# Northern Tepehuan

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Northern Tepehuan (ISO 639-3: *ntp*) is one of the 68 native linguistic groups[1] currently spoken in Mexico according to the National Institute of Indigenous Languages (INALI 2008). As is the case with many indigenous languages, Northern Tepehuan is under serious threat of disappearance during the next decades as it is spoken by fewer than 9000 people (Carrillo 2011: 6) whose historical background has been one of social and linguistic marginalization. The Ódami – as the speakers of the language call themselves – live in the alpine valleys of an isolated region known as Sierra Tarahumara, a section of the Sierra Madre Occidental, in Chihuahua State, Mexico. Saucedo Sánchez de Tagle (2004: 6–9) indicates that the heart of the current Ódami territory is in some sections of the Guadalupe y Calvo municipality, in the southernmost tip of Chihuahua (see Figure 1) but speakers also can be found in the surrounding municipalities of Balleza, Guachochi and Batopilas. Approximately 80% of Northern Tepehuan speakers live in small villages and rural settlements around the population nuclei of Baborigame, Nabogame, Llano Grande, Barbechitos and El Venadito (Saucedo Sánchez de Tagle 2004: 7). There are also some scattered speakers living in the region's big cities of Chihuahua and Hermosillo.

Northern Tepehuan is a language of the Uto-Aztecan family, a genetic group spreading from the American Southwest and the Great Basin to Central Mexico in a corridor located alongside the Sierra Madre Occidental (see Miller 1984, Mithun 1999, Dakin 2004).


**Figure 1** Map of Northern Tepehuan-speaking area.

[1] *Agrupaciones lingüísticas*, according to INALI's nomenclature in Spanish, meaning 'a group of linguistic variants included under the same traditional name used to designate a native group' (INALI 2008: 36).

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Its actual range even encompasses a small region in El Salvador where Pipil Náhuatl is spoken. Northern Tepehuan belongs to the Tepiman branch of the family (Bascom 1965) and therefore is closely related to other northwest Mexico languages like Pima, Tohono O'odham, Southeast Tepehuan and Southwest Tepehuan.

Although there have been some efforts to build a descriptive tradition of the language, many of its aspects remain poorly explored, especially within the phonological and phonetic scopes (for a bibliographic summary of the language see Willett & Willett 2001, Gil Burgoin 2020). During the 1980s, linguists prepared a grammatical sketch (Bascom 1982) and more recently, a bilingual dictionary (Bascom & Molina 2018), but many years passed before the language began to attract interest from descriptive linguists anew. Just recently, some morpho-syntactic research has been added to the Northern Tepehuan bibliography (e.g. Ramos Bierge 2010, 2012; Carrillo 2011, 2013). In addition, a couple of works have been published focusing on formal accounts of the tonal phenomena (see Woo 1970, Kim 1997). Nonetheless, the conclusions of these phonological approaches present relevant shortcomings as they have assumed Bascom's descriptive premises without having direct access to data. The present account seeks to contribute to the renewal of the descriptive tradition of the language.

## Data

With respect to dialectal variation within Northern Tepehuan, Molinari, Ruiz & Nolasco (1995) discuss the possibility of arranging the spatial variation into three dialects: Baborigame (center), Nabogame (south) and Venadito (north) – although further research on this subject needs to be done. In any case, the data presented in this work come from two speakers of the Túpuri village variety, one of the localities belonging to the Baborigame nucleus.

The data were collected through fieldwork interviews. Both speakers are female and were aged in their thirties at the time of recording. The speakers were asked to answer a questionnaire of around 1500 lexical items as well as questionnaires of verbal and nominal paradigms. The recording sessions took place at the University of Sonora, in an acoustically controlled environment although not under laboratory conditions.

## Consonants

Below, the chart of phonological segments is presented, followed by a list of minimal and near-minimal pairs to show the most relevant contrasts in the language.

| | Bilabial | Alveolar | Post-alveolar | Velar |
|---|---|---|---|---|
| Plosive | p b | t d | | k g |
| Affricate | | | t͡ʃ | |
| Nasal | m | n | | |
| Trill | | r | | |
| Fricative | | s | | x |
| Approximant | β | | j | |

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| | PHONOLOGICAL | BROAD PHONETIC TRANSCRIPTION | GLOSS |
|---|---|---|---|
| /p/ | /ipu:rai/ | [iˈpu:rɛi] | ‘dress’ |
| /b/ | /gibu:rai/ | [giˈbu:rɛi] | ‘belt’ |
| /b/ | /bi:/ | [ˈbi:] | ‘he/she fed [it]’ |
| /β̞/ | /β̞i:/ | [ˈβ̞i:] | ‘it has been left over’ |
| /b/ | /bá:si/ | [ˈbá:ʃi] | ‘mouthful’ |
| /m/ | /ma:sí/ | [ˈma:ʃí] | ‘type’ |
| /m/ | /mara:dɨ/ | [maˈra:dɨ̰] | ‘his/her child’ |
| /β̞/ | /β̞ara:dɨ/ | [β̞aˈra:dɨ̰] | ‘soup’ |
| /t/ | /ta:nɨ́i/ | [ˈta:nɨ́i] | ‘he/she earns money’ |
| /d/ | /da:nɨ́i/ | [ˈda:nɨ́i] | ‘he/she begs’ |
| /d/ | /da:ká/ | [ˈda:qá] | ‘nose’ |
| /n/ | /na:ká/ | [ˈna:qá] | ‘ear’ |
| /t/ | /tuá:i/ | [ˈtwá:j̰i] | ‘he/she grinds’ |
| /s/ | /suá:i/ | [ˈswá:j̰i] | ‘blanket’ |
| /s/ | /so:/ | [ˈso:] | ‘he/she sewed’ |
| /t͡ʃ/ | /t͡ʃo:/ | [t͡ʃo:] | ‘no’ |
| /k/ | /kɨβ̞ai/ | [ˈkʰɨβ̞:ai] | ‘snow’ |
| /g/ | /gɨβ̞ai/ | [ˈgɨβ̞:ai] | ‘he/she hits’ |
| /k/ | /tɨki/ | [ˈtɨkʰ:i] | ‘bet’ |
| /x/ | /tɨxi/ | [ˈtɨx:i] | ‘teenager girl’ |
| /g/ | /a:gái/ | [ˈa:gái] | ‘he/she wants’ |
| /x/ | /β̞ia:xái/ | [ˈβ̞ia:xái] | ‘he/she mashes up’ |
| /n/ | /onai/ | [ˈon:ɛi] | ‘salt’ |
| /r/ | /ó:rai/ | [ˈó:rɛi] | ‘sand’ |
| /r/ | /sɨ:rí/ | [ˈsɨ:ɾ̥í] | ‘straight’ |
| /j̰/ | /sɨ́:j̰i/ | [ˈsɨ́:j̰i] | ‘wolf’ |

The inventory of consonants of the language consists of 14 segments. Northern Tepehuan has voiced and voiceless plosives in three places of articulation, bilabial, alveolar and velar (see Figure 2). There are also two unvoiced fricatives and one clearly approximant segment.

