

## A TENTATIVE PHONEMIC ANALYSIS OF NINGIL

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## 0 INTRODUCTION

The following material was collected during the time 4th October 1974 to 16th November 1974, at Yabiru, near Ningil in the Western Sepik District of Papua New Guinea.

The language is usually called Ningil because of its location, but surrounding languages are classified according to the word for 'no'. If this was the criterion for naming the Ningil language, it could be called the 'gal' language, although Laycock lists an alternate word 'ral' which we did not record.<sup>1</sup>

It is a Sepik language of Melanesian stock, the Torricelli Phylum and Wapei family.<sup>2</sup>

The language helpers we found most helpful were:

Jakob Tallis M.H.A. from Ningil  
Paskal from Yabiru  
Thomas, Kaspar and Juliana from Nukamp.

There are approximately 500 speakers in the four villages: Yabiru, Nucamp, Sepik and Ningil.

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1. Pacific Linguistics Series B. No. 25, Laycock D.C. p.9.  
2. Ibid. pp. 72,73.

## 1 DESCRIPTION OF PHONEMES

## Phoneme Chart

## 1.1.1 Consonants

	Bilabial	Alveolar	Velar	Glottal
Stops	p	t	k	ʔ
Fricatives	ɸ	s	g	
Nasals	m	n	ŋ	
Lateral		l		
Trill		r		
Semi-vowels	w	y		

## 1.1.2 Vowels

	Front	Central	Back
High	i	ɨ	u
Mid	ɛ	ʌ	(ɔ)*
Low		a	

\* See section 7.6 Unresolved Issues.

u typed as u in phonetic data, and • represents length. ~ means fluctuation.

## Description

## 1.2.1 Consonants

There are fourteen consonant phonemes in the Ningil language. They contrast in point of articulation as to labial, alveolar, velar and glottal, and in manner of articulation as to stops, fricatives, nasals, lateral, trill and semi-vowels. In point of articulation the

stops contrast as to labial, alveolar, velar and glottal. The fricatives and nasals contrast as to bilabial, alveolar and velar. The semi-vowels contrast as to bilabial and alveolar.

In manner of articulation, the labials contrast as to stop, fricative, nasal and semi-vowel. The alveolars contrast as to stop fricative, nasal, lateral, trill and semi-consonant. The velars contrast as to stop, fricative and nasal.

### 1.2.2 Vowels

There appear to be six vowel phonemes in the Ningil language. (\*See Unresolved Issues, section 7 for evidence of a seventh vowel.) They contrast in tongue position as to front, central and back, and high, mid and low. The front vowels contrast as to high and mid, and the central vowels as to high, mid and low.

The high vowels contrast as to front, central and back, and the mid vowels as to front and central (and possibly back).

## 2 PHONEME CONTRASTS

### 2.1 Consonants

/p/, /p̥/

The labial fricative /p̥/ contrast word initially, medially and finally

/paligi/	['palə'gi]	['p <sup>h</sup> alə'gi]	'give me'
/pʌligi/	['pʌlə'gi]	['bʌləgi]	'close'
/gap̥ri/	['gap̥ri]	[gap <sup>h</sup> ri]	'breadfruit'
/gap̥ri/	['gap̥ri]	['gab̥ri]	'brid'
/wʌp̥/	['wʌp̥]		'night'
/yʌp̥/	['yʌ <sup>p̥</sup> ]		'good (masc. plural)'
/yi yʌp̥/	['yi 'ypʌp̥]		'myself'

/t/, /s/

The alveolar stop /t/ and the alveolar grooved fricative /s/ contrast word initially, medially and finally.

/sag/	['sag]	'banana'
/tag/	['tag]	'ground, underneath'

/řaŋkitʌnik/	['řaŋkə'tʌnə <sup>k</sup> ]	['řaŋgə'tʌnə <sup>k</sup> ]	'feathers'
/wʌřigisʌnik/	['wʌřigə'sʌnə <sup>k</sup> ]		'type of grass cooked with taro'
/matiʔ/	['mati <sup>ə</sup> ʔ]	['mat <sup>h</sup> i <sup>ə</sup> ʔ]	'betelnut'
/misin/	['misi <sup>ə</sup> n]		'man'
/mit/	[mi <sup>t̚</sup> ]		'belonging to'
/mis/	['mis]		'cry (1st person plural, 3rd person plural masc.)'

/k/, /g/ /ʔ/

The voiceless velar stop /k/ and the (voiced) velar fricative /g/ contrast word initially, medially and finally. Both /k/ and /g/ contrast with the glottal stop /ʔ/ word finally. /ʔ/ also occurs word medially.

