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**The phonology of Proto-Central Chadic : the reconstruction of the phonology and lexicon of Proto-Central Chadic, and the linguistic history of the Central Chadic languages**

Gravina, R.C.

**Citation**

Gravina, R. C. (2014, December 16). *The phonology of Proto-Central Chadic : the reconstruction of the phonology and lexicon of Proto-Central Chadic, and the linguistic history of the Central Chadic languages*. LOT dissertation series. Retrieved from <https://hdl.handle.net/1887/30139>

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**Author:** Gravina, Richard

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**Issue Date:** 2014-12-16

## Section III - PHONOLOGICAL RECONSTRUCTION

In the previous section we looked at the phonological characteristics of each of the Central Chadic languages for which data or an analysis is available. We also reconstructed the key elements of the phonological system for the proto-language of each group – vowels, prosodies and labialized and palatalized consonants – as far as is possible. (No attempt has been made to reconstruct tone or stress.) In this section we will go the next step, and reconstruct the phonological inventory of Proto-Central Chadic.

In chapter 10 we will reconstruct the consonantal inventory, giving evidence for the reconstruction of each phoneme, and a rough history of the phoneme through to the present-day languages. This reconstruction will be compared with Newman's Proto-Chadic reconstruction (Newman 1977a).

In chapter 11 we will look at the status of prosodies in Proto-Central Chadic. We will show that the palatalization prosody can be reconstructed, but that the vowel labialization prosody and non-velar labialized consonants are both innovations.

In chapter 12 we will propose that Proto-Central Chadic had three vowel phonemes, and give evidence for their reconstructions.

Chapter 13 gives a short summary of the phonological system of Proto-Central Chadic, and present a possible scenario for the history of Central Chadic covering people movements, linguistic developments and language contact.



## 10 Proto-Central Chadic Consonants

### 10.1 Introduction

This chapter presents the reconstruction of the consonantal system of Proto-Central Chadic. For each phoneme we will give data to justify the reconstruction, along with a description of its distribution in Proto-Central Chadic.

The consonantal system of Proto-Central Chadic is as follows:

	Labial	Alveolar	Laminal	Velar	Labialized Velar
<b>Plosive</b>	p	t	ts	k	k <sup>w</sup>
	b	d	dz	g	g <sup>w</sup>
<b>Implosive</b>	ɓ	ɗ			
<b>Fricative</b>		ɬ	s	h	h <sup>w</sup>
	v	ʒ	z	ɣ	ɣ <sup>w</sup>
<b>Nasal</b>	m	n			
<b>Pre-nasalized</b>	<sup>m</sup> b	<sup>n</sup> d	<sup>n</sup> dz	( <sup>ŋ</sup> g)	( <sup>ŋ</sup> g <sup>w</sup> )
<b>Liquid</b>		r			
<b>Approximant</b>			j		w

Table 111 - Proto-Central Chadic consonants

The label 'laminal' is used, following Roberts (2001) to denote the set of sibilant-based consonants. These consonants function as a distinct grouping in almost all Central Chadic languages.

The phonemes in parentheses are those which are innovations in Central Chadic, but where it is not clear whether they originated in Proto-Central Chadic or shortly afterwards.

Voiced plosives, including pre-nasalized plosives, are not found in word-final position.

#### 10.1.1 Nasals and Pre-nasalized Plosives

There were only two nasals in Proto-Central Chadic, \*m and \*n. Indeed, in the majority of the present-day languages, there are only these two nasals. In a number of cases /ŋ/ has been added, and in some of these languages there is

also the labialized equivalent /ŋ<sup>w</sup>/. There are no known cases of a truly phonemic palatal nasal, though some languages permit the palatalization of /n/.

For the pre-nasalized consonants, \*<sup>m</sup>b and \*<sup>n</sup>d are well-attested. The phoneme \*<sup>n</sup>dz is present in only one root – \*<sup>n</sup>dzah ‘to sit’ – though the root is extremely well-attested. The other two potential pre-nasalized consonants \*<sup>ŋ</sup>g and \*<sup>ŋ</sup>g<sup>w</sup> are difficult to establish for Proto-Central Chadic, and may or may not have existed as phonemes. They are included in the table within parentheses.

### 10.1.2 Implosives

Proto-Central Chadic had two glottalised phonemes, \*b and \*d. There is no evidence for a glottalised consonant in the laminal set. There are instances of glottalised consonants around the palatal or velar positions in the data, but these are innovations, and there were no palatal or velar implosives in Proto-Central Chadic.

(123)	Malgwa	*hikin→hikiri→kidɪ→kidʰi→kigʰi	‘three’
	Tera	*dɪt→ɟɪti→ɟət	‘bone’
	Bana	*h <sup>w</sup> idɪt <sup>y</sup> →ʔiɪa→ʔiɪa	‘to cough’
	Mser	*ɟikin <sup>y</sup> →nk’in→nk’ir	‘claw’

## 10.2 Labial Consonants

### 10.2.1 \*p

One major issue in reconstructing the Proto-Central Chadic consonant inventory is deciding whether there were two phonemes \*f and \*p, or whether [f] and [p] were allophones. The position most consistent with the data is that in Proto-Chadic there was only \*p, and in Proto-Central Chadic there was still the one phoneme, but the phoneme had two allophones [f] and [p]. In the proto-languages of the groups within Central Chadic, /f/ and /p/ became contrastive, as they are in almost all of the present-day Central Chadic languages.

Proto-Central Chadic \*p has two allophones, [p] occurring initially and medially, and [f] occurring finally. There is one major exception to this, the root \*wɪpad ‘four’, where /f/ is attested in all but a few languages.

At the level of the proto-languages of the groups, in most cases it is possible to find examples of contrast between /f/ and /p/, though there is still a strong

tendency towards the distribution described for Proto-Central Chadic. At the level of the individual languages the contrast can be seen clearly.

The split of \*p into /p/ and /f/ took place in each group separately, as can be seen from the differences in the distribution of these two phonemes across the groups. However the conditions for the split were already present in Proto-Central Chadic, and the apparent presence of [f] in medial position in the root for 'four', may imply that the sounds were already being phonemicised.

Newman (1977a) analyses \*p and \*f as being distinct phonemes in Proto-Chadic. He notes that this distinction has been lost in many present-day languages. Whilst outside the scope of this study, it is interesting to note that there is no \*p/\*f contrast in other branches of Afroasiatic, such as Berber (Kossmann 1999) and Semitic (Weninger 2011). If this lack of contrast in Proto-Central Chadic is also the case in Proto-Chadic, this is an important consideration in the reconstruction of Proto-Afroasiatic.

We will distinguish \*p and \*f in the reconstructions of the proto-languages of the Central Chadic groups, since these two phonemes can be shown to contrast at this level in most groups, and in order to follow the history of these sounds through to the present day languages.

In the following sections we will give the evidence for the reconstruction of \*p in different positions in the word. The evidence is presented in the form of the reconstructed roots for the proto-languages of the groups. These languages are displayed according to their genetic groupings, with the first column covering the North and Hurza sub-branches, and the second and third columns covering the South sub-branch. The full data can be viewed at <http://centralchadic.webonary.org/>.

So far it has not been possible to identify regular sound laws to determine when individual languages or groups use /p/ or /f/ as reflexes of \*p.