There are also three clearly phonemic sonorants: the nasals /m/ and /n/, the rhotic /r/. On the other hand, the palatal (/j̰/) appears to be a special case since it is always linked with the presence of /i/ and it is inserted for phonotactic reasons, for instance, avoiding a hiatus or triphthong – see ‘Vowels’ section below – like in /suá:i/ ‘blanket’ whose phonetic form

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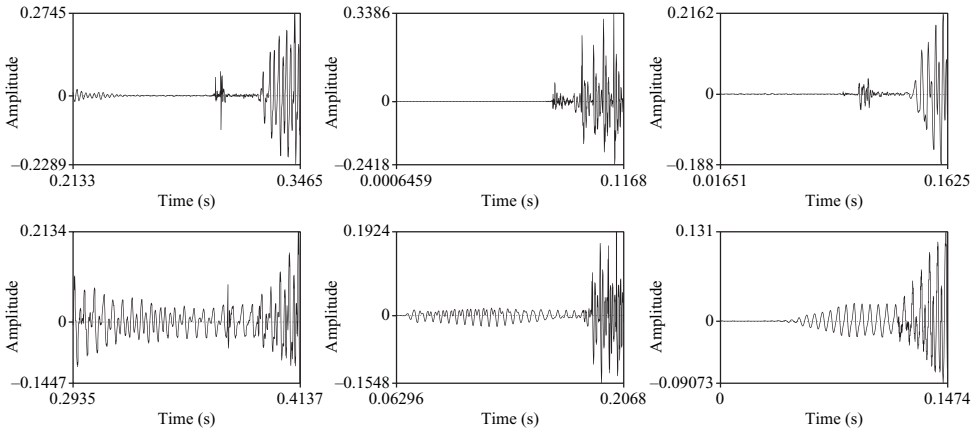


**Figure 2** Waveforms illustrating the voice contrast in (first column) /p/-/b/ /ipuːrai/ [iˈpuːrɛi] 'dress' and /gibuːrai/ [giˈbuːrɛi] 'belt', (second column) /t/-/d/ /taːnɨ́i/ [ˈtaːnɨ́i] 'he/she earns money' and /daːká/ [ˈdaːqá] 'nose', and (third column) /k/-/g/ /kuːpái/ [ˈkuːpái] 'hair' and /guguːkai/ [guˈguːkɛi] 'he/she stands up'.

is [ˈswáːˌji]. Nonetheless, in a few cases like /sɨ́ːˌji/ 'wolf', /ˌj/ can truly contrast with closely similar sounds like [ʎ] – allophone of /r/. It can, therefore, be considered a phonological sound, although it appears to be MARGINALLY PHONEMIC.[2]

The affricate /t͡ʃ/ has been said not to belong to the native inventory, allegedly appearing only in loanwords (Ramos Bierge 2010: 22; Carrillo 2013: 13). Although it is indeed an infrequent segment, it does occur in a number of native words and roots like /t͡ʃoː/ 'no', /t͡ʃukiatai/ 'few people', /t͡ʃɨːkí/ 'a little', or /úːt͡ʃai/ 'canes'. In all these cases there are no traceable phonological motivations for its appearance, i.e. the surrounding segments or position constraints, apart from being lexically specified.[3] Thus, it should be accepted as a phonemic segment.

As for the phonetic realization, plosives tend to show a very tense articulation at the beginning of a word, especially voiced plosives. In utterance-initial position, voiced plosives are generally characterized by two traits: (i) the initial phase of the closure is nasalized as seen in Figure 3, illustrating /baxi/ 'tail'; and (ii) they produce an 'auditory' and acoustic impression similar to implosives. In this sense, it can be observed that the amplitude of voicing increases during the closure which typically indicates some degree of lowering of the larynx. However, the proposal of this paper is that these are not true implosives as it is well-documented (Henton, Ladefoged & Maddieson 1992: 71; Ladefoged & Maddieson 1996: 119) that pre-nasalized implosives are highly dispreferred sounds in the world's languages, if not completely absent. The sound pattern described here can rather be characterized as a mechanism that coordinates both pre-nasalization and larynx lowering as a means of sustaining voicing in positions where voicing is aerodynamically difficult, as in utterance-initial position. Ewan & Krones (1974) have actually shown that larynx lowering is not unique to implosives, but it is sometimes used to maintain voicing in pulmonic stops. In this respect, Ladefoged & Maddieson (1996: 51) also say that there is a tendency in some languages to associate a sustained vocal fold vibration – as part of the target of a voiced stop – and the downward movement of the larynx, and that there is a continuum between fully voiced stops

[2] See Hall (2013) for a general discussion of MARGINAL or INTERMEDIATE CONTRASTS.

[3] Although some type of sound symbolism concerning the semantically related notions of 'a little' and 'small' might be proposed for the affricate, this is not something present in the other /t͡ʃ/-bearing words.