/kʌn/	['kʌn]	['gʌn]	'boy'
/gʌn/	['gʌn]		'brother'
/kig/	['ki <sup>ə</sup> g]	['k <sup>h</sup> i <sup>ə</sup> g]	'girl'
/gig/	['gi <sup>ə</sup> g]		'ancestor'
/pʌŋkʌlu/	['pʌŋkʌ'lu]	[p <sup>h</sup> ʌŋgʌ'lu]	'fingers (plural)'
/nigilu/	['nigə'lu]		'fish (plural)'
/nʌlukɪ/	['nʌlu'ki]		'epika'
/paligi/	['palə'gi]	[p <sup>h</sup> alə'gi]	'... give me'
/sig/	['siɡ]		'leaf'
/sik/	['si <sup>k</sup> ]		'spear'
/wisiʔ/	['wisi <sup>ə</sup> ʔ]		'sago beetle (plural)'
/gʌřeg/	[gʌ'řig]		'head (singular)'
/gʌrik/	[gʌ'ri <sup>k</sup> ]		'head (plural)'
/piliɡ/	[bə'liɡ]	[pə'liɡ]	'cheek (singular)'
/piliʔ/	[bə'li <sup>k</sup> ]	[pə'li <sup>k</sup> ]	'cheek (plural)'
/yig/	['yiɡ]		'type of bamboo (singular)'
/yik/	['yi <sup>k</sup> ]		'type of bamboo (plural)'

/lapiʔ/	[ˈlapi <sup>ə</sup> ʔ]			'rib, side'
/pik/	[ˈpi <sup>k</sup> ]			'yesterday'
/maʔ/	[ˈmaʔ]			'milk'
/mek/	[ˈmɛ <sup>k</sup> ]	[mɛ <sup>ik</sup> ]		'sap of breadfruit tree'
/yaʔɛy/	/yaʔay/	[ˈyaʔay]	[ˈyaʔɛy]	'father'
/naʔɛy/	/naʔay/	[ˈnaʔay]	[ˈnaʔɛy]	'mother'

The following three words need careful checking:

/lʌg/	[lʌg]	'half'
/lʌk/	[ˈlʌ <sup>k</sup> ]	'pangal'
/lʌʔ/	[lʌʔ]	'plenty', 'mark from a score'
		'scar'

/m/

The voiced labial nasal occurs word initially, medially and finally.

/maʔ/	[ˈmaʔ]	'milk'
/wim/	[ˈwɪ <sup>m</sup> ] [ˈwi <sup>ə</sup> m]	'two'
/nʌmɪk/	[ˈnʌmɛ <sup>k</sup> ]	'eye'

/n/, /ŋ/

The voiced alveolar nasal /n/ and the voiced velar nasal /ŋ/ contrast word finally /n/ also occurs word initially and medially. /n/ and /ŋ/ sometimes fluctuate word medially contiguous to velar stops.

/nɪn/	[ˈ-nɪn]	'(subject person) weave'
/nɪŋ/	[ˈnɪŋ]	'meat'
/gilʌn/	[ˈgilʌn]	'carry (one thing)'
/gilʌŋ/	[ˈgilʌŋ]	'carry (more than one thing)'
/gʌnpɪ/	[ˈgʌnpɪ] [ˈgʌnp <sup>h</sup> i]	'coconut'
/nini/	[ˈni <sup>ə</sup> ni]	'woman ancestor'
/pʌnkaɹ/	[ˈpʌnkaɹ] [p <sup>h</sup> ʌŋgaɹ]	'finger'

/w/, /p/

The voiced labial semi-vowel /w/ and the voiceless labial fricative /p/ contrast word initially and medially. They both occur word finally.

/waĩ/	['waĩ]	'house', tongue'
/paĩ/	['paĩ]    ['p <sup>h</sup> aĩ]	'coconut shoot'
/wʌp/	['wʌp]	'night'
/suwʌku/	['suwʌ'ku]    ['suwʌ'kɔw]	'smoke' (tobacco)
/yaw/	['yaw]	'leg'
/wʌlukaw/	['wʌlu'kaw]	'animal (plural)'

/ĩ/, /l/, /n/.

The voiced alveolar lateral /l/ contrasts with the voiced alveolar trill /ĩ/ word initially, medially and finally. /l/ also contrasts with the voiced alveolar nasal /n/ word initially, medially and finally.

/luwi/	['luwi]    ['luwe]	'frog'
/nuwɛy/	['nuwɛy]	'on top of'
/lʌ?/ *	['lʌ?]	'plenty', 'scar from a sore'
/na?/	['na?]	'teeth'
/rʌ?/	['rʌ?]	'stand up'
/niḡĩi/	['nə'ḡĩi]	
/niḡlay/	[nəḡ'lay]	'sky, cloud'
/gʌn/	['gʌn]	'brother'
/gʌl/	['gʌl]	
/gʌĩ/	['gʌĩ]	'I stand up'
/misiwʌniŋ/	['misi'wʌnəŋ]	'woman'
/gilʌŋ/	['gilʌŋ]	'carry (more than one thing)'

N.B. /l/ and /n/ sometimes fluctuate depending on the speaker

\* uncertain.

/y/

The voiced alveolars semi-vowel occurs word initially, medially and finally.

	['yi]	'I'
/yʌmɪn/	['yʌmən]	'good (singular masculine)'
/biyu/	['biyu]	'you (plural)'
/nɛyu/	['nɛ <sup>i</sup> yu]	'two leaf'
/bay/ /bɛy/,	['bay] ['bɛy]	'you (singular)'
/yaʔay/ /ya y/	['yaʔay] [yaʔɛy]	'father'

## 2.2 Vowels

/i/, /i̥/. /u/

The voiced high close central unrounded vocoid /i̥/ contrasts with both the voiced high close front unrounded vocoid /i/ and the voiced high open back rounded vocoid /u/ word medially. /i/ and /u/ also occur word finally. They may be lengthened slightly, when they occur in the word final position.