## 10.2.1.1 Word-initial

(124) \*p<sub>i</sub>ra 'to untie'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	p <sub>i</sub> ri	<b>Margi</b>	p <sub>i</sub> li	<b>Kotoko Island</b>	felu
<b>Daba</b>	p <sub>i</sub> l	<b>Mandara</b>	p <sub>i</sub> la	<b>Kotoko North</b>	fal
<b>Mafa</b>	p <sub>i</sub> r	<b>Mofu</b>	p <sub>i</sub> l	<b>Kotoko Centre</b>	v <sub>i</sub> l
<b>Tera</b>	p <sub>i</sub> ri	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	p <sub>i</sub> r	<b>Lamang</b>	p <sub>i</sub> l	<b>Musgum</b>	
<b>Hurza</b>	para	<b>Higi</b>	p <sub>i</sub> l	<b>Gidar</b>	ippila

(125) \*p<sub>i</sub>t<sub>s</sub>i 'sun'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	fi <sub>t</sub> i	<b>Margi</b>	p <sub>i</sub> t <sub>s</sub> i	<b>Kotoko Island</b>	
<b>Daba</b>	p <sub>i</sub> t <sub>s</sub> y	<b>Mandara</b>	f <sub>a</sub> t <sub>s</sub> i <sub>y</sub>	<b>Kotoko North</b>	
<b>Mafa</b>	p <sub>a</sub> t <sub>s</sub>	<b>Mofu</b>	p <sub>a</sub> t <sub>s</sub>	<b>Kotoko Centre</b>	
<b>Tera</b>	f <sub>i</sub> d <sub>a</sub>	<b>Maroua</b>	p <sub>a</sub> s	<b>Kotoko South</b>	f <sub>a</sub> t <sub>s</sub> a
<b>Sukur</b>	p <sub>i</sub> s	<b>Lamang</b>	f <sub>i</sub> t <sub>i</sub>	<b>Musgum</b>	f <sub>u</sub> t <sub>i</sub> j
<b>Hurza</b>	p <sub>a</sub> t <sub>s</sub>	<b>Higi</b>	v <sub>i</sub> t <sub>s</sub> i	<b>Gidar</b>	

(126) \*p<sub>i</sub>ri 'butterfly'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	p <sub>i</sub> ri	<b>Margi</b>	p <sub>i</sub> r	<b>Kotoko Island</b>	
<b>Daba</b>	p <sub>u</sub> la	<b>Mandara</b>	p <sub>a</sub> la	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	p <sub>i</sub> la	<b>Kotoko Centre</b>	
<b>Tera</b>	p <sub>i</sub> r	<b>Maroua</b>	p <sub>i</sub> la	<b>Kotoko South</b>	
<b>Sukur</b>	p <sub>i</sub> r	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	p <sub>a</sub> la <sup>y</sup> , p <sub>i</sub> ra	<b>Higi</b>	p <sub>i</sub> li	<b>Gidar</b>	p <sub>a</sub> la <sup>w</sup>

## 10.2.1.2 Word-medial

(127) \*ɣ<sup>w</sup>i<sub>p</sub>a 'flour'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	h <sup>w</sup> i <sub>p</sub> i	<b>Margi</b>	i <sub>p</sub> <sup>w</sup> i	<b>Kotoko Island</b>	
<b>Daba</b>	ŋ <sub>f</sub> a	<b>Mandara</b>	k <sup>w</sup> i <sub>p</sub> i	<b>Kotoko North</b>	
<b>Mafa</b>	g <sup>w</sup> i <sub>f</sub> a	<b>Mofu</b>	g <sup>w</sup> i <sub>p</sub> a	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	h <sub>a</sub> p <sub>a</sub>	<b>Kotoko South</b>	
<b>Sukur</b>	p <sup>w</sup> <sub>a</sub>	<b>Lamang</b>	h <sup>w</sup> i <sub>p</sub> a <sup>w</sup>	<b>Musgum</b>	
<b>Hurza</b>	hi <sup>m</sup> b <sub>i</sub> g <sub>a</sub>	<b>Higi</b>	ɣ <sup>w</sup> i <sub>p</sub> i	<b>Gidar</b>	g <sub>i</sub> p <sub>a</sub>



(128) \*hipaɬ<sup>y</sup> 'shoulder'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	apaɬa	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	aɬapi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	paɬpaɬ <sup>y</sup>	<b>Mofu</b>	hipaɬ <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	papaɬ <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	taɬaɬ	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	paɬpaɬ <sup>y</sup>	<b>Higi</b>	baɬa	<b>Gidar</b>	

(129) \*wipad<sup>y</sup> 'four'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	f <sup>w</sup> ad	<b>Margi</b>	f <sup>w</sup> adu	<b>Kotoko Island</b>	
<b>Daba</b>	fad <sup>w</sup>	<b>Mandara</b>	ufadɪ	<b>Kotoko North</b>	
<b>Mafa</b>	fad	<b>Mofu</b>	wifad	<b>Kotoko Centre</b>	
<b>Tera</b>	foda	<b>Maroua</b>	mufad	<b>Kotoko South</b>	fodi
<b>Sukur</b>	fwad	<b>Lamang</b>	wifad	<b>Musgum</b>	pidɪ <sup>w</sup>
<b>Hurza</b>	fudaw	<b>Higi</b>	wifadɪ	<b>Gidar</b>	pada <sup>w</sup>

## 10.2.1.3 Word-final

(130) \*kirip<sup>y</sup> 'fish'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	kirifi <sup>y</sup>	<b>Margi</b>	kilfi <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>	kilif <sup>y</sup>	<b>Mandara</b>	kilifi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	kilaf <sup>y</sup>	<b>Mofu</b>	kilif <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	yirvi <sup>w</sup>	<b>Maroua</b>	kilif <sup>y</sup>	<b>Kotoko South</b>	kilfi
<b>Sukur</b>	kirif <sup>y</sup>	<b>Lamang</b>	kilipi	<b>Musgum</b>	hilif <sup>y</sup>
<b>Hurza</b>	kilaf <sup>y</sup>	<b>Higi</b>	kilipi	<b>Gidar</b>	kilfi <sup>y</sup>

(131) \*tip 'to spit'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	tif	<b>Margi</b>	tifa	<b>Kotoko Island</b>	
<b>Daba</b>	tif <sup>y</sup>	<b>Mandara</b>	tifa	<b>Kotoko North</b>	tafi
<b>Mafa</b>	<sup>n</sup> dzif <sup>y</sup>	<b>Mofu</b>	tif	<b>Kotoko Centre</b>	tif
<b>Tera</b>		<b>Maroua</b>	tif <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	tifa	<b>Lamang</b>	tif	<b>Musgum</b>	tif <sup>w</sup>
<b>Hurza</b>	tifa	<b>Higi</b>	tifi	<b>Gidar</b>	

(132) \*ɣ<sup>w</sup>irip 'blind'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	wirifi	<b>Margi</b>	wilifu	<b>Kotoko Island</b>	
<b>Daba</b>	wilif	<b>Mandara</b>	ɣ <sup>w</sup> ilifi	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	ɣ <sup>w</sup> ilif	<b>Kotoko Centre</b>	ny <sup>w</sup> if
<b>Tera</b>		<b>Maroua</b>	hilif <sup>w</sup>	<b>Kotoko South</b>	ɣ <sup>w</sup> ajra
<b>Sukur</b>		<b>Lamang</b>	ɣ <sup>w</sup> ilpa	<b>Musgum</b>	
<b>Hurza</b>	ɣ <sup>w</sup> iraf	<b>Higi</b>	ɣ <sup>w</sup> ilifi	<b>Gidar</b>	

## 10.2.2 \*b

Newman gives good evidence for Proto-Central Chadic having undergone a change from Proto-Chadic \*b→v (Newman 1977a, 16). This being the case, we would not expect to find any roots reconstructed with \*b in Proto-Central Chadic, and indeed this is very nearly the case. However there is just one widely-attested root where it appears that \*b should be reconstructed.

(133) \*bana 'to wash'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	bini	<b>Margi</b>		<b>Kotoko Island</b>	benu
<b>Daba</b>	ban	<b>Mandara</b>	bara	<b>Kotoko North</b>	<sup>m</sup> ban
<b>Mafa</b>	pana	<b>Mofu</b>	bara	<b>Kotoko Centre</b>	ban
<b>Tera</b>		<b>Maroua</b>	buna	<b>Kotoko South</b>	bana
<b>Sukur</b>	ban	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	bana	<b>Higi</b>	pi	<b>Gidar</b>	

This root is reconstructed by Newman for Proto-Chadic (as \*bāna), with data from West Chadic as well as Central Chadic. The presence of \*b in this root appears therefore to be a simple exception where the sound change did not take place. For this reason, \*b is included in the consonantal inventory for Proto-Central Chadic, but with marginal status.

## 10.2.3 \*v

The phoneme \*v is found in initial, medial and final positions. In most groups it has retained its original phonetic form. However it has the reflex /f/ in Proto-Musgum, Proto-Kotoko Centre and Proto-Kotoko Island, and /b/ in Gidar and in the Meri subgroup of the Mofu group.

Only two examples of the phoneme have been found in final position, and these roots are not widely attested across Central Chadic.