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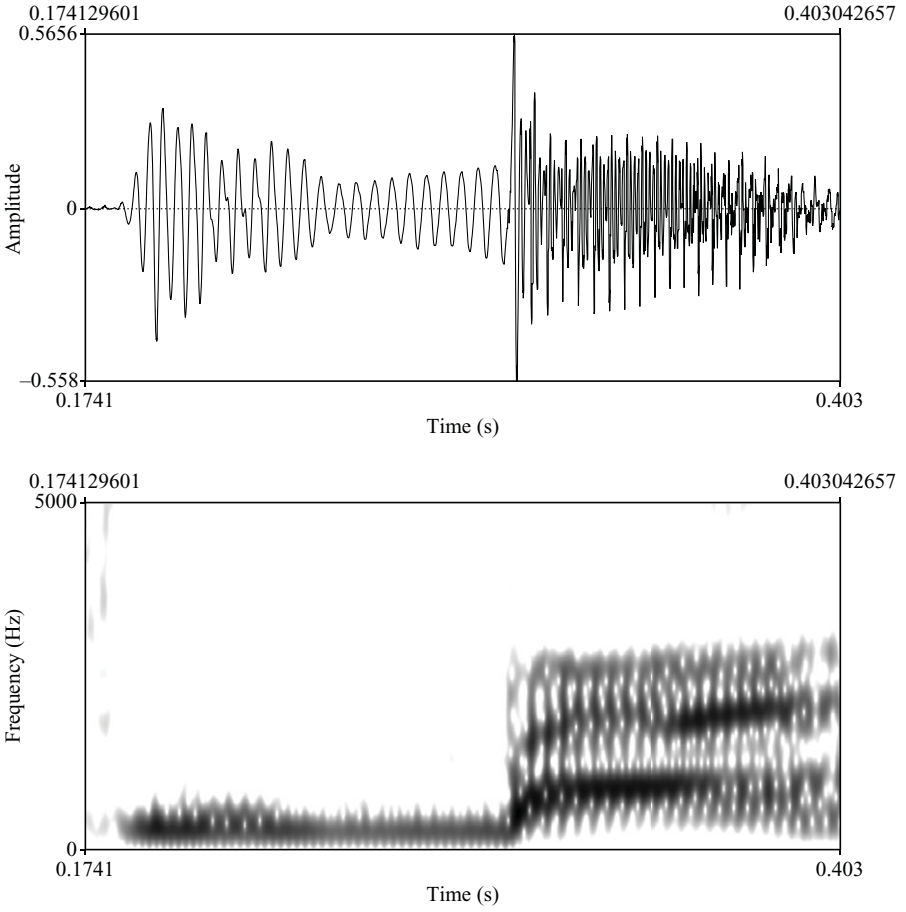


**Figure 3** Waveform and spectrum of [ᵐba] in /baxi/ 'tail'.

and implosives.[4] Thus, a narrower phonetic transcription of /baxi/ 'tail' and /daːká/ 'nose' could be [ˈᵐbaxi] and [ˈⁿdaːqá], respectively.

The bilabial approximant /β̞/ corresponds to Southern Tepehuan fricative /β/ – compare with Reyes Taboada (2014) data. This approximant is shown in Figure 4 in intervocalic and initial position in the words /kaβ̞ami/ [qaˈβ̞ami] 'quickly, intensely' and /β̞araːdɨ/ [β̞aˈraːɖɨ] 'soup'. It can be noted that, unlike the fricatives, [β̞] lacks a high frequency turbulent noise (Catford 1977: 118–121; Martínez Celdrán 2004: 203). Voiced labial fricatives like [v] and [β] have a fainter friction than other fricatives, but it can be still observed between 7000 Hz and 8000 Hz – see Jongman, Wayland & Wong (2000: 1256), Ladefoged & Johnson (2010: 202) – which is not the case here. Also, it is expected that voiced fricatives show a considerable decreasing in amplitude compared to approximants, causing a similar effect as a plosive but without its typical burst – see Ladefoged & Maddieson (1996: 325) for examples from Isoko. Approximants exhibit formants and decrease amplitude moderately – see Martínez Celdrán (1991) for Spanish examples – as in the intervocalic example here. In the case of /β̞/

[4] Similarly, in the closely related Southeastern Tepehuan, pre-glottalized nasals as allophones of voiced plosives in coda position has been explained as the result of a mechanism of voicing reinforcement that involves nasality and laryngeal gestures (Reyes Taboada 2014: 132–137).

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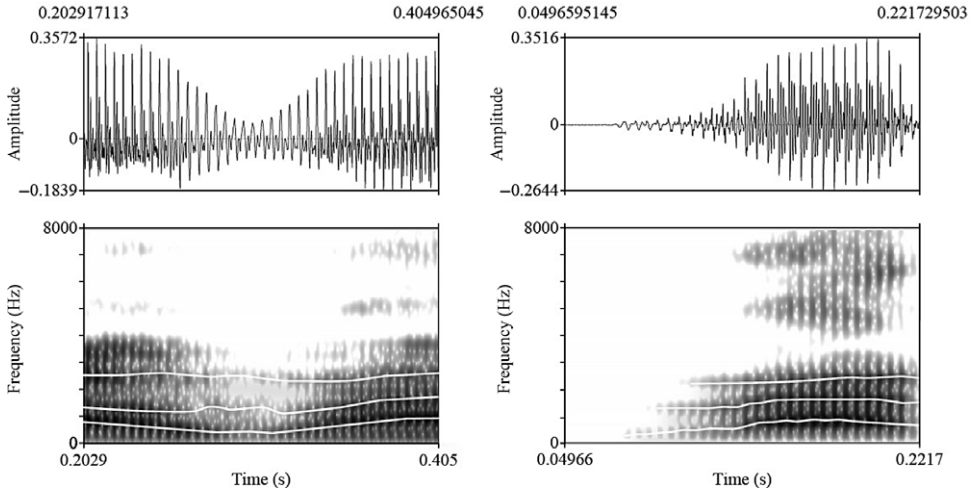


**Figure 4** Waveform and spectrum of [aβa] and [βa] in /kaβami/ [qaˈβami] 'quickly, intensely' (left) and /βaraːdɨ/ [βaˈraːɖɨ] 'soup' (right).

in initial position we observe a weak periodic wave that smoothly increases as it approaches the vowel onset, as is the case with other approximants.