/sik/	['si <sup>ə</sup> k]	'hand'
/sɪk/	['sɪ <sup>k</sup> ]	'spear'
/yɪk/	['yɪ <sup>k</sup> ]	'type of bamboo'
/yuk/	['yu <sup>k</sup> ]	'tail of animal plural)'
/sɪg/	['sɪg]	'leaf'
/wig/	['wi <sup>ə</sup> g]	'type of bird'
/wɪg/	['wɪg]	'bush'
/mɪkɪĩ/	['mɛ <sup>h</sup> kɪĩ] [mɛ <sup>h</sup> kɪĩ]	'ear'
/luĩ puĩ/	['luĩ baĩ] [luĩ puĩ]	'sago leaf'
/yuĩ/	['yuĩ]	'tail of animal (singular)'
/lumbɪlu/	['lumbə <sup>h</sup> lu] ['lumpə <sup>h</sup> lu]	'go (3rd person plural feminine)'
/malu/	['malu] [malu]	'carrier for baby'
	['ɹi]	'i'
/ni/	['ni] ['ne]	'rain', 'water'

/i/, /ʌ/.

The voiced high close central unrounded vocoid /ɨ/ and the voiced mid open central unrounded vocoid /ʌ/ contrast word medially.

/sik/	['sɨ <sup>k</sup> ]	'spear'
/sʌʔ/	['sʌʔ]	'pig'
/gɨn/	['gɨn]	'I am coming'
/gʌn/	['gʌn]	'brother'
/lɨn/	['lɨn]	'they come (feminine)'
/l n/	['l n]*	'half'

/i/, /ɛ/.

The voiced high close front unrounded vocoid /i/ and the voiced mid open front unrounded vocoid /ɛ/ contrast word medially.

/sik/	['si <sup>ə</sup> k]	'hand'
/sek/	['se <sup>ik</sup> ]	'banana (plural)'
/mek/	['me <sup>ik</sup> ]	'sap of breadfruit tree'
/pik/	['pi <sup>ə</sup> k]	'yesterday'
/wig/	['wi <sup>ə</sup> g]	'type of bird'
/leɾ̃/	['le <sup>a</sup> ɾ̃]	'ton (tree)'
/lig/	['li <sup>ə</sup> g]	'type of breadfruit (kapiak)'

/ɛ/, /ʌ/, /a/.

The voiced mid open front unrounded vocoid /ɛ/ and the voiced mid open central unrounded vocoid /ʌ/ contrast word medially. /ʌ/ also contrasts word medially with the voiced low open central unrounded vocoid /a/.

/mek/	['me <sup>k</sup> ]	'sap of breadfruit tree'
/maʔ/	['maʔ]	'milk'
/waɾ̃/	['waɾ̃]	'house', 'tongue'
/wʌɾ̃/	['wʌɾ̃]	'3rd person singular (feminine) stand up'

uncertain



/wεĩ/	['wεĩ]	'kapur'
/lεĩ/	['lεĩ]    ['lε <sup>a</sup> ĩ]	'ton (tree)'
/laĩ/	['laĩ]	'knife'
/lΛĩ/	['lΛĩ]	'3rd person plural (feminine) stand up'
/sΛʔ/	['sΛʔ]	'pig'
/sag/	['sag]	'banana (singular)'
/sεk/	['sε <sup>ik</sup> ]    ['sε <sup>k</sup> ]	'banana (plural)'
/pΛʔ/	['pΛʔ]	'faeces'
/sΛʔ/	['sΛʔ]	'pig'
/sapΛʔ/	['sapΛʔ]	'type of bird'
/sΛʔpΛʔ/	['sΛʔpΛʔ]	'pig's dung'

### 3 PHONEME VARIANTS

Not all the fluctuations have been included in examples throughout the paper. This is because they seem to occur at some times with certain words, and not with others. We have recorded only those that we actually heard.

#### 3.1 Consonants

The voiceless belabial fricative /p/ has two allophones.

/p/    [p]    [p̥]    The voiceless bilabial aspirated stop [p̥] and the voiceless bilabial fricative [p̥] fluctuate freely word initially and medially.

/p̥/ fluctuates with /p/ finally when preceded by another /p̥/.

/p̥Λkim/    ['p̥Λkəm]    ['p̥<sup>h</sup>Λkəm]    ['p̥Λk̥<sup>h</sup>əm]    ['p̥<sup>h</sup>Λk̥<sup>h</sup>əm]    'full'  
/gΛnp̥Λp/    /gΛnp̥Λp/    ['gΛnp̥Λp̥]    ['gΛnp̥<sup>h</sup>Λ<sup>p</sup>]    'one' (masculine)

/p/    [p]

/t/    [t]

/k/    [k̥]

Each of the voiceless stopes /p̥/, /t̥/, /k̥/, has an unreleased allophone [p̥̚] [t̥̚] and [k̥̚] which occurs word finally.

