰəmàéúe |
| born, be | kəpà | kəpà |
| break out | sùtʰíkəsú | sùtʰíkəsú |
| burn/on fire, be | mákàéí | mákàéí |
| burning | mákətəʰù | mákətəʰù |
| clean | kətʰùə | kətʰùəN |
| clear | kʰántʰùə | kʰántʰùəN |
| clever/smart | kəéiŋ | kəéiNŋ |
| closed | késxù | késxùN |
| cold | kʰəkətsà | kʰəkətsà |
| comparative degree | kʰəmə | kʰəmə |
| correct | kʰántʰò | kʰántʰòN |
| correct | kʰántʰò | kʰántʰòN |
| crippled/lame | ʔúxú ʔàkʰàlá | ʔúxú ʔàkʰàlá |
| crooked | kʰáŋkùe | kʰáNkùe |
| dark | táŋkʰəmâ | táNkʰəmâ |
| deaf | níkəxú | níkəxú |
| deep | kətʰú | kətʰú |
| difficult | kʰəlùə | kʰəlùə |
| dirty | kʰáŋkxùə | kʰáNkxùə |
| dry | kətɣùə | kətɣùəN |
| early in the morning | ntʰúlúəto | Ntʰúlúəto |
| easy | kʰəlíc | kʰəlíc |
| far | kəlí | kəlí |
| fast | kətʰúə | kətʰúə |
| fat | kʰətəʰù | kʰətəʰù |
| few | dúəkʰəmá | dúəkʰəmá |
| fine | məsúnúnúʔə | məsúnúnúʔə |
| full | kətxúə | kətxúə |
| full/complete | məpúnkəpʰá | məpúnNkəpʰá |
| get higher and higher | təùəkíkí | təùəkíkí |
| good (morally) | ʔisúvénŋ kəpʰrí | ʔisúvénéN kəpʰrí |
| green | kʰántúə | kʰántúə |
| hard | kʰəŋká | kʰəNká |
| heavy | kəɣú | kəɣú |
| high | kətəʰùə | kətəʰùə |
| hot | kəéi | kəéi |

| | | |
|------------------------|------------------------------------|------------------------------------|
| hunchbacked | mákò kàbù | mákòN kàbùN |
| hungry for rice, to be | zú kàtē ^h ē | zú kàtē ^h ē |
| incorrect/wrong | k ^h àmé | k ^h àmé |
| just right temp | k ^h ózá ?à kàéí | k ^h ózá ?à kàéí |
| late | kàxúi | kàxúi |
| leprous | p ^h áirèkàtēúə | p ^h áirèkàtēúə |
| light | kóxù | kóxù |
| light | k ^h əmpùə | k ^h əNpùəN |
| long | kəsùə | kəsùəN |
| loose | k ^h əntē ^h ú | k ^h əNtē ^h ú |
| lost | k ^h ə múə | k ^h ə múəN |
| low | k ^h ə nàxúə | k ^h ə nàxúəN |
| low | k ^h ə nùə | k ^h ə nùə |
| low | nìkàxúə | nìkàxúəN |
| many | tēúmmà | tēúmmà |
| many | tēúŋk ^h əmə | tēúNk ^h əmə |
| missing legs | ?úkxú kátúe | ?úkxú kátúe |
| more than | tēúŋk ^h əmə | tēúNk ^h əmə |
| mute/dumb | ?úílùo ?àkàsú | ?úílùo ?àkàsú |
| narrow | k ^h ə məxúə | k ^h ə məxúəN |
| naughty, be | k ^h ákəkɽu | k ^h ákəkɽu |
| near | ?əxúe | ?əxúe |
| new | kət ^h ùə | kət ^h ùə |
| | məsúnúnú ?á | məsúnúnú ?á |
| not fine | tsù?é | tsù?é |
| not heavy | ?ákəɽú | ?ákəɽú |
| not high | ?àkətē ^h úə | ?àkətē ^h úə |
| not sharp | ?ák ^h ə məxúə | ?ák ^h ə məxúəN |
| numb, be | kəts ^h ù | kəts ^h ù |
| old | ŋəxúi | ŋəxúiN |
| old | tùəkətsá | tùəkətsáN |
| open | kəsxú | kəsxú |
| pregnant, be | ?ənúkəp ^h ó | ?ənúkəp ^h óN |
| red | kəχá | kəχáN |
| ripe | k ^h ə múə | k ^h ə múəN |
| rough | tàxúxú | tàxúxú |
| round | ?ətá | ?ətáN |
| see | kəχá | kəχá |
| shallow | ?àkət ^h ú | ?àkət ^h ú |
| sharp | k ^h ə məxúə | k ^h ə məxúəN |
| short | kəsú | kəsú |
| shy/ashamed | k ^h ákəsxá | k ^h ákəsxá |
| sick, be | kətē ^h úə | kətē ^h úə |
| sick, be | kətē ^h úə | kətē ^h úə |
| skinny | kákò | kákòN |
| slippery | k ^h əŋúe | k ^h əŋúe |
| slow | kətá | kətá |
| small | kətúə | kətúə |
| smell bad | éúk ^h ənà | éúk ^h ənàN |

| | | |
|--------------|-----------------|-----------------|
| smooth | nàmpúə̀t | nàNpúə̀t |
| soft | tə̀pʰèpʰè | tə̀pʰèpʰè |
| sour | kə̀tʰú | kə̀tʰú |
| straight | ŋə̀lúsxúə̀ | ŋə̀lúsxúə̀N |
| strong | kʰə̀nkúə̀ | kʰə̀Nkúə̀ |
| strong | kʰə̀ŋkúə̀ | kʰə̀Nkúə̀ |
| stupid | máŋkʰə̀múə̀ | máNkʰə̀múə̀ |
| sweet | kə̀súə̀ | kə̀súə̀N |
| tall | kə̀sxúə̀ | kə̀sxúə̀N |
| thick | kə̀éi | kə̀éi |
| thin | ʔákə̀éi | ʔákə̀éi |
| thirst | ʔùntsý mǎŋkíŋié | ʔùNtsý mǎNkíŋié |
| tight | kʰə̀ŋə̀zúə̀ | kʰə̀ŋə̀zúə̀N |
| alive | kə̀rúə̀ | kə̀rúə̀ |
| awake | kə̀txúə̀ | kə̀txúə̀ |
| ugly/bad | ʔəkə̀pʰí | ʔəkə̀pʰí |
| very cold | kə̀sxúə̀ | kə̀sxúə̀ |
| warm | kʰə̀lú | kʰə̀lúN |
| weak | kʰə̀ŋə̀zè | kʰə̀ŋə̀zè |
| wet | kə̀zú | kə̀zú |
| white | kʰə̀ŋúə̀ | kʰə̀ŋúə̀ |
| white | kʰə̀ŋúə̀ | kʰə̀ŋúə̀ |
| wither | kʰə̀ŋə̀xú | kʰə̀ŋə̀xú |
| without legs | ʔùkxúkə̀túə̀ | ʔùkxúkə̀túə̀ |
| yellow | tə̀liúmə̀tə̀hú | tə̀liúmə̀tə̀hú |

Pronouns

| | | |
|-----|------|-------|
| 1du | ʔóná | ʔóná |
| 1pl | ʔórû | ʔórû |
| 1sg | â | â |
| 2du | níná | nínáN |
| 2sg | nâ | nâN |
| 3du | íná | íná |
| 3sg | ʔómú | ʔómú |
| 3sg | ʔómú | ʔómú |

Adverbs

| | | |
|-----------|-------|-------|
| routinely | ýsádó | ýsádó |
|-----------|-------|-------|