Alveolar consonants palatalize in the following contexts. Firstly, when an underlying alveolar consonant immediately precedes /i/, it surfaces as palatal – except for /t/. Likewise, in most cases /r/ undergoes a change in its manner of articulation to a lateral approximant [ʎ].[5] This produces the following alternations: when followed by /i/, /d/ > [ɟ], /n/ > [ɲ], /s/ > [ʃ] and /r/ > [ʎ], as is shown in (1). Additionally, sometimes /r/ may also appear as [ɾ].

| | | | | | | |
|---|---|---|---|---|---|---|
| (1) Before /i/ | a. | /d/ | > | [ɟ] | /tioːdí/ | [ˈtioːɟí] | 'pretty' |
| | b. | /n/ | > | [ɲ] | /tɨni/ | [ˈtɨɲːi] | 'mouth, snout' |
| | c. | /s/ | > | [ʃ] | /uːsí/ | [ˈuːʃí] | 'tree, wooden' |
| | d. | /r/ | > | [ʎ] | /úːri/ | [ˈúːʎi] | 'maternal grandmother' |

In a similar way, preceded by /i/ /t/ > [c], /d/ > [ɟ], /n/ > [ɲ], and /s/ > [ʃ], as in (2). Note that /r/ does not palatalize preceded by /i/.

| | | | | | | |
|---|---|---|---|---|---|---|
| (2) After /i/ | a. | /t/ | > | [c] | /akita/ | [aˈkica] | 'younger paternal uncle' |
| | b. | /d/ | > | [ɟ] | /ariːdu/ | [aˈʎiːɟu] | 'small' |
| | c. | /n/ | > | [ɲ] | /íːna/ | [ˈíːɲa] | 'he/she shouted' |
| | d. | /s/ | > | [ʃ] | /pisɨri/ | [piˈʃɨːʎi] | 'chipmunk' |
| | e. | /r/ | > | [r] | /ɾíːpirɨi/ | [ˈɾíːpirɨi] | 'it cools down' |

[5] The editor suggests that this palatal could be alternatively be transcribed as [rʲ], and might be a palatalized sound that is unspecified as to its laterality.

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Palatalization appears also as the result of a morpho-phonological process, as in (3) below, where there are examples of palatalized /s/ and /r/ preceding a following /i/ in the imperative morpheme -/ini/. Observe that a vowel in suffix-initial position deletes the vowel or diphthong at the end of the stem.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (3) a. | /mɨrai/ | [ˈmɨrːɛi] | + | -/ini/ | → | /mɨr-ini/ | [mɨˈʎiɲi] |
| | ‘he/she runs’ | | | IMP | | ‘run!’ | |
| b. | /koːso/ | [ˈqoːso ] | + | -/ini/ | → | /koːs-ini/ | [qoːˈʃiɲi] |
| | ‘he/she sleeps’ | | | IMP | | ‘sleep!’ | |

Alveolar consonants also palatalize when they come in contact with palatalized consonants so the process can spread across more than one segment, as in /β̟úrsiapai/ [ˈβ̟úʎʃiapai] ‘he/she ties’ or in /íːstukai/ [ˈíːʃcuqai] ‘seeds’ where the palatalization caused by /i/ affects /s/ and then the adjacent alveolar consonant – /r/ and /t/ in these cases.

The fricative /s/ also appears as [ʃ] in coda position when in contact with a voiceless stop /t/ or /k/ e.g. /táskari/ [ˈtáʃkaʎi] ‘tortilla’, /káskɨdɨ/ [ˈqáʃkɨɖɨ] ‘thus’, /ástɨkɨi/ [ˈáʃcɨkɨi] ‘he/she throws away’, but not when in contact with /p/ – /araspai/ [aˈraspai] ‘he/she rubs’ – or the nasals /m/ and /n/ – /β̟asmonai/ [β̟asˈmonai] ‘yeast’, /kusna/ [ˈkusna] ‘nape’. Although sC > ʃC without a high/front vocoid is often not regarded as a typologically common process – it certainly does not appear in palatalization surveys as Chen (1973), Bhat (1978) or Bateman (2011) – it has been well documented in many Italian dialects (Rohlfs 1966) and, diachronically, sk > ʃ/ʃk and st > ʃt occurred in some Germanic languages as High German (Harbert 2007: 49). The abstract nature of this process is still debated, but it can be seen as an instance of assimilation and dissimilation of the feature [anterior] of the coronal /s/ – see Lorenzetti (2018: 116) for this process in Italian.[6]

An alternative explanation is that an underlying /i/ causes palatalization before being deleted in the sequences /sik/ and /sit/, so the underlying form of [ˈkáʃkɨɖɨ] ‘thus’ would be ∗/kásikɨdɨ/. Nonetheless, there are numerous examples where this rule would not apply, like /ɨsikami/ [ɨˈʃiqami] ‘cropland’, /miːsitu/ [miːˈʃicu] ‘cat’, /βóisiki/ [ˈβóiʃiki] ‘garbage’, /túisiki/ [ˈtwíʃiki] ‘patio’, therefore I incline for the first explanation.

The last paragraphs present key evidence for merging the palatal set of phonemes proposed by Bascom (1965, 1982) into the alveolar place of articulation, reducing thus the consonant inventory presented by him. In fact, the necessity of this merge has been noted by some other authors (Carrillo & Estrada 2006; Ramos Bierge 2010: 22–23; Carrillo 2013: 14), although they have not provided any analyses. In Bascom’s description, the palatal set includes the proper palatals /c ɟ ɲ/, the postalveolar /ʃ/ – which he represents as *ty*, *dy*, *ny* and *š* – as well as the alveolar /l/. It should be noted that the lateral approximant represented by /l/ in those works can be better transcribed as a palatal [ʎ]. The analysis of all the materials gathered for this work have shown that [c], [ɟ], [ɲ], [ʃ] and [ʎ] can be characterized as palatalized allophones of the alveolar phonological segments /t/, /d/, /s/, /n/ and /r/ because the palatalized variants only surface in environments contiguous to the high front vowel /i/ – except for /s/ palatalizing in coda.[7]

[6] See Kochetov (2011) for a definition of palatalization that includes this process and Hanssen (2010), Kochetov & Alderete (2011) and Krämer & Urek (2016) for further cases of palatalization that do not involve a high and/or front vocoid.

[7] Similar processes have been described in Southeastern Tepehuan in the works of Willett (1982, 1985) and Reyes Taboada (2014).