/p/	[p]	[b]	The voiceless stops may be slightly voiced
/t/	[t]	[d]	initially and medially, especially fol-
	[t]	[t <sup>h</sup> ]	lowing nasals.
/k/	[k]	[g]	The alveolar and velar stops /t/ and /k/
	[k]	[k <sup>h</sup> ]	may be aspirated initially and medially.
/yʌp/		['yʌ <sup>p</sup> ]	'good (masculine plural)'
/pɪp/		['bɪ <sup>p</sup> ]    ['pɪ <sup>p</sup> ]	'white ant'
/pʌɾkʌn/		['pʌɾkʌn]    ['bʌɾgʌn]	'she'
/tapapi/		['tapa'pi]    ['daba'bi]	'small, few'
/mit/		['mi <sup>t</sup> ]	plural possessive
/pit/		['pɪ <sup>t</sup> ]    [p <sup>h</sup> ɪ <sup>t</sup> ]	Singular possessive
/matiʔ/		['mati <sup>ə</sup> ʔ]    ['mat <sup>h</sup> ɪ <sup>ə</sup> ʔ]	'betelnut'
/sik/		['sɪ <sup>k</sup> ]	'spear'
/mʌku/		['mʌku]	'cold'
/mʌŋku/		['mʌŋgu]	'1st person plural eat, '3rd person plural (masculine) eat
/pʌnkaɾ/		['pʌnkaɾ]    [pʌnəkaɾ]    [p <sup>h</sup> ʌnəkaɾ]	
		['pʌŋgaɾ]    [p <sup>h</sup> ʌŋgaɾ]	'finger'
/kʌn/		['kʌn]    [gʌn]	'boy'
/kig/		['ki <sup>ə</sup> g]    [k <sup>h</sup> ɪ <sup>ə</sup> g]	'girl'

### 3.2 Vowels

The voiced high close front unrounded vocoid /i/ has four allophones.

/i/	[i]	[ɨ]	The voiced high close front unrounded vocoid with an offglide of the voiced close central vocoid [i <sup>ə</sup> ] <u>may</u> fluctuate with the voiced high open front unrounded vocoid [ɨ] when followed by a consonant.
	[e]		The voiced high close front unrounded vocoid [i] sometimes fluctuates with the

voiced mid close front unrounded vocoid  
[e] word finally or preceding a /?/.

/puwi/	['pɔ <sup>u</sup> wi]	[pɔ <sup>u</sup> we]	'where'
	['ni]	['ne]	'water'
/yi/	['yi]		'I'
/meli?meli?/	['meli <sup>ə</sup> ?]	['meli?meli]	
	['mele?mele?]		'slowly'
/sik/	['si <sup>ək</sup> ]		'hand'
/pik/	['pi <sup>ək</sup> ]	['p <sup>h</sup> i <sup>ək</sup> ]	'yesterday'
/wim/	['wi <sup>əm</sup> ]	['wim]	'two masculine'
/taɾpin/	['taɾpi <sup>ən</sup> ]	['t <sup>h</sup> aɾp <sup>h</sup> i <sup>ən</sup> ]	'soft'
/lapi?/	['lapi <sup>ə</sup> ?]		'rib, side'
/nini/	['nini]	['ni <sup>ə</sup> ni]	'old woman'

The voiced high close central unrounded vocoid /ɨ/ has two allophones.

/ɨ/	[ə]	[ɨ]	The voiced mid close central unrounded vocoid [ə] occurs in unstressed syllables [ɨ] occurs elsewhere.
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/sɪk/	['sɪ <sup>k</sup> ]	'spear'	
/pɪp/	['pɪ <sup>p</sup> ]	['bɪ <sup>p</sup> ]	'white ant'
/wɪg/	['wɪg]		'bush'
/nʌmɪk/	['nʌm <sup>k</sup> ə]		'eye'
/mɪsɪwʌnɪ /	['mɪsɪ'wʌnəŋ]		'woman'
/yʌmɪʔʌm/	['yʌm <sup>k</sup> ə'ʔʌm]		'young man'

N.B. This analysis is extremely tentative. See also Unresolved Issues (Section 7.5).

The voiced mid open front unrounded vocoid /ɛ/ has three allophones. It has an offglide of voiced high close front unrounded vocoid [ɛ<sup>i</sup>] or the voiced low open central unrounded vocoid [ɛ<sup>q</sup>] and tends to fluctuate with these when followed by a consonant.