## 10.2.3.1 Word-initial

(134) \*vin<sup>y</sup> 'hut'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	vini	<b>Margi</b>	vi	<b>Kotoko Island</b>	
<b>Daba</b>	biŋ	<b>Mandara</b>	biri, vij	<b>Kotoko North</b>	fin
<b>Mafa</b>	van <sup>y</sup>	<b>Mofu</b>	vir <sup>y</sup>	<b>Kotoko Centre</b>	vini
<b>Tera</b>		<b>Maroua</b>	vin <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	va	<b>Lamang</b>	iviŋ	<b>Musgum</b>	funij
<b>Hurza</b>		<b>Higi</b>	vi	<b>Gidar</b>	biina

(135) \*vinah 'to vomit'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	vina	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	vina	<b>Mandara</b>	viraha	<b>Kotoko North</b>	
<b>Mafa</b>	vinaha <sup>y</sup>	<b>Mofu</b>	vinaha	<b>Kotoko Centre</b>	vinahi
<b>Tera</b>	vinah	<b>Maroua</b>		<b>Kotoko South</b>	vinaha
<b>Sukur</b>	vinah	<b>Lamang</b>	vinah	<b>Musgum</b>	fi <sup>y</sup> na
<b>Hurza</b>	vinah <sup>y</sup>	<b>Higi</b>	vinih <sup>wi</sup>	<b>Gidar</b>	

(136) \*vija 'rainy season'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	va <sup>y</sup>	<b>Margi</b>	vija	<b>Kotoko Island</b>	
<b>Daba</b>	vija	<b>Mandara</b>	vija	<b>Kotoko North</b>	
<b>Mafa</b>	vija	<b>Mofu</b>	vija	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	vija	<b>Kotoko South</b>	
<b>Sukur</b>	vi	<b>Lamang</b>	vija	<b>Musgum</b>	pija
<b>Hurza</b>	vija	<b>Higi</b>	vija	<b>Gidar</b>	

## 10.2.3.2 Word-medial

(137) \*dzavin 'guinea fowl'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	zav <sup>wi</sup> n	<b>Margi</b>	tsivir	<b>Kotoko Island</b>	
<b>Daba</b>	zavin	<b>Mandara</b>	zabira <sup>y</sup>	<b>Kotoko North</b>	tsafan
<b>Mafa</b>	zapan	<b>Mofu</b>	dzavir	<b>Kotoko Centre</b>	zavan
<b>Tera</b>	tsivan	<b>Maroua</b>	tsivin <sup>w</sup>	<b>Kotoko South</b>	dzavaŋ
<b>Sukur</b>	zabiŋ	<b>Lamang</b>	zivin	<b>Musgum</b>	tsaavan <sup>y</sup>
<b>Hurza</b>	zavin	<b>Higi</b>	zivin	<b>Gidar</b>	zamvina

(138) \* $\gamma^w$ iv $\dot{i}$ n $\dot{y}$  'charcoal'

Group	Root	Group	Root	Group	Root
Bata	iv $\dot{i}$ n $\dot{y}$	Margi	v $^w$ ini	Kotoko Island	
Daba	$\eta^g$ w $\dot{i}$ van $^w$	Mandara	$\gamma^w$ iviri	Kotoko North	f $\dot{a}$ n $\dot{f}$ $\dot{a}$ n
Mafa	va $\eta$	Mofu	$\gamma^w$ avar $\dot{y}$	Kotoko Centre	wivan
Tera		Maroua	av $\dot{i}$ n $^w$	Kotoko South	
Sukur	vin	Lamang	$\gamma^w$ ivani	Musgum	ava $\eta$ $\dot{y}$
Hurza	h $^w$ ivan	Higi	vi $\dot{?}$ in	Gidar	

## 10.2.3.3 Word-final

(139) \*h $^w$ a $^n$ dav 'hare'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	ma $^n$ davan	Mandara		Kotoko North	
Mafa	wa $^n$ dav	Mofu	h $^w$ a $^n$ dav	Kotoko Centre	
Tera		Maroua	ma $^n$ daf	Kotoko South	
Sukur		Lamang		Musgum	mudivaj
Hurza	$^n$ divan $\dot{y}$	Higi		Gidar	ma $^n$ dava

(140) \*hirig $^w$ iv 'baboon'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	lahav $^w$	Mandara	lik $^w$ iva	Kotoko North	
Mafa		Mofu	h $\dot{i}$ lig $^w$ iv	Kotoko Centre	
Tera	ruf	Maroua	li $\dot{?}$ if $^w$	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	hirgav $^w$	Higi		Gidar	lava $^w$

10.2.4 \* $\delta$ 

\* $\delta$  is rare in Proto-Central Chadic, with only two widely-attested roots in the data.

(141) \* $\gamma^w$ i $\delta$ is 'to laugh'

Group	Root	Group	Root	Group	Root
Bata	m $^w$ is	Margi	m $^w$ isa	Kotoko Island	
Daba	$\delta$ as	Mandara	$\gamma^w$ i $\delta$ asa	Kotoko North	
Mafa	$\eta^g$ was	Mofu	$\gamma^w$ i $^m$ bas	Kotoko Centre	
Tera	mis	Maroua		Kotoko South	
Sukur	$\delta$ is	Lamang	$\gamma^w$ i $\delta$ as	Musgum	
Hurza	$^m$ bisij	Higi	$\delta$ $^w$ isi	Gidar	i $\delta$ asa

(142) \*siwiḃ<sup>y</sup> 'to suck'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	siḃ <sup>y</sup>	<b>Margi</b>	siḃi <sup>y</sup>	<b>Kotoko Island</b>	tsetsabu
<b>Daba</b>	saḃ <sup>y</sup>	<b>Mandara</b>	ḃusa <sup>y</sup>	<b>Kotoko North</b>	s'afu
<b>Mafa</b>	sasiḃ <sup>w</sup>	<b>Mofu</b>	siwiḃ	<b>Kotoko Centre</b>	s'afi
<b>Tera</b>		<b>Maroua</b>	suḃi	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	ḃisaj	<b>Musgum</b>	susubi <sup>y</sup>
<b>Hurza</b>	susaḃ <sup>y</sup>	<b>Higi</b>	ḃisi, s'iḃi	<b>Gidar</b>	issiḃa <sup>w</sup>

## 10.2.5 \*m

\*m is one of the most common phonemes in Proto-Central Chadic. It has remained very stable through time, with the only exception being the regular change to /w/ in word-final position in the Mandara group, with a similar change in word-initial position in the Wandala and Dghwede subgroups of the Mandara group. This change has spread into some words of neighbouring groups.

## 10.2.5.1 Word-initial

(143) \*mits 'to die'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	mit	<b>Margi</b>	mita	<b>Kotoko Island</b>	mati
<b>Daba</b>	mits	<b>Mandara</b>	mitsa	<b>Kotoko North</b>	madi
<b>Mafa</b>	mitsa	<b>Mofu</b>	mit	<b>Kotoko Centre</b>	mit
<b>Tera</b>	mit	<b>Maroua</b>	muts	<b>Kotoko South</b>	mara
<b>Sukur</b>	ḡ <sup>w</sup> is	<b>Lamang</b>	mita	<b>Musgum</b>	mid <sup>y</sup>
<b>Hurza</b>	mits	<b>Higi</b>	miti	<b>Gidar</b>	imta

(144) \*maj 'mouth'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ma	<b>Margi</b>	mja	<b>Kotoko Island</b>	
<b>Daba</b>	ma	<b>Mandara</b>	wa	<b>Kotoko North</b>	
<b>Mafa</b>	ma	<b>Mofu</b>	maj	<b>Kotoko Centre</b>	
<b>Tera</b>	me	<b>Maroua</b>	ma <sup>y</sup>	<b>Kotoko South</b>	me
<b>Sukur</b>	ḡ <sup>w</sup> i	<b>Lamang</b>	waj	<b>Musgum</b>	maj
<b>Hurza</b>	ma <sup>y</sup> , ʔam	<b>Higi</b>	mi	<b>Gidar</b>	ma

(145) \*mar 'oil'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	maɾi	<b>Margi</b>	mal	<b>Kotoko Island</b>	
<b>Daba</b>	mal <sup>y</sup>	<b>Mandara</b>	malɪ	<b>Kotoko North</b>	
<b>Mafa</b>	mar	<b>Mofu</b>	amal	<b>Kotoko Centre</b>	
<b>Tera</b>	mar	<b>Maroua</b>	mal	<b>Kotoko South</b>	amiɪ
<b>Sukur</b>	mir	<b>Lamang</b>		<b>Musgum</b>	mal
<b>Hurza</b>	amar	<b>Higi</b>		<b>Gidar</b>	malɪ <sup>y</sup>