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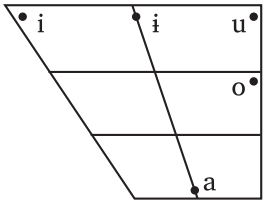
In rapid speech, however, it is possible to find phonetic sequences of an alveolar consonant plus [i] due to the surface deletion of underlying non-palatalizing vowels that interfere with the palatalization process, e.g. /tiáːnii/ 'he/she orders' has the form [ˈtiáːnii] in isolation but can have the form [ˈtiáːni] in rapid speech, or /tasai/ 'sun', in isolation [ˈtasːai], but sometimes [ˈtasːi] in speech – see the recorded passage for rapid speech forms. Similarly, in the case of /s/ becoming [ʃ] before a sequence /ia/ or /ii/ the vowel [i] tends to be almost entirely merged with the fricative. It is therefore common to find [ʃa] or [ʃɨ] sequences, especially in rapid speech.

Other frequent consonantal allophones are [q] and [ɖ]. The first of them is an instance of /k/ that usually occurs when adjacent to /a/ or /o/, e.g. in /komi/ [ˈqomːi] 'back' or /kaxi/ [ˈqaxːi] 'thigh' – and in other previous examples – but not after [ʃ]. The retroflex [ɖ] is an allophone of /d/ that appears before the vowel /ɨ/ as in /dɨ́ːdɨ/ [ˈɖɨ́ːɖɨ] 'mother'.

Consonants never form clusters and rarely appear in coda position in isolated words. The only consonants allowed in the coda are /s/, /n/ and /r/, as in /táskari/ [ˈtáʃ.ka.ʎi] 'tortilla', /kusna/ [ˈkus.na] 'nape', /βustai/ [ˈβuʃ.cɛi] 'he/she blows', /siaːnkɨ́/ [ˈʃiaːŋ.kɨ́] 'which' and /βúrsiapai/ [ˈβúʎ.ʃia.pai] 'he/she ties'. In rapid speech, however, final vowels can be deleted after /m/, /n/ and /r/ which leads to the existence of final phonetic [m], [n] or [r], for instance in [qaˈβam] or [qaˈβan] – see the recorded passage – whose isolated form is /kaβami/ [qaˈβami] 'quickly, intensely'.

## Vowels




| | | | |
|---|---|---|---|
| /i/ | /íːsi/ | [ˈíːʃi] | 'urine' |
| /ɨ/ | /ɨ́ːsi/ | [ˈɨ́ːʃi] | 'quantity' |
| /u/ | /uːsí/ | [ˈuːʃɨ́] | 'tree, wooden' |
| /o/ | /óːsi/ | [ˈóːʃi] | 'drop' |
| /a/[8] | /áːsi/ | [ˈáːʃi] | 'he/she laughed' |

The Northern Tepehuan vowel system comprises five vowels, according to the data collected for this paper: three high vowels, one mid and one low. All of them are equally frequent in stressed syllables. This coincides with the previous accounts of Bascom (1982), Ramos Bierge (2010) and Carrillo (2013). Figure 5 displays the typical acoustic quality of vowels in stressed syllables and non-stressed syllables of one of the female speakers, also showing that vowels undergo some degree of centralization in non-stressed positions. For this projection, the values of F1 and F2 were measured using Praat (Boersma & Weenink 2006) in 754

[8] I use this symbol to denote a low central vowel – since strictly speaking it is a low front vowel in the IPA chart.

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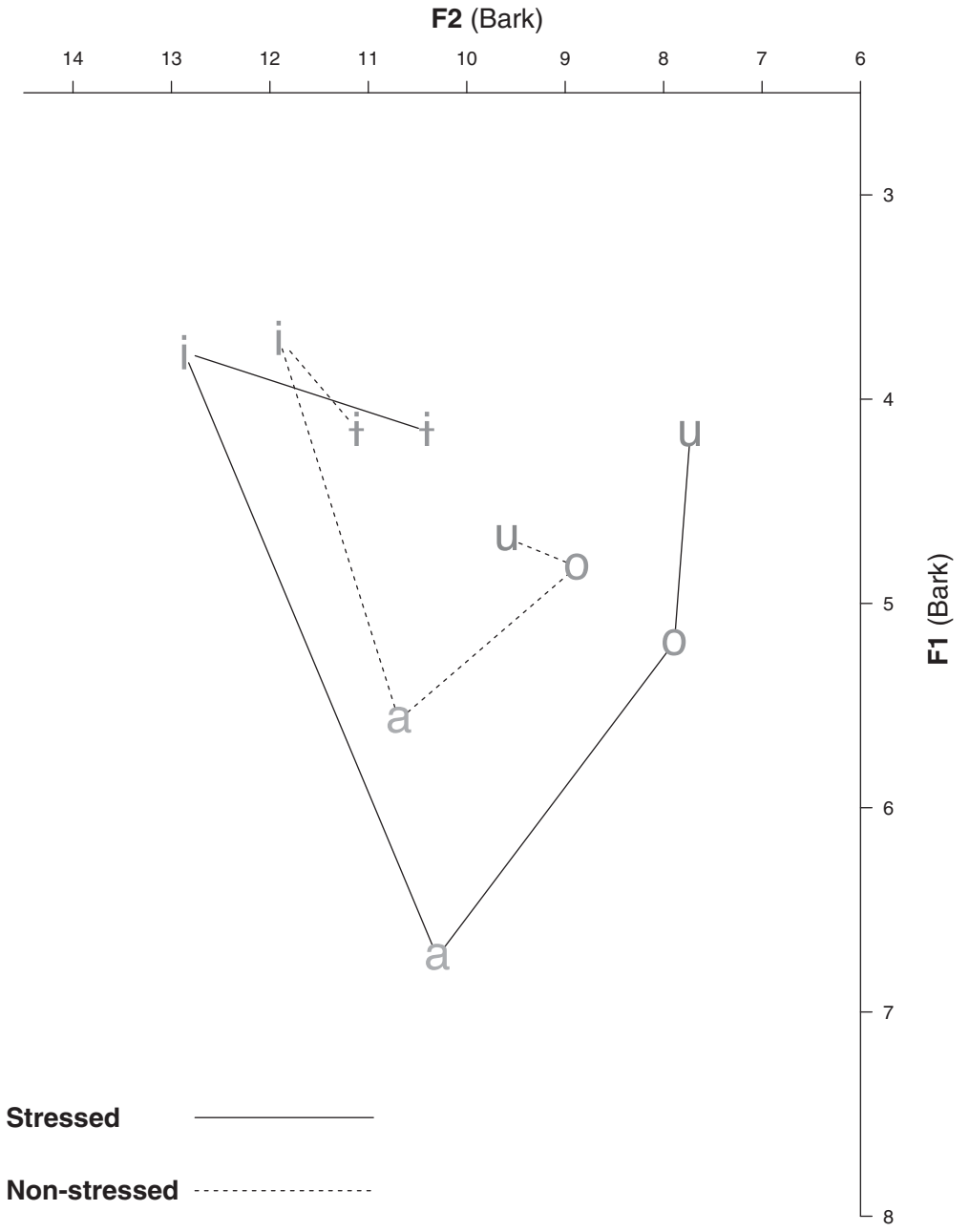