/sek/	['sɛ <sup>k</sup> ]	['sɛ <sup>ik</sup> ]	'banana (plural)'
/mek/	['mɛ <sup>k</sup> ]		'sap of breadfruit tree'
/lɛr̃/	['lɛr̃]	['lɛ <sup>a</sup> r̃]	'ton tree'
/wɛr̃/	['wɛr̃]		'type of spider'

N.B. /ɛ/ tends to fluctuate with /a/ when followed by a /y/

/pɛy/	/pay/	['pɛy]	['pay]	['bey]	
		['bay]			'you (singular)'
/nɪplay/	/nɪplɛy/	[nəp <sup>h</sup> 'lay]	[nəp <sup>h</sup> 'lay]		
		[nəp <sup>h</sup> 'lɛy]	[nəp <sup>h</sup> 'lɛy]		'cloud, sky', 'type of beetle'
/yaʔay/	/yaʔɛy/	['yaʔay]	['yaʔɛy]		'father'
/naʔay/	/naʔɛy/	['naʔay]	['naʔɛy]		'mother'
/naʔaybabi/	/naʔɛybabi/	['naʔaybabi]			
		['naɛy'babi]			'plenty'
/bayis/	/beyis/	['bay <sub>s</sub> ]	['bey <sub>s</sub> ]		'big'

For variation of the phoneme /u/ see Section 7.6 Unresolved Issues

#### 4 DISTRIBUTION OF PHONEMES

##### 4.1 Consonants

##### 4.1.1 Within the Syllable.

All consonants except /ŋ/ occur in the onset slot of CVC and CV syllables. All consonants occur in the coda slot of CVC syllables.

/pay/	/pɛy/	['pay]	['pɛy]	
		['bay]	['bey]	'you (singular)'
/yi yʌp/		['yi 'yʌp]		'myself'
/nuwɛy/		['nuwɛy]		'on top of'
/tapapi/		['tapa'pi]	['daba'bi]	'small, few'
/mɛliʔmɛliʔ/		['mɛliʔmɛliʔ]	['mɛli <sup>ə</sup> ʔmɛli <sup>ə</sup> ʔ]	
		['mɛleʔmɛliʔ]		'slowly'
/mɪsiwʌnɪŋ/		['mɪsi'wʌnɪŋ/		'woman'
/sɪk/		['sɪ <sup>k</sup> ]		'spear'

/luĩ puĩ/	['luĩ 'buĩ]    ['luĩ 'puĩ]	'sago leaf'
/kig/	['ki <sup>ə</sup> g]    [k <sup>h</sup> i <sup>ə</sup> g]	'girl'
/mitig/	['mə'tig]    [mə't <sup>h</sup> ig]	'wife'
/yaʔay/	/yaʔey/    ['yaʔay]    ['yaʔey]	'father'
/yʌp/	['yʌ <sup>p</sup> ]	'good (masculine) plural'
/mit/	['mi <sup>t</sup> ]	'possessive (plural)'
/paligi/	['palə'gi]    ['p <sup>h</sup> alə'gi]	'subject person give me'
/gʌl/	['gʌl]	'no'
/mʌku/	['mʌku]	'cold'
/paĩ/	['paĩ]    ['p <sup>h</sup> aĩ]	'coconut shoot'
/nam/	['nam]	'raw'
/mis/	['mis]	'1st person plural, 3rd person plural (masculine) cry'
/minik/	['mi <sup>ə</sup> nə <sup>k</sup> ]	'true'
/kʌn/	['kʌn]    ['gʌn]	'boy'
/yi ʀʌʔ/	['yi ʀʌʔ]	'I stand up'
/gʌpĩi/	['gʌpĩi]    ['gʌbĩi]	'mouth'
/yaw/	['yaw]	'leg'
/piʔagiginti/	[bə'ʔagə'ginti]	'I will build'

#### 4.1.2 Across Syllable Boundaries

There are no geminate consonant clusters

/p/ occurs first in cluster with /r/ and /l/

/gʌpĩi/	['gʌpĩi]    ['gʌbĩi]	'mouth'
/sikʌm 'kʌnʌʔ kuplʌn/		
	['sikʌm 'kʌnʌʔ 'kɔplʌn]	
	['sikʌm 'gʌnʌʔ 'gɔplʌn]	'six'

/t/ occurs first in cluster with /w/.

/patwa /	['patwaŋ]    ['p <sup>h</sup> at <sup>h</sup> waŋ]	'blow'
----------	--	--------

/k/ occurs first in cluster with /r/, /l/ and /w/.

/nikĩri/	['nikĩri]	
/wiklʌg/	['wiklʌg]	'bamboo'
/gimikwag/	['gimək'wag]	'I am falling'

/ʔ/ occurs first in cluster with /t/ and /k/.

/tuʔtuʔ/	['tuʔtuʔ]	['t <sup>h</sup> uʔt <sup>h</sup> uʔ]	'talk', 'custom'
/sikʌm kʌnʌʔkuplʌn/	['sikʌm 'kʌnʌʔkɔplʌn]		
	['sik <sup>h</sup> ʌm 'gʌnʌʔgɔblʌn]		

/p/ occurs first in cluster with /n/, /l/ and /r/

/wʌpɲimin/	['wʌpɲə'min]	'morning'
/niplay/	['nəp'lay]	'sky, cloud'
/wuplig/	['wupli <sup>ə</sup> g]	'sun'
/niɸĩri/	[nəp'ĩri]	'star'
/gupĩri/	['gupri]	

/g/ occurs first in cluster with /l/ and /y/

/tiglig/	['tiglɛg]	'hill'
/giɣyam/	['giɣyam]	'I know', 'I perceive'

/m/ occurs first in cluster with /p/, /t/ and /n/

/tʌmpay yʌp/	/tʌmpɛy yʌp/	['tʌmpay 'yʌp]	
		['tʌmbay yʌp]	['t <sup>h</sup> ʌmpɛy 'yʌp]
		['t <sup>h</sup> ʌmbɛy 'yʌp]	'yourself'
/nɪmpʌĩ/	['nɪmpʌĩ]	['nɪmbʌĩ]	'pitpit'
/namtak/	['namtʰa <sup>k</sup> ]		'swallow'
/gʌmti/	['gʌmti]		'I cry'
/gʌmni/	['gʌmni]		'sago roofing'

/n/ occurs first in cluster with /t/, /k/ and /p/.