## 10.2.5.2 Word-medial

(146) \*ɬimiɗ<sup>y</sup> 'ear'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɬimi <sup>y</sup>	<b>Margi</b>	ɬimi <sup>y</sup>	<b>Kotoko Island</b>	hiɪmu
<b>Daba</b>	ɬimiɪ <sup>y</sup>	<b>Mandara</b>	ɬimi <sup>y</sup>	<b>Kotoko North</b>	ɬim
<b>Mafa</b>	ɬimad <sup>f</sup>	<b>Mofu</b>	ɬimaj	<b>Kotoko Centre</b>	ɬimi
<b>Tera</b>	ɬim	<b>Maroua</b>	ɬimiɗ <sup>y</sup>	<b>Kotoko South</b>	sime
<b>Sukur</b>	ɬimaj	<b>Lamang</b>	ɬimiɪŋ	<b>Musgum</b>	ɬima <sup>w</sup>
<b>Hurza</b>	ɬimaj	<b>Higi</b>	ɬimi	<b>Gidar</b>	ɬima

(147) \*hiɪmiɗ<sup>y</sup> 'wind'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	miɗi	<b>Margi</b>	samad <sup>y</sup>	<b>Kotoko Island</b>	ha <sup>m</sup> baɗi
<b>Daba</b>	miɗ <sup>y</sup>	<b>Mandara</b>		<b>Kotoko North</b>	samade
<b>Mafa</b>	mamad <sup>y</sup>	<b>Mofu</b>	hiɪmiɗ <sup>y</sup>	<b>Kotoko Centre</b>	siɪmaɗi
<b>Tera</b>		<b>Maroua</b>	hiɪmiɗ <sup>y</sup>	<b>Kotoko South</b>	siɪmade
<b>Sukur</b>	miɗ <sup>y</sup>	<b>Lamang</b>		<b>Musgum</b>	siɪmad <sup>y</sup>
<b>Hurza</b>	hiɪmade	<b>Higi</b>		<b>Gidar</b>	siɪmja

In this root, and in the root \*k<sup>w</sup>ihiɪm 'mouse', there are instances of /s/ where we would expect /h/. There was no regular change \*s→h or \*h→s in these groups (except Kotoko Island which has \*s→h). These cases may be due to the borrowing of a cognate, possibly from the Masa group.

## 10.2.5.3 Word-final

(148) \*ɗijim 'water'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	maʔi	<b>Margi</b>	jimi	<b>Kotoko Island</b>	amaj
<b>Daba</b>	jim	<b>Mandara</b>	jɪwi	<b>Kotoko North</b>	ame
<b>Mafa</b>	jam	<b>Mofu</b>	jam	<b>Kotoko Centre</b>	am
<b>Tera</b>	ɗiɪm	<b>Maroua</b>	jam	<b>Kotoko South</b>	aʔiɪm
<b>Sukur</b>	jam	<b>Lamang</b>	imi	<b>Musgum</b>	ʔijam
<b>Hurza</b>	aʔam	<b>Higi</b>	jame	<b>Gidar</b>	

(149) \*dawim 'honey'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	wimi	<b>Kotoko Island</b>	
<b>Daba</b>	baɓam <sup>w</sup>	<b>Mandara</b>	ɗama	<b>Kotoko North</b>	mam
<b>Mafa</b>	<sup>m</sup> gbam	<b>Mofu</b>	awim	<b>Kotoko Centre</b>	imam
<b>Tera</b>		<b>Maroua</b>	amam	<b>Kotoko South</b>	amama
<b>Sukur</b>	mam	<b>Lamang</b>	omo	<b>Musgum</b>	wamaj
<b>Hurza</b>	wimam	<b>Higi</b>		<b>Gidar</b>	amima

(150) \*zim 'to eat'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	zim	<b>Margi</b>	sim	<b>Kotoko Island</b>	him
<b>Daba</b>	zim	<b>Mandara</b>	ziwa	<b>Kotoko North</b>	sim
<b>Mafa</b>		<b>Mofu</b>	zim	<b>Kotoko Centre</b>	zim
<b>Tera</b>	zim	<b>Maroua</b>	zuma, zimi	<b>Kotoko South</b>	h <sup>w</sup> ima
<b>Sukur</b>		<b>Lamang</b>	za	<b>Musgum</b>	simi, zum
<b>Hurza</b>		<b>Higi</b>	zimi	<b>Gidar</b>	izima

### 10.2.6 \*<sup>m</sup>b

\*<sup>m</sup>b appears in a number of well-attested roots. It occurs in initial and medial position, but not in final position. It is stable, with no known consistent changes. It is by far the best-attested pre-nasalized phoneme.

In the root for 'navel', \*<sup>m</sup>b<sup>w</sup> is reconstructed, even though no other labialized labials are reconstructed for Proto-Central Chadic (see section 11.3.3). It may be that this root was borrowed from outside of Central Chadic and originally had a form like e.g. \*zi<sup>m</sup>bud, which was reanalysed with either a back-rounded vowel or a labialized labial consonant according to the preferences of the language. It may also be that there was a \*<sup>w</sup> somewhere in the root which transferred to the \*<sup>m</sup>b (see section 11.3). Or the root could be a reduced form of a compound such as \*zi<sup>m</sup>b<sup>i</sup> h<sup>w</sup>id, where \*h<sup>w</sup>id is the reconstructed root for 'belly'. Until there is an answer, \*<sup>m</sup>b<sup>w</sup> will be retained in the reconstruction.

## 10.2.6.1 Word-initial

(151) \*<sup>m</sup>biwran 'tamarind'

Group	Root	Group	Root	Group	Root
Bata	<sup>m</sup> biwran	Margi	<sup>m</sup> biwla	Kotoko Island	
Daba		Mandara	amiri	Kotoko North	
Mafa	<sup>m</sup> biwram	Mofu	<sup>m</sup> biwlar	Kotoko Centre	
Tera	<sup>m</sup> birin	Maroua	<sup>m</sup> biwlam	Kotoko South	
Sukur	<sup>m</sup> bilim	Lamang	<sup>m</sup> bilam	Musgum	
Hurza		Higi	<sup>m</sup> biwlan	Gidar	

(152) \*<sup>m</sup>biɖa 'to change'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	<sup>m</sup> baɖ	Mandara	<sup>m</sup> biɖa	Kotoko North	
Mafa		Mofu	<sup>m</sup> biɖ	Kotoko Centre	
Tera		Maroua	<sup>m</sup> biɖa <sup>y</sup>	Kotoko South	
Sukur	<sup>m</sup> biɖa	Lamang	<sup>m</sup> biɖa	Musgum	
Hurza	<sup>m</sup> biɖa	Higi	<sup>m</sup> biɖi	Gidar	

(153) \*<sup>m</sup>ba 'to be able'

Group	Root	Group	Root	Group	Root
Bata	<sup>m</sup> ba	Margi		Kotoko Island	
Daba	<sup>m</sup> baj	Mandara	<sup>m</sup> ba	Kotoko North	
Mafa		Mofu	<sup>m</sup> ba	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza	<sup>m</sup> ba	Higi	<sup>m</sup> ba	Gidar	<sup>m</sup> ba

## 10.2.6.2 Word-medial

(154) \*<sup>h</sup>a<sup>m</sup>biz<sup>y</sup> 'blood'

Group	Root	Group	Root	Group	Root
Bata	za <sup>m</sup> be	Margi	masi <sup>y</sup>	Kotoko Island	
Daba	ha <sup>m</sup> biz	Mandara	mizi <sup>y</sup>	Kotoko North	
Mafa	ba <sup>m</sup> baz <sup>y</sup>	Mofu	ha <sup>m</sup> biz <sup>y</sup>	Kotoko Centre	
Tera		Maroua	hi <sup>m</sup> bis <sup>w</sup>	Kotoko South	
Sukur	mu <sup>m</sup> bus	Lamang		Musgum	
Hurza	miza <sup>y</sup>	Higi	mimi	Gidar	



(155) \*zi<sup>m</sup>b<sup>w</sup>id<sup>f</sup> 'navel'