**Figure 5** Mean values of *F1* and *F2* in stressed and non-stressed vowels.

stressed vowels and 684 unstressed vowels in isolated words – see Table 1 for details. The values in Hertz were converted to Bark according to the equation proposed by Traunmüller (1990). Occasionally, non-stressed vowels can be turned into schwas [ə] in long phonological words in rapid speech. Also, final non-stressed vowels tend to show a slight degree of devoicing.

In the previous literature, contrastive vowel length has been reported, although never exemplified. In (4) below there are some examples of words that contrast in vowel length.

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**Table 1** Values of F1 and F2 of stressed and non-stressed vowels.

| Type | Vowel | N | F1 (Hz) | F2 (Hz) | F1 (Bark) | F2 (Bark) |
|---|---|---|---|---|---|---|
| Stressed | i | 138 | 402 | 2528 | 3.77 | 12.87 |
| | ɨ | 104 | 450 | 1639 | 4.16 | 10.38 |
| | u | 123 | 452 | 1005 | 4.17 | 7.73 |
| | o | 184 | 586 | 1037 | 5.19 | 7.89 |
| | a | 205 | 824 | 1615 | 6.73 | 10.30 |
| | Total | 754 | | | | |
| Non-stressed | i | 231 | 394 | 2141 | 3.70 | 11.91 |
| | ɨ | 104 | 448 | 1870 | 4.14 | 11.13 |
| | u | 85 | 517 | 1422 | 4.68 | 9.59 |
| | o | 102 | 536 | 1250 | 4.82 | 8.88 |
| | a | 162 | 640 | 1730 | 5.57 | 10.69 |
| | Total | 684 | | | | |

Note also that consonants tend to be longer after a stressed short vowel than after a long vowel, although this is a phonetic operation and might not be implemented.

(4) a. /i/ /imɨi/ [ˈimːɨi] ‘he/she goes’

b. /iː/ /íːmɨi/ [ˈíːmɨi] ‘they go’

c. /ɨ/ /ɨsi/ [ˈɨʃːi] ‘planted’

d. /ɨː/ /ɨ́ːsi/ [ˈɨ́ːʃi] ‘quantity’

e. /o/ /βopui/ [ˈβopːwi] ‘feather, hair’

f. /oː/ /βoːpúi/ [ˈβoːpwí] ‘they run’

In Northern Tepehuan the following diphthongs exist (syllabic boundaries are indicated in these examples): /ia/ and /ai/ as in /βiaːxái/ [βiaː.xái] ‘he/she mashes up’, /io/ as in /tioːdí/ [ˈtioː.ɟí] ‘pretty’ and /oi/ as in /sonoi/ [ˈson.ːoi] ‘log’, /ɨi/ as in /imɨi/ [ˈim.ːɨi] ‘he/she goes’, /iu/ as in /kiupai/ [ˈkʰiu.pai] ‘church’, /ui/ as in /úːtui/ [ˈúː.twi] ‘fingernail’, and /ua/ as in /ˈkuáːgi/ [ˈkwáː.gi] ‘firewood’. The corpus of over 2000 words shows no evidence of triphthongs or hiatus in the language.

In addition, the vowel /a/ undergoes a process of vocalic raising and fronting, which we would also call some instance of palatalization, although it applies under different conditions than consonants: /a/ remains a low and central vowel when it is contiguous to /i/, like in /kuːpái/ [ˈkuːpái] ‘hair’, but usually it becomes [ɛ] or [ə] when preceded by an alveolar consonant and followed by /i/, as in /ipuːrai/ [iˈpuːrɛi] ‘dress’ or /onai/ [ˈonːəi] ‘salt’. In rapid speech, it is not uncommon to find instances of fronted /a/ adjacent to [i].

## Tone and word stress

Northern Tepehuan is a tonal language with a single phonological tone: the high tone H. The alternative equipollent tonal system (H, L) proposed by Bascom (1959) is less economic as

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it requires labeling all syllables without high tone with a low tone, a representation indistinguishable from an absence of tone, but one that introduces more phonological features than necessary.

Northern Tepehuan could be better characterized as a language with a LOW TONAL DENSITY, as not all morphemes are lexically specified for tone and the H tone is culminative, *i.e.*, it occurs at most once in a phonological word (Kim 1997). The H tone only occurs in the first two syllables of a root and in some suffixes (Woo 1970). The contrasts between the words in (5) exemplify lexical tone.

| | | | | |
|---|---|---|---|---|
| (5) | a. | /á:gai/ | [ˈá:gai] | ‘he/she says’ |
| | b. | /a:gái/ | [ˈa:gái] | ‘he/she wants’ |
| | c. | /ó:ɟi/ | [ˈó:ji] | ‘needle’ |
| | d. | /o:ɟí/ | [ˈo:jí] | ‘he/she follows’ |
| | e. | /ɨ́:si/ | [ˈɨ́:ʃi] | ‘quantity’ |
| | f. | /ɨ:sí/ | [ˈɨ:ʃí] | ‘he/she stole it’ |

It should be noted that a high pitch is also a correlate of stress in toneless words, but stress and high pitch could not coincide when lexical H is present like in (5b, d, f). In cases where the stress and the lexical H are not located on the same syllable, the stress is still observable by vowel quality – see the vowels chart above – and intensity, and it is also identified by native speakers in the first syllable.