/kintuʔʌl/	['k <sub>1</sub> ntuʔʌl]	'stream'
/pʌnkalu/	['pʌnka'lu]	['pʌŋka'lu]
	['p <sup>h</sup> ʌnka'lu]	['p <sup>h</sup> ʌŋga'lu]
		'fingers (plural)'
/gʌnpʌp/	['gʌnpʌp]	['gʌnp <sup>h</sup> ʌ <sup>p</sup> ]
		'one'

/gʌŋpi/	['gʌŋpi]	['gʌŋp <sup>h</sup> i]	'coconut'
* /mʌŋpaĩ/	['mʌŋpaĩ]	['mʌŋpaĩ]	'lizard'

/n/ occurs first in cluster with /k/.

/wiŋkinik/	['wiŋk <sub>i</sub> nə <sup>k</sup> ]	['wiŋg <sub>i</sub> nə <sup>k</sup> ]	'elbow (plural)'
/puŋkʌnik/	['pɔŋkʌnə <sup>k</sup> ]	['bɔŋkʌnə <sup>k</sup> ]	'wrist'

/l/ occurs first in cluster with /p/, /t/. /k/, /p/, /g/, /m/ and /w/

/gʌlpku/	['gʌlpa'ku]	['gʌlba'ku]	'mumut'
/walpin/	['walpi <sup>ə</sup> n]	['walbi <sup>ə</sup> n]	'drip'
/liŋiltɛki/	['liŋəl'tɛ'ki]		'jaw, chin'
* /matilk(w)uk/	['mat <sub>i</sub> l'k(w)ɔ <sup>k</sup> ]		
	['mat <sup>h</sup> <sub>i</sub> l'k(w)ɔ <sup>k</sup> ]		'edible leaf (type)'
/walkikal/	['walk <sub>i</sub> 'kal]		'chicken (plura;)'
/wʌʔʌlpi/	['wʌʔlpi]		'drum', 'kundu'
/lupalgu/	['lupal'go]		'stump of a tree (plural)'
/sʌlmanig/	['sʌlma'nig]		'sand, beach'
/nalwuwaw/	['nalwu'waw]		'3rd person singular (masculine) move'

/ĩ/ occurs first in cluster with /k/. /p/, /s/ and /w/

/pʌĩkʌn/	['pʌĩkʌn]	['bʌĩgʌn]	'she'
/taĩpin/	['taĩpi <sup>ə</sup> n]	['t <sup>h</sup> arp <sup>h</sup> i <sup>ə</sup> n]	'soft'
/naĩsuĩsuĩ/	['naĩsiĩ'suĩ]		'move, flow (water)'
/wuĩwatuwaŋ/	['wuĩ'watu'waŋ]		'3rd person singular (feminine) chase'

/y/ occurs first in cluster with /p/, /r/, /g/

/naʔaypʌpi/	/naʔɛypʌpi/	[na'ʔaybʌ'bi]	
	[na'ɛypʌ'pi]	['naybʌ'bi]	['nɛypʌ'pi] 'many plenty'
/yaʔayĩram/	/yaʔɛyĩram/	['yaʔayĩram]	
	['yaʔɛyĩram]		'father (plural)'

\* Uncertain

/w/ occurs first in cluster with /k/

/sawkɛy/      ['sawkɛy]      ['saw<sup>h</sup>l<sup>h</sup>ɛy]      'smoke (tobacco)'

Vowels

#### 4.2.1 Within the syllable

All vowels occur in peak slots of CV and CVC syllables

/sik/	['si <sup>k</sup> ]	'spear'
/wig/	['wig]	'bush'
/sik/	['si <sup>ə</sup> k]	'hand'
/pik/	['pi <sup>ə</sup> k]	'yesterday'
/lu <sup>h</sup> pu <sup>h</sup> /	['lu <sup>h</sup> 'pu <sup>h</sup> ]      ['lu <sup>h</sup> bu <sup>h</sup> ]	'sago palm leaf'
/luk/	['lu <sup>ə</sup> k]      ['lɔ <sup>ə</sup> k]	'sago (plural)'
/sek/	['se <sup>ik</sup> ['se <sup>k</sup>	'bananas (plural)'
/mek/	['me <sup>ik</sup> ['me <sup>k</sup>	'sap of breadfruit tree'
/sʌʔ/	['sʌʔ]	'pig'
/wʌ <sup>h</sup> /	['wʌ <sup>h</sup> ]	'3rd person singular (feminine) stand up'
/sag/	['sag]	'banana (singular)'
/maʔ/	['maʔ]	'milk'
/mitig/	[mə'tig]      ['mə't <sup>h</sup> ig]	'wife'
/paligi/	['palə'gi]      ['p <sup>h</sup> alə'gi]	'(subject person) ... give me'
/yi/	['yi]	'I',
/yaʔɛy/      /yaʔay/	['yaʔɛy]      ['yaʔay]	'father'
/mʌku/	['mʌku]      ['mʌk <sup>h</sup> u]	'cold'
/nuwɛy/	['nuwɛy]	'on top of'
/mɛliʔmɛliʔ/	['mɛli <sup>ə</sup> ʔmɛli <sup>ə</sup> ʔ]	
	['mɛleʔ'mɛleʔ]      ['mɛliʔ'mɛliʔ]	'slowly'
/bɛyis/      /bayis/	['bɛyis]      ['bayis]	'big'
/nʌm <sup>k</sup> ik/	['nʌ <sup>k</sup> ]	'eye'
/pʌkim/	['pʌk <sup>h</sup> m]      ['p <sup>h</sup> ʌk <sup>h</sup> m]	'full'