Group	Root	Group	Root	Group	Root
Bata	zi <sup>m</sup> b <sup>w</sup> id <sup>f</sup> y	Margi	si <sup>m</sup> b <sup>w</sup> id <sup>f</sup> w <sup>y</sup>	Kotoko Island	
Daba		Mandara	zi <sup>m</sup> bi <sup>y</sup>	Kotoko North	sa <sup>m</sup> bu
Mafa	zimal <sup>y</sup>	Mofu	zi <sup>m</sup> bal <sup>y</sup>	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang	zi <sup>m</sup> bid <sup>f</sup>	Musgum	
Hurza		Higi	zi <sup>m</sup> b <sup>w</sup> id <sup>f</sup>	Gidar	

(156) \*hi<sup>m</sup>biw 'armpit'

Group	Root	Group	Root	Group	Root
Bata	m <sup>w</sup> am <sup>w</sup> a	Margi	h <sup>w</sup> i <sup>m</sup> bi	Kotoko Island	
Daba	ha <sup>m</sup> biwa	Mandara		Kotoko North	
Mafa	<sup>m</sup> bihaw	Mofu	h <sup>w</sup> i <sup>m</sup> bajak <sup>y</sup> , hi <sup>m</sup> bid <sup>f</sup> <sup>y</sup> , <sup>m</sup> biwa	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza	a <sup>m</sup> bajak <sup>w</sup> <sup>y</sup>	Higi	ha <sup>m</sup> biwi	Gidar	

## 10.3 Alveolar Consonants

### 10.3.1 \*t

\*t is found in word-initial, word-medial and word-final position, though there are only two roots reconstructed with \*t in medial position, and only one in word-final position.

\*t is stable, with its reflexes being /t/ consistently through its history in Central Chadic, with only a few sporadic variations.

#### 10.3.1.1 Word-initial

(157) \*tip 'to spit'

Group	Root	Group	Root	Group	Root
Bata	tif	Margi	tifa	Kotoko Island	
Daba	tif <sup>y</sup>	Mandara	tifa	Kotoko North	tafi
Mafa	<sup>n</sup> dzif <sup>y</sup>	Mofu	tif	Kotoko Centre	tif
Tera		Maroua	tif <sup>w</sup>	Kotoko South	
Sukur	tifa	Lamang	tif	Musgum	tif <sup>w</sup>
Hurza	tifa	Higi	tifi	Gidar	

(158) \*tira 'moon'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	tira	<b>Mandara</b>	tila	<b>Kotoko North</b>	tedî
<b>Mafa</b>		<b>Mofu</b>		<b>Kotoko Centre</b>	tedî
<b>Tera</b>	tera	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	tja	<b>Lamang</b>	tila	<b>Musgum</b>	tîla <sup>y</sup>
<b>Hurza</b>		<b>Higi</b>	tiri	<b>Gidar</b>	tîla

(159) \*tima 'sheep'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	timîk	<b>Mandara</b>	tîwa	<b>Kotoko North</b>	
<b>Mafa</b>	tamak	<b>Mofu</b>	tîma	<b>Kotoko Centre</b>	
<b>Tera</b>	<sup>n</sup> diɓaŋ	<b>Maroua</b>	tîma	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	tîwak	<b>Musgum</b>	tîma
<b>Hurza</b>	tîma	<b>Higi</b>	tîmi	<b>Gidar</b>	tîma <sup>y</sup>

### 10.3.1.2 Word-medial

(160) \*k<sup>w</sup>itir<sup>y</sup> 'tail'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	h <sup>w</sup> itîri	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	k <sup>w</sup> ital <sup>y</sup>	<b>Mandara</b>	k <sup>w</sup> itîli <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	h <sup>w</sup> adar, fîtar <sup>w</sup>	<b>Mofu</b>	h <sup>w</sup> itîl <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	tur	<b>Lamang</b>	h <sup>w</sup> itîl	<b>Musgum</b>	
<b>Hurza</b>	k <sup>w</sup> itar <sup>y</sup>	<b>Higi</b>		<b>Gidar</b>	kitîr <sup>w</sup>

### 10.3.1.3 Word-final

There is only one root with \*t in word-final position, and that root is not reconstructed with a high degree of confidence.

(161) \*simî<sup>y</sup> 'broom'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	simti <sup>y</sup>	<b>Margi</b>	simtu <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	samati	<b>Kotoko North</b>	
<b>Mafa</b>	sa <sup>m</sup> bak	<b>Mofu</b>		<b>Kotoko Centre</b>	msisi
<b>Tera</b>	siseeti	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	sîbîk	<b>Lamang</b>	si <sup>ʔ</sup> wit	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	s <sup>ʔ</sup> imi	<b>Gidar</b>	

## 10.3.2 \*d

\*d is found in word-initial and word-medial positions. There is a change \*d→t in initial position in the Higi and Margi groups.

## 10.3.2.1 Word-initial

(162) \*d 'to cook'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	ta	<b>Kotoko Island</b>	
<b>Daba</b>	da	<b>Mandara</b>	da	<b>Kotoko North</b>	da
<b>Mafa</b>		<b>Mofu</b>	da	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	di	<b>Kotoko South</b>	udo
<b>Sukur</b>	di	<b>Lamang</b>	da	<b>Musgum</b>	di
<b>Hurza</b>	da	<b>Higi</b>	ta	<b>Gidar</b>	ida

(163) \*dayilij 'girl'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	dahalaj	<b>Mandara</b>	dahili <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	dahla	<b>Mofu</b>	dahilaj	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	dili <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	digili	<b>Lamang</b>	dayali	<b>Musgum</b>	
<b>Hurza</b>	dalaj	<b>Higi</b>	diyili	<b>Gidar</b>	

(164) \*dirim 'horn'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	tilim	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	dirima	<b>Kotoko North</b>	
<b>Mafa</b>	diram <sup>w</sup>	<b>Mofu</b>	diram	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	dirim <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	twam	<b>Lamang</b>	duli	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	tilim <sup>wi</sup>	<b>Gidar</b>	

## 10.3.2.2 Word-medial

(165) \*hadik 'thorn'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	dihî	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	adaki	<b>Kotoko North</b>	
<b>Mafa</b>	hitak	<b>Mofu</b>	hadak	<b>Kotoko Centre</b>	
<b>Tera</b>	<sup>n</sup> deki	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	dzik <sup>y</sup>	<b>Lamang</b>	tiki	<b>Musgum</b>	hadak <sup>y</sup>
<b>Hurza</b>	adak	<b>Higi</b>	tiki	<b>Gidar</b>	

(166) \*madiwan 'rat'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	ma <sup>n</sup> diwan	<b>Mandara</b>	madiwani	<b>Kotoko North</b>	
<b>Mafa</b>	madiwan	<b>Mofu</b>	madiwan	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	midwan	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	mididiwan	<b>Higi</b>		<b>Gidar</b>	

## 10.3.3 \*ɬ

\*ɬ is a very well-attested phoneme in Proto-Central Chadic. It has the reflex /ɓ/ in the Mafa, Daba and Sukur groups. It also has the reflex /ɓ/ in a few languages of the Bata group, with its reflex in the rest of the Bata group being /l/. In Kotoko South it has the reflex /s/, as it is in many of the languages of the Kotoko Centre and North groups. In Kotoko Island it has the reflex /h/.