Stress is predictable from the size and the tonal pattern of the word. Stress falls on the first syllable in disyllabic words – regardless of lexical tone or vowel duration as shown in (4) and (5) above – and on the second syllable in phonologically toneless words with three or more syllables, as in /ipu:rai/ [iˈpu:rɛi] ‘dress’ or /nakasɨrai/ [naˈqasɨrɛi] ‘scorpion’. However, when a H tone is phonologically specified in the first syllable and the word has three or more syllables, the stress always falls in the H syllable, as in /ú:ridɨ/ [ˈú:ʌiɟɨ] ‘his maternal grandmother’, in contrast, for instance, with /i:bɨxi/ [i:ˈbɨxi] ‘he/she breathes’, and /ta:tasai/ [ta:ˈtasəi] ‘he/she splits’. In morphological processes adding syllables to disyllabic words, we observe that a high tone (H) in the first syllable produces initial stress, as in (6a), in trisyllabic words, whereas in words with tone on the second and toneless words the stress is displaced to the second syllable, as in (6b, c).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (6) | a. | /ú:ri/ | [ˈú:ʌi] | + | -/dɨ/ | → | /ú:ridɨ/ | [ˈú:ʌiɟɨ] ‘maternal grandmother.3S’ |
| | b. | /ba:bá/ | [ˈba:bá] | + | -/dɨ/ | → | /ba:bádɨ/ | [ba:ˈbáɖɨ] ‘maternal grandfather.3S’ |
| | c. | /usui/ | [ˈuswi] | + | -/dɨ/ | → | /usudɨ/ | [uˈsuɖɨ] ‘mouth.3S’ |

Figures 6 and 7 illustrate the typical f0 trajectory differences between the tonal pattern shown by a high tone on the first syllable – on the left – and a high tone on the second syllable – on the right – for two pairs of words that are segmentally identical.[9] Figure 8 illustrates the pitch pattern of words with more than two syllables with an expected stress pattern, whereas Figure 9 illustrates the pitch pattern of a trisyllabic word with initial stress.

[9] Sometimes a glottal closure occurs at utterance initial position in words beginning with a vowel. This glottal stop is not phonemic and might not occur.

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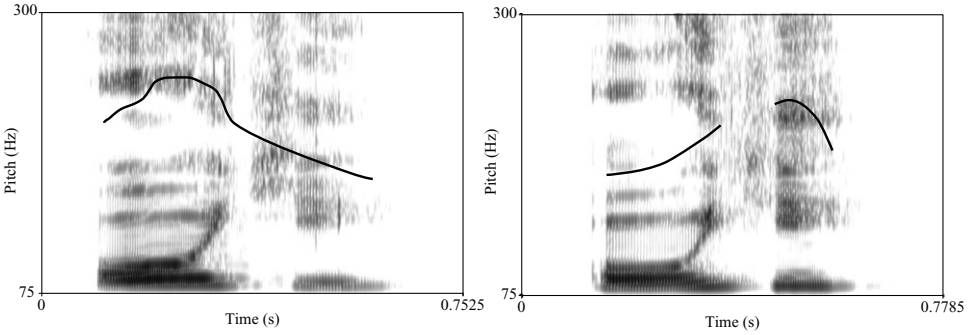


**Figure 6** FO difference in tonal patterns of /óːɟi/ 'needle' and /oːjí/ 'he/she follows'.

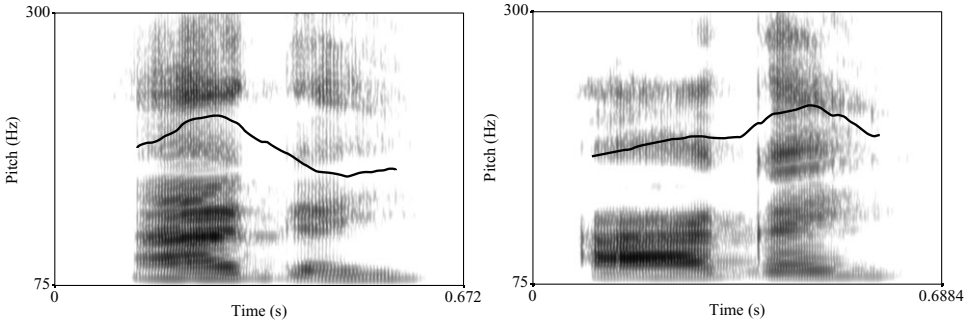


**Figure 7** FO difference in tonal patterns of /áːgai/ 'he/she says' and /aːgái/ 'he/she wants'.

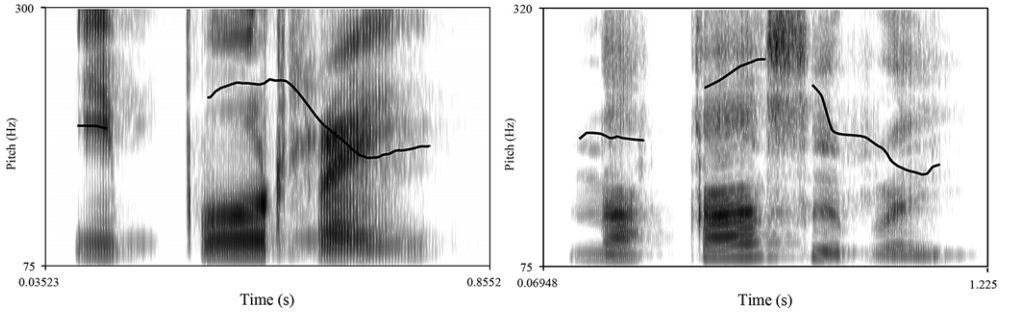


**Figure 8** FO patterns in words with stress on the second syllable /ipuːrai/ [iˈpuːrɛi] 'dress' and /nakasɨrai/ [naˈqasɨrɛi] 'scorpion'.