#### 4.2.2 Across syllable boundaries

There are no vowel clusters. (See Alternative Analysis, Section 8.2.

### 5 SUPRASEGMENTAL ITEMS

#### 5.1 Stress

Stress tends to occur on the first and every alternate syllable

/sɪg/	['sɪg]		'leaf'
/sag/	['sag]		'banana'
/nʌmɪk/	['nʌmɪ <sup>k</sup> ]		'eye'
/gʌnpɪ/	['gʌnpɪ]	['gʌnp <sup>h</sup> i]	'coconut'
/pəlɪgi/	['pəlɪ'gi]	['p <sup>h</sup> əlɪ'gi]	'(subject person) give me'
/tapapi/	['daba'bi]	['taba'bi]	'small, few'
/misiwʌnɪŋ]	['misi'wʌnɪŋ]		'woman'
/lɪgɪltɛki/	['lɪgɪl'tɛ <sup>i</sup> ki]		'jaw, chin'

There are a few two syllable words where the stress seems to be on the second syllable.

/gʌʔɪg/	[gʌ'ʔɪg]		'head'
/pɪlɪg/	[pɪ'ɪg]	[bɐ'ɪg]	'cheek'
/nɪpʔi/	[nɪp'ʔi]		'star'
/nɪplay/	[nɪp'lay]		'sky, cloud'

When there is a prefix added, stress may be on the second syllable.

/pəwɛgʌʔ/	[pə'wɛgʌʔ]	[p <sup>h</sup> ə'wɛ <sup>i</sup> gʌʔ]	'tame'
		(possessive prefix 'pə')	

### 6 MORPHOPHONEMIC RULES

Nasals tend to assimilate to the same point of articulation as the following stop. However, there appears to be some fluctuation and some exceptions.

/lumpɪlu/	['lumpə'lu]	['lumbə'lu]	'3rd person plural (feminine) go'
/yi gampin/	['yi 'gamb(ɪ)n]	['yi 'gamp(ɪ)n]	'1st person singular come.
/gʌŋku/	['gʌŋku]	['gʌŋgu]	'1st person singular eat'
/namɪŋkʌĩ/	['naməŋ'kʌĩ]	['naməŋ'gʌĩ]	'ant'
/yi ɡim(ŋkɪta 'ti/	['yi'gə'm(ŋkɪta'ti]		'1st person singular
/g(ŋkɪĩ/	['g(ŋgə'ĩ]		'centipede'
/řaŋkitanik/	['řaŋgə'tanə <sup>k</sup> ]		
	['řaŋkə't <sup>h</sup> anə <sup>k</sup> ]		'feather (plural)'
/wiŋkinik/	['w(ŋg)nə <sup>k</sup> ]		'elbow (plural)'
/wupʌm lʌnkʌm/	['wupʌm 'lʌnkʌm]		'very dark'
/pʌnkaĩ/	['pʌnkaĩ]	['pʌnəkaĩ]	
	['p <sup>h</sup> ʌŋkaĩ]	['p <sup>h</sup> ʌŋgaĩ]	'finger'
/mʌnpaĩ/	['mʌnpaĩ]	['mʌnpaĩ]	'lizard'

## 7 UNRESOLVED ISSUES

7.1 The following words need checking to see whether or not they are exactly the same.

/naʔay/	/naʔey/	['naʔay]	['naʔey]	'mother'
/naʔay/ etc.				'sit'
/naʔay/ etc. is a shortened form of:				
/namʌʔay/	/namʌʔey/	['namʌʔay]		
		['namʌʔey]		'to be'

7.2 The following words need further checking for possible contrasts

/wʌlik/	['wʌlɐ <sup>k</sup> ]	'fire'
/wʌlik/	['wʌlɐ <sup>k</sup> ]	'nail of finger'
/gʌl/	['gʌl]	'no'
/gʌl/	['gʌl]    ['gʌ <sup>v</sup> l]	'type of bamboo'
/yi nagʌl/	['yi 'nagʌl]	'I'm afraid'

Is the following one or two syllables?

['liaĩ] or ['liyaĩ] or ['li<sup>a</sup>ĩ] 'ginger'  
 /waysan/ ['waysan] 'taro' may be influenced by pidgin.