## 10.3.3.1 Word-initial

(167) \*ɬidiŋ<sup>y</sup> 'tooth'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɓini <sup>y</sup>	<b>Margi</b>	ɬir <sup>y</sup>	<b>Kotoko Island</b>	hinaj
<b>Daba</b>	ɓidɔŋ <sup>y</sup>	<b>Mandara</b>	ɬiri <sup>y</sup>	<b>Kotoko North</b>	ɬir
<b>Mafa</b>	ɓan <sup>y</sup>	<b>Mofu</b>	ɬir <sup>y</sup>	<b>Kotoko Centre</b>	ɬini
<b>Tera</b>	ɓin	<b>Maroua</b>	ɬin <sup>y</sup>	<b>Kotoko South</b>	sin
<b>Sukur</b>	ɓin <sup>y</sup>	<b>Lamang</b>	ɬidɔŋ	<b>Musgum</b>	ɬiŋ
<b>Hurza</b>	ɬahan	<b>Higi</b>	ɬini	<b>Gidar</b>	ɬaja

(168) \*ɬimiɗ<sup>y</sup> 'ear'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɓimi <sup>y</sup>	<b>Margi</b>	ɬimi <sup>y</sup>	<b>Kotoko Island</b>	himu
<b>Daba</b>	ɓimiʔ <sup>y</sup>	<b>Mandara</b>	ɬimi <sup>y</sup>	<b>Kotoko North</b>	ɬim
<b>Mafa</b>	ɓimaɗ	<b>Mofu</b>	ɬimaj	<b>Kotoko Centre</b>	ɬimi
<b>Tera</b>	ɓim	<b>Maroua</b>	ɬimiɗ <sup>y</sup>	<b>Kotoko South</b>	sime
<b>Sukur</b>	ɓimaj	<b>Lamang</b>	ɬimiŋ	<b>Musgum</b>	ɬima <sup>w</sup>
<b>Hurza</b>	ɬimaj	<b>Higi</b>	ɬimi	<b>Gidar</b>	ɬima

(169) \*ła 'cow'

Group	Root	Group	Root	Group	Root
Bata	ʒa	Margi	ła	Kotoko Island	ha
Daba	ʒa	Mandara	ɦa	Kotoko North	ła
Mafa	ʒa	Mofu	ła	Kotoko Centre	ła
Tera	ʒa	Maroua	ła	Kotoko South	sa
Sukur	ʒi	Lamang	ła	Musgum	ʔaj
Hurza	ła	Higi	ła	Gidar	waɦja

## 10.3.3.2 Word-medial

(170) \*dɦij 'egg'

Group	Root	Group	Root	Group	Root
Bata	daɦi	Margi	h <sup>j</sup> ɦ <sup>j</sup> i	Kotoko Island	
Daba	naɦid <sup>y</sup>	Mandara	ɦja	Kotoko North	enɦi
Mafa	ɦaɦaj	Mofu	dɦij	Kotoko Centre	enɦi
Tera		Maroua	ataɦ <sup>y</sup>	Kotoko South	nsi
Sukur	da <sup>n</sup> gaɦaj	Lamang	ɦiɦi	Musgum	ʒat <sup>y</sup>
Hurza	ɦaj	Higi	ɦiɦi	Gidar	da <sup>n</sup> gɦa <sup>y</sup>

(171) \*dit 'bone'

Group	Root	Group	Root	Group	Root
Bata	ilɦi	Margi	daɦi <sup>y</sup>	Kotoko Island	ahaj
Daba		Mandara	ɦaɦi	Kotoko North	enɦi
Mafa	taɦ	Mofu	itaɦ	Kotoko Centre	ehi
Tera	gɦi	Maroua	ataɦ	Kotoko South	asis <sup>i</sup>
Sukur	taɦ	Lamang		Musgum	
Hurza		Higi	ɦiɦi	Gidar	ɦaɦaɦ <sup>y</sup>

(172) \*h<sup>w</sup>idɦi<sup>y</sup> 'cough'

Group	Root	Group	Root	Group	Root
Bata		Margi	widɦa	Kotoko Island	
Daba		Mandara	h <sup>w</sup> ɦah <sup>y</sup>	Kotoko North	h <sup>w</sup> idɦa
Mafa	wiɦa	Mofu	h <sup>w</sup> idɦi <sup>y</sup>	Kotoko Centre	widɦa
Tera	k <sup>w</sup> iɦa	Maroua	hirɦa <sup>y</sup>	Kotoko South	wasja
Sukur	ɦar <sup>y</sup>	Lamang		Musgum	h <sup>w</sup> aɦ
Hurza	ɦiɦah <sup>y</sup>	Higi	ɦiɦa	Gidar	wirɦa

## 10.3.3.3 Word-final

(173) \*tsiɬ<sup>y</sup> 'to hatch'

Group	Root	Group	Root	Group	Root
Bata	tsatsaɬi <sup>y</sup>	Margi		Kotoko Island	
Daba		Mandara	tsiɬa <sup>y</sup>	Kotoko North	
Mafa		Mofu	tsaɬ <sup>y</sup>	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	tsiɬ <sup>y</sup>	Lamang	tsiɬ	Musgum	
Hurza	tsaɬ <sup>y</sup>	Higi		Gidar	

(174) \*taɬ 'cold'

Group	Root	Group	Root	Group	Root
Bata		Margi	mitaɬ	Kotoko Island	
Daba		Mandara	mitaɬi	Kotoko North	
Mafa	mitaɬ	Mofu	taɬ	Kotoko Centre	taɬi
Tera		Maroua	mutelaɲ	Kotoko South	
Sukur		Lamang	mitaɬ	Musgum	
Hurza		Higi	taɬi	Gidar	

(175) \*hipaɬ<sup>y</sup> 'shoulder'

Group	Root	Group	Root	Group	Root
Bata		Margi	apaɬa	Kotoko Island	
Daba		Mandara	aɬapi <sup>y</sup>	Kotoko North	
Mafa	paɬpaɬ <sup>y</sup>	Mofu	hipaɬ <sup>y</sup>	Kotoko Centre	
Tera		Maroua	papaɬ <sup>y</sup>	Kotoko South	
Sukur	tapaɬ	Lamang		Musgum	
Hurza	paɬpaɬ <sup>y</sup>	Higi	baɬa	Gidar	

## 10.3.4 \*ɬ

There are only eight roots reconstructed containing \*ɬ. However the roots are reasonably well-attested, and provide sufficient evidence for reconstructing \*ɬ for Proto-Central Chadic. Interestingly, in the root for camel, which comes from Berber alɣ<sup>w</sup>əm (Skinner 1977), the [l] was adapted to become a voiced lateral fricative. This would be natural if the root was introduced at a very early stage, since there was no \*l in Proto-Central Chadic. However, wider evidence suggests a later time for the introduction of the root (Kossmann 2005), in which case we must look elsewhere for a motivation for this change. There was a regular change \*ɬ→ɬ in Proto-Gidar.

## 10.3.4.1 Word-initial

(176) \*ʒig<sup>w</sup>ami<sup>y</sup> 'camel'

Group	Root	Group	Root	Group	Root
Bata	ʒig <sup>w</sup> ami <sup>y</sup>	Margi	ʒig <sup>w</sup> am	Kotoko Island	log <sup>w</sup> ime
Daba	ʒakama <sup>w</sup>	Mandara	ʒig <sup>w</sup> ami	Kotoko North	logome
Mafa		Mofu	ʒig <sup>w</sup> ama <sup>y</sup>	Kotoko Centre	
Tera	ʒimox	Maroua		Kotoko South	
Sukur	ʒig <sup>w</sup> am	Lamang		Musgum	lukma
Hurza	ʒig <sup>w</sup> ama <sup>y</sup>	Higi	ʒig <sup>w</sup> ami	Gidar	ʒagama <sup>w</sup>

(177) \*ʒidɪm 'five'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ʒidɪm	Kotoko North	
Mafa	ʒam	Mofu	ʒim	Kotoko Centre	
Tera		Maroua	ʒi <sup>n</sup> dam	Kotoko South	
Sukur	ʒam	Lamang		Musgum	ʒiɪm <sup>y</sup>
Hurza		Higi		Gidar	ʒaɪ <sup>y</sup>

(178) \*ʒiwin 'fear'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ʒiʒiwi	Kotoko North	
Mafa	ʒaw	Mofu	ʒiwir <sup>y</sup>	Kotoko Centre	
Tera		Maroua	ʒiwin	Kotoko South	
Sukur		Lamang	ʒiwij	Musgum	
Hurza	ʒiwan	Higi		Gidar	

## 10.3.4.2 Word-medial

(179) \*<sup>m</sup>baʒa 'beer'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	<sup>m</sup> baʒa	Mandara	<sup>m</sup> baʒa	Kotoko North	
Mafa		Mofu	<sup>m</sup> baʒa	Kotoko Centre	
Tera		Maroua	<sup>m</sup> baʒa	Kotoko South	
Sukur	mɪpaʒɪ	Lamang		Musgum	
Hurza		Higi	<sup>m</sup> baʒɪ	Gidar	<sup>m</sup> baʒa

### 10.3.4.3 Word-final

(180) \*g<sup>w</sup>idɪŋ 'to belch'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	ɓag <sup>w</sup> i	<b>Kotoko Island</b>	
<b>Daba</b>	gidɪŋ	<b>Mandara</b>	giŋa	<b>Kotoko North</b>	ɣ'a
<b>Mafa</b>	g <sup>w</sup> idɪŋa	<b>Mofu</b>	gidɪŋ	<b>Kotoko Centre</b>	iti
<b>Tera</b>		<b>Maroua</b>	ʔirɓiʔi <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	ŋiŋu	<b>Musgum</b>	
<b>Hurza</b>	ɗizla	<b>Higi</b>	ɓi	<b>Gidar</b>	

### 10.3.5 \*d

\*d is widely attested in the Proto-Central Chadic reconstructions, being by far the most common of the implosive phonemes. It is frequently reduced to /ʔ/ or lost altogether in present-day languages, particularly in palatalized words where it often has the reflex /j/. In certain cases the glottal component fuses with \*w and creates the reflex /b/. In some languages it has the reflex /r/.