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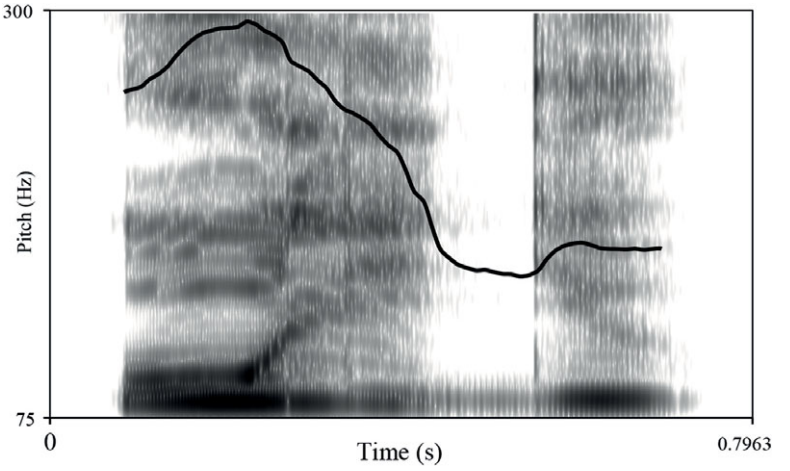


**Figure 9** F0 pattern in a word with stress on the first syllable /úːridɨ/ [ˈúːʌiɟɨ] 'his maternal grandmother'.

## Transcription of recorded passage: 'The North Wind and the Sun'

### Phonemic transcription

go: ɨβíːri imáːdɨ go: tasai | ginkokoːdaitadai siaːnkɨ́ bamioma ga tiáːnɨi ‖ βai áidipɨrɨ dáiβusai ɨmo imɨ́dami dai | gɨːinátogai ɨmo suáːi ‖ borɨ itɨidi ɨːgái | siaːnkɨ́ ipɨgioma iduniagi si go: imɨ́dami maidasa suáːdɨ | ɨgɨgai dai gɨr(tɨ)tiáːnɨdaːgí ‖ bódɨrɨ go: ɨβɨ́ːri kaβami ɨːβɨ́i | siɨ́ːsi istui | duː áidi bamioma kaβami ɨβɨgai | go: suáːi bamioma kɨi βiː go imɨ́dami ‖ bóːrɨ gokirɨ | go: ɨβíːri iːbimu ‖ gokirɨ go: tasai kaβami tóːndia | go: imɨ́dami óːtoma mai dai suáːdɨ ‖ bai pudukai go: ɨβɨ́ːri bai áː si go: tasɨgai dai ga tiáːnɨi

### Semi-narrow phonetic transcription

ⁿgɨˈβɨ́ːʌi ˈmáɖɨ goˈtasːí | gĩχoˈqóːdaicərə ˈʃaːŋkɨ́ βaˈmióŋga ˈtiáːni ‖ βɛˈáiɟipɨrə ˈdáiβusu moiˈmɨ́damɛ dɛːi | gɨːiˈɲátogə moˈswáːɟi̯ ‖ borˈiˈcɨiɟɨgɛ́ ‖ ˈʃaːŋkɨ́ː pɨˈgión iɟuˈɲáːgi ʃigoiˈmɨ́ːdami maiˈɟasa ˈswáːɖɨ | ɨˈgɨ́gədəgɨr tɨ tʰiáːnɨˈdaːgí ‖ ˈbóːdɨr goˈβɨːʌi qaˈβan ˈɨβí | ˈʃɨ́ːʃi ˈiʃcwí | ˈduː ˈáiːɟi baˈmió kaˈβán ɨˈβɨ́gai | goˈswáːɟi baˈmión kɨˈβi goiˈmɨ́dami ‖ bóːr goˈkir | goˈβɨ́ʌi iːˈbímu ‖ goːˈkírɨ goˈtasːí qaˈβán ˈtóːɲja | goiˈmɨ́dami ˈóːtom mái déi ˈswáːɖɨ ‖ bai puˈduːka gɨˈβɨ́ʌu | baˈjáːʃi gotaˈsɨ́gə dɛ́i gaˈtʰiáːnɨi

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## Morphemic gloss

Abbreviations used in the glosses: 1, 2, 3 = first, second, third person; CONJ = conjunction; DET = determiner; DUR = durative; IMPF = imperfective; IRR = irrealis; NOM = nominalizer; noSP = non-specific pronoun; PERF = perfective; PL = plural; REL = relative; RPAS = remote past; SG = singular.

go: ɨβíːri imáːdɨ go: tasai | gin-kokoːdai-tadai siaːnkɨ́ bamioma

DET wind together DET sun 3.PL-fighit.IMPF-RPAS who more

ga tiáːnɨi ‖ βai áidipɨrɨ dáiβusai ɨmo imɨ́-dami dai

noSP command.IMPF CONJ then pass.IMPF one walk-NOW CONJ

gɨː-iná-togai ɨmo suáːi ‖ borɨ itɨidi ɨːgái | siaːnkɨ́

2.SG-cover-DUR one blanket then say.PERF 3.SG who

ipɨgioma idunia-gi si go: imɨ́-dami mai-dasa

first make-IRR that DET WALK-NOM no-WEAR.IMPF

suáː-dɨ | ɨgɨgai dai gɨr-tiáːnɨ-daːgí ‖ bódɨrɨ go: ɨβíːri

blanket-3.SG indeed REL 1.PL-command-NOM then DET wind

kaβami ɨːβíɨ | siíːsi istui | duː áidi bamioma kaβami ɨβɨgai

intensely blow.PERF how can.PERF but then more intensely blow.IMPF

go: suáːi bamioma kɨi βiː go: imɨ́-dami ‖

DET blanket more well fit.PERF DET walk.NOM

bóːri gokirɨ | go: iːbimu ‖ gokirɨ go: tasai

then after DET get tired.PERF after DET sun

kaβami tóːndia | go: imɨ́dami óːtoma mai-dai suáː-ɨd ‖

intensely heat up.PERF DET walk.NOM then no-wear.PERF blanket-3.SG

bai pudukai go: ɨβíːri bai áː si go: tasɨgai dai ga tiáːnɨi

CONJ thus DET wind agree tell.PERF that DET sun REL noSP command.IMPF

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### English translation

The Wind and the Sun were arguing about who was in command. At that moment a walker passed by. He had a blanket covering him. Then he said, 'The first (one) of us to make the walker take off his blanket is the one in charge.' So, the Wind blew intensely as much as he could but the more he blew the tighter the blanket clung to the walker. After that, the Wind got tired. Then the Sun shined intensely, and the walker took off his blanket. Thus, the Wind admitted that the Sun was in charge.

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## Supplementary material

To view supplementary material for this article (including audio files to accompany the language examples), please visit https://doi.org/10.1017/S002510032100013X

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