7.3 We could not find any real contrasts between /p/ and /ʔ/, or between /t/ and /ʔ/.

7.4 There are no unambiguous CC patterns. Yet there are certain words which do not fit into the CV or CVC patterns.

['saŋgrʌŋ]	'type of banana (singular)'
['saŋgrʌŋ <sup>k</sup> ]	'type of banana (plural)'
['nalʌŋglʌl]	'dry'
['plʌkĩi]	'type of bird'
['siyu'wʌnəŋ]	'girl'
['wipə'lʌŋ <sup>k</sup> ]	'(small) banana (plural)'
['bays] ['beys]	'big'
[sawkaŋ <sup>k</sup> ]	'smoke (tobacco)'
['liklə'yiŋ <sup>k</sup> ]	'type of bird (plural)'
[bi'biŋ <sup>k</sup> ]	'white ant (plural)'
['su <sup>ə</sup> laŋ <sup>k</sup> ]	'poisonous snake (plural)'
['yatʌ'nəŋ <sup>k</sup> ]	'fly (plural)'
['mat <sub>1</sub> l'kwə <sup>k</sup> ]	'edible leaf'
[wumiŋ]	'type of bird'

7.5 We are still uncertain as to whether [ə] really occurs in some words or whether it is merely a transition across syllable boundaries. e.g. /pankaĩ/ ['panəkaĩ] [paŋgaĩ]

It could be that other phonemes tend to become [ə] in fast speech. We are still doubtful as to whether /i/ does become [ə] in all unstressed syllables or whether it fluctuates. Further checking is necessary.

[bi'biŋ <sup>k</sup> ]	'white ant'
['yatʌ'əŋ]	'fly'
[pʌkəm] [pʌkim]	'full'

['lo <sup>u</sup> ]	['lu]	'tree'
['paño]	['pañow]	'dog (plural)'
['lipow]		'lips (plural)'
['luwow]		'frog (plural)'
['suwou]		'thigh'

## 8 ALTERNATIVE ANALYSIS

8.1 The /a/ and /ʌ/ distinction could alternatively be interpreted as length. However, we have little evidence of length elsewhere.

/lumpilu/	['lumpə'lu]	['lumbə'lu]	'3rd person plural (feminine) go'
/malu/	['malu]	['malu]	'carrier for baby'

These are about the only two examples we have. We have not found contrastive length elsewhere.

The second reason why we chose the lower/higher distinction is because it occurs in related languages, whereas length has not been found.

8.2 /y/ and /w/ may alternatively be interpreted as /i/ and /u/ respectively.

/patwaŋ/	/patuaŋ/	['patwaŋ]	[p <sup>h</sup> at <sup>h</sup> waŋ]		
	['patuaŋ]	[p <sup>h</sup> at <sup>h</sup> uaŋ]		'blow'	
/yaw/	/yau/	['yaw]	['yɔw]	['yau]	'leg'
* (check)	[liaŋ]	['li <sup>a</sup> ŋ]	['liyaŋ]		'ginger'
/pay/	/pey/	/pai/	/pei/	['pay]	['pey]
	['pai]	['pey]	['bay]	['bɛy]	
	['bai]	['bei]			'you (singular)'

## 9 ORTHOGRAPHY

Phoneme	Allophones	Orthographic Symbol
/p/	[p] [b] [ <sup>p</sup> ]	p
/t/	[t] [t <sup>h</sup> ] [d] [t̥]	t
/k/	[k] [k <sup>h</sup> ] [g] [k̥]	k
/ʔ/	[ʔ]	
/p̥/	[p̥] [p <sup>h</sup> ]	f
	[s]	s
/g/	[g]	h
/m/	[m]	m
/n/	[n]	n
/ŋ/	[ŋ]	ng
/l/	[l]	l
/r̃/	[r̃]	r
/w/	[w]	w
	[y]	y
/i/	[e] [i] [i <sup>ə</sup> ] [ɪ]	i
/ĩ/	[ĩ] [ə]	ii
/u/ /ɔ/	[u] [u <sup>ə</sup> ] See section	u
8 Unresolved Issues		
/ɛ/	[ɛ] [ɛ <sup>i</sup> ] [ɛ <sup>a</sup> ]	e
/ʌ/	[a]	a
	[a]	<u>a</u>

10 SAMPLE TEXT

Phonetic:        yi gə'gəni'pu 'tutu 'mɪ<sup>t</sup> mi'uaʔay'ɾam 'mətə'ʔɔw  
                 'mɪ<sup>t</sup> 'sɛ<sup>i</sup>ki.

Phonemic:       yi kɪɡɪnɪpu    tutu mɪt miyaʔayɾam    mɪtɪʔu  
                 mɪt    sɛki.

Orthographic:   yi kiihiinipu tutu miit miya'ayram miitii'u  
                 miit seki.

Free English:    I want to tell you a story about our ancestors.

Phonetic:        'pɪna'neyɿl    bə'ɾɿl    lɿ'la<sup>p</sup>.

Phonemic:       pɪnaɛyɿl        pɪɾɿl        lilap/

Orthographic:   finaneyɿl       Piiral    lilap.

Free English:    A long time ago they all used to fight.