#### 10.3.5.1 Word-initial

(181) \*ɗiwah 'breast, milk'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ʔ <sup>w</sup> a	<b>Margi</b>	ʔiwa	<b>Kotoko Island</b>	
<b>Daba</b>	ʔ <sup>w</sup> a	<b>Mandara</b>	wiɓa	<b>Kotoko North</b>	eʔ <sup>w</sup> i
<b>Mafa</b>	wa	<b>Mofu</b>	ɗiwah	<b>Kotoko Centre</b>	iwi
<b>Tera</b>	ɓiɓi	<b>Maroua</b>	ɗiwa	<b>Kotoko South</b>	
<b>Sukur</b>	ʔ <sup>w</sup> a	<b>Lamang</b>	ɗiwa	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	ʔ <sup>w</sup> a	<b>Gidar</b>	

(182) \*ɗap 'food (millet boule)'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɗafa	<b>Margi</b>	ɗifi	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	ɗafi	<b>Kotoko North</b>	
<b>Mafa</b>	ɗaf	<b>Mofu</b>	ɗaf	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	ɗaf	<b>Kotoko South</b>	
<b>Sukur</b>	ɗaf	<b>Lamang</b>	ɗafa	<b>Musgum</b>	
<b>Hurza</b>	ɗaf	<b>Higi</b>	ɗafa	<b>Gidar</b>	



(183) \*d̥ɨjɨk<sup>w</sup> 'bird'

Group	Root	Group	Root	Group	Root
Bata		Margi	d̥ɨjɨk <sup>w</sup>	Kotoko Island	
Daba		Mandara	d̥ɨjɨk	Kotoko North	
Mafa	d̥ɨjɨk	Mofu	d̥ɨjɨŋ <sup>w</sup>	Kotoko Centre	
Tera	d̥ɨki	Maroua	d̥ɨjɨw	Kotoko South	
Sukur	ʔak	Lamang	d̥ɨjɨk	Musgum	
Hurza		Higi	d̥ɨjɨk <sup>w</sup> ɨ	Gidar	

## 10.3.5.2 Word-medial

(184) \*pɨd̥ɨk<sup>w</sup>ɨ<sup>y</sup> 'razor'

Group	Root	Group	Root	Group	Root
Bata	pɨd̥ɨk <sup>w</sup> a <sup>y</sup>	Margi	park <sup>w</sup> ɨ <sup>y</sup>	Kotoko Island	
Daba	pɨd̥ɨk <sup>w</sup> ɨ <sup>y</sup>	Mandara	pɨd̥ɨk <sup>w</sup> ɨ <sup>y</sup>	Kotoko North	
Mafa	pɨd̥ɨk <sup>w</sup> ɨ <sup>y</sup>	Mofu	pɨd̥ɨk <sup>w</sup> ɨ <sup>y</sup>	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	pɨd̥ɨk <sup>w</sup> ɨ <sup>y</sup>	Lamang		Musgum	
Hurza		Higi	pɨd̥ɨk <sup>w</sup>	Gidar	

(185) \*k<sup>w</sup>ad̥ɨh 'to boil'

Group	Root	Group	Root	Group	Root
Bata	k <sup>w</sup> ad̥ɨsa <sup>y</sup>	Margi	k <sup>w</sup> ɨdu	Kotoko Island	
Daba	k <sup>w</sup> ɨd̥ɨh <sup>y</sup>	Mandara	k <sup>w</sup> ad̥ɨh	Kotoko North	
Mafa	k <sup>w</sup> ɨd̥ɨh	Mofu	k <sup>w</sup> ad̥ɨh	Kotoko Centre	
Tera	k <sup>w</sup> ɨd̥ɨh	Maroua		Kotoko South	
Sukur		Lamang	k <sup>w</sup> ad̥ɨh	Musgum	
Hurza	k <sup>w</sup> ad̥ɨh	Higi		Gidar	

(186) \*ɨd̥ɨɨm 'five'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ɨd̥ɨɨm	Kotoko North	
Mafa	ɨam	Mofu	ɨɨm	Kotoko Centre	
Tera		Maroua	ɨi <sup>n</sup> dam	Kotoko South	
Sukur	ɨam	Lamang		Musgum	ʔɨɨm <sup>y</sup>
Hurza		Higi		Gidar	ɨa <sup>ʔ</sup> <sup>y</sup>

## 10.3.5.3 Word-final

(187) \*ɬiwidʸ 'meat'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɬiwɪʸ	<b>Margi</b>		<b>Kotoko Island</b>	hu
<b>Daba</b>	ɬijʸ	<b>Mandara</b>	ɬiwidʸ	<b>Kotoko North</b>	ɬiw
<b>Mafa</b>	ɬiwadʸ	<b>Mofu</b>	ɬiw	<b>Kotoko Centre</b>	ɬiw
<b>Tera</b>	ɬu	<b>Maroua</b>		<b>Kotoko South</b>	asu
<b>Sukur</b>	ɬiwidʸ	<b>Lamang</b>	ɬiʷi	<b>Musgum</b>	ɬiwit
<b>Hurza</b>	ɬiwadʸ	<b>Higi</b>	ɬij	<b>Gidar</b>	ɬiwi

(188) \*wɪpadʸ 'four'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	fʷad	<b>Margi</b>	fʷadu	<b>Kotoko Island</b>	
<b>Daba</b>	fadʷ	<b>Mandara</b>	ufadɪ	<b>Kotoko North</b>	
<b>Mafa</b>	fad	<b>Mofu</b>	wɪfad	<b>Kotoko Centre</b>	
<b>Tera</b>	foda	<b>Maroua</b>	mufad	<b>Kotoko South</b>	fodɪ
<b>Sukur</b>	fwad	<b>Lamang</b>	wɪfad	<b>Musgum</b>	pɪdɪʷ
<b>Hurza</b>	fudaw	<b>Higi</b>	wɪfadɪ	<b>Gidar</b>	padɑʷ

(189) \*dziwidʸ 'fly (insect)'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	dziʔiʸ	<b>Margi</b>	tsidɪʸ	<b>Kotoko Island</b>	hadzu
<b>Daba</b>	dziwidʸ	<b>Mandara</b>	<sup>n</sup> dziwidʸ	<b>Kotoko North</b>	ts'iwi
<b>Mafa</b>	dziwaj	<b>Mofu</b>	dziwaj	<b>Kotoko Centre</b>	ziwid
<b>Tera</b>		<b>Maroua</b>	dzidziwidʸ	<b>Kotoko South</b>	dzadzwi
<b>Sukur</b>	dziwidʸ	<b>Lamang</b>	ziwdɪ	<b>Musgum</b>	dɪwaj
<b>Hurza</b>	dziwaj	<b>Higi</b>	z'iwid	<b>Gidar</b>	zikdaʸ

## 10.3.6 \*n

\*n is found in initial, medial and final positions, though it is surprisingly rare in initial position. It is the most common phoneme in final position. Word-finally, \*n→r in the Mofu, Mandara and Margi groups. In many other groups \*n has the reflex [ŋ] word-finally, and in some cases this has led to the phonemicisation of /ŋ/. In the Mandara group there was also a change \*n→r word-medially.

### 10.3.6.1 Word-initial

Only two roots have been reconstructed with initial \*n.

(190) \*niy 'to see'

Group	Root	Group	Root	Group	Root
Bata	niy	Margi		Kotoko Island	
Daba		Mandara	niya	Kotoko North	
Mafa		Mofu	nik	Kotoko Centre	
Tera	na	Maroua	nahi	Kotoko South	
Sukur		Lamang	niya	Musgum	
Hurza		Higi	niyi	Gidar	

(191) \*nih 'to ripen'

Group	Root	Group	Root	Group	Root
Bata	na	Margi	niya	Kotoko Island	
Daba	na	Mandara	na	Kotoko North	na
Mafa	nih	Mofu	nih <sup>w</sup>	Kotoko Centre	naha
Tera		Maroua	nih <sup>y</sup>	Kotoko South	winha
Sukur		Lamang		Musgum	niyi
Hurza	nah	Higi	naka	Gidar	

### 10.3.6.2 Word-medial

(192) \*vinah 'to vomit'

Group	Root	Group	Root	Group	Root
Bata	vina	Margi		Kotoko Island	
Daba	vina	Mandara	viraha	Kotoko North	
Mafa	vinaha <sup>y</sup>	Mofu	vinaha	Kotoko Centre	vinahi
Tera	vinah	Maroua		Kotoko South	vinaha
Sukur	vinah	Lamang	vinih	Musgum	fina <sup>y</sup>
Hurza	vinah <sup>y</sup>	Higi	vinih <sup>wi</sup>	Gidar	

(193) \*bana 'to wash'

Group	Root	Group	Root	Group	Root
Bata	bini	Margi		Kotoko Island	benu
Daba	ban	Mandara	bara	Kotoko North	<sup>m</sup> ban
Mafa	pana	Mofu	bara	Kotoko Centre	ban
Tera		Maroua	buna	Kotoko South	bana
Sukur	ban	Lamang		Musgum	
Hurza	bana	Higi	pi	Gidar	

(194) \*k<sup>w</sup>inij 'urine'

Group	Root	Group	Root	Group	Root
Bata		Margi	k <sup>w</sup> ini	Kotoko Island	k <sup>w</sup> araj
Daba		Mandara	k <sup>w</sup> irij	Kotoko North	k <sup>w</sup> ire
Mafa	k <sup>w</sup> iraj	Mofu	k <sup>w</sup> inaj	Kotoko Centre	k <sup>w</sup> ine
Tera		Maroua	k <sup>w</sup> inaj	Kotoko South	kimade
Sukur	k <sup>w</sup> ir <sup>y</sup>	Lamang	k <sup>w</sup> ani	Musgum	
Hurza	mikadaj	Higi		Gidar	kina <sup>y</sup>

## 10.3.6.3 Word-final

(195) \*ɬidɪn<sup>y</sup> 'tooth'

Group	Root	Group	Root	Group	Root
Bata	ɬini <sup>y</sup>	Margi	ɬir <sup>y</sup>	Kotoko Island	hinaj
Daba	ɬidɪn <sup>y</sup>	Mandara	ɬiri <sup>y</sup>	Kotoko North	ɬir
Mafa	ɬan <sup>y</sup>	Mofu	ɬir <sup>y</sup>	Kotoko Centre	ɬini
Tera	ɬin	Maroua	ɬin <sup>y</sup>	Kotoko South	sin
Sukur	ɬin <sup>y</sup>	Lamang	ɬidɪŋ	Musgum	ɬiŋ
Hurza	ɬahan	Higi	ɬini	Gidar	ɬaja

(196) \*sin 'to know'

Group	Root	Group	Root	Group	Root
Bata	sina	Margi	sin	Kotoko Island	hin
Daba	sin	Mandara	sir	Kotoko North	sin
Mafa	sina	Mofu	sir	Kotoko Centre	sin
Tera	zini	Maroua	sin	Kotoko South	siŋ
Sukur	si	Lamang	sina	Musgum	
Hurza	sina	Higi	sina	Gidar	isina

(197) \*dzavɪn 'guinea-fowl'

Group	Root	Group	Root	Group	Root
Bata	zav <sup>w</sup> ɪn	Margi	tsivir	Kotoko Island	
Daba	zavɪn	Mandara	zabira <sup>y</sup>	Kotoko North	tsafan
Mafa	zapan	Mofu	dzavir	Kotoko Centre	zavan
Tera	tsivan	Maroua	tsivɪn <sup>w</sup>	Kotoko South	dzavaŋ
Sukur	zabɪn	Lamang	zivɪn	Musgum	tsoavan <sup>y</sup>
Hurza	zavɪn	Higi	zivɪn	Gidar	zamvina

### 10.3.7 \*<sup>n</sup>d

The phoneme \*<sup>n</sup>d is found in initial and medial positions. Only three roots have been constructed for this phoneme.

#### 10.3.7.1 Word-initial

(198) \*<sup>n</sup>diw ‘person’

Group	Root	Group	Root	Group	Root
Bata	i <sup>n</sup> diw	Margi	<sup>n</sup> du	Kotoko Island	
Daba		Mandara	wi <sup>n</sup> di	Kotoko North	
Mafa	<sup>n</sup> da <sup>w</sup>	Mofu	<sup>n</sup> daw	Kotoko Centre	
Tera	<sup>n</sup> dik <sup>wi</sup>	Maroua		Kotoko South	
Sukur	<sup>n</sup> diw	Lamang	mi <sup>n</sup> du	Musgum	
Hurza		Higi	wi <sup>n</sup> di	Gidar	

(199) \*<sup>n</sup>da ‘to swallow’

Group	Root	Group	Root	Group	Root
Bata	<sup>n</sup> da	Margi		Kotoko Island	
Daba		Mandara	<sup>n</sup> di	Kotoko North	
Mafa		Mofu	<sup>n</sup> da	Kotoko Centre	
Tera		Maroua	<sup>n</sup> di	Kotoko South	
Sukur	<sup>n</sup> dam	Lamang	<sup>n</sup> da	Musgum	
Hurza		Higi	<sup>n</sup> da	Gidar	

#### 10.3.7.2 Word-medial

(200) \*h<sup>w</sup>a<sup>n</sup>dav ‘hare’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	ma <sup>n</sup> davan	Mandara		Kotoko North	
Mafa	wa <sup>n</sup> dav	Mofu	h <sup>w</sup> a <sup>n</sup> dav	Kotoko Centre	
Tera		Maroua	ma <sup>n</sup> daf	Kotoko South	
Sukur		Lamang		Musgum	mudivaj
Hurza	<sup>n</sup> divan <sup>y</sup>	Higi		Gidar	ma <sup>n</sup> dava

This root may be cognate with \*vida ‘hare’, in which case the root given here does not contribute evidence for Proto-Central Chadic \*<sup>n</sup>d, but shows a later prenasalization of \*d.

### 10.3.8 \*r

The phoneme \*r is extremely well-attested, and occurs in all positions. In many of the groups it has undergone \*r→l, with only the Bata, Sukur, Mafa, Hurza, Tera and Daba groups retaining \*r.

There was no \*l phoneme in Proto-Central Chadic.

#### 10.3.8.1 Word-initial

(201) \*rigid<sup>y</sup> 'bow (weapon)'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ragi	<b>Margi</b>	laga	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	lika	<b>Kotoko North</b>	
<b>Mafa</b>	lakad <sup>y</sup> , lalaŋ	<b>Mofu</b>	hiligid <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	ri	<b>Maroua</b>	halak <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	raj	<b>Lamang</b>	liyed	<b>Musgum</b>	gi <sup>n</sup> diliŋ <sup>y</sup>
<b>Hurza</b>	liga <sup>y</sup>	<b>Higi</b>	ligij	<b>Gidar</b>	

(202) \*ra 'to dig'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ra	<b>Margi</b>	la	<b>Kotoko Island</b>	la
<b>Daba</b>	ra	<b>Mandara</b>	la	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	la	<b>Kotoko Centre</b>	
<b>Tera</b>	ra	<b>Maroua</b>	li	<b>Kotoko South</b>	
<b>Sukur</b>	ri	<b>Lamang</b>	la	<b>Musgum</b>	
<b>Hurza</b>	ra	<b>Higi</b>	la	<b>Gidar</b>	

(203) \*riwits<sup>y</sup> 'hearth'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	riti <sup>y</sup>	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	liwits <sup>y</sup>	<b>Mandara</b>	liwtsi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	riwats <sup>y</sup>	<b>Mofu</b>	liwit <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	liwits <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	ruts	<b>Lamang</b>	liti	<b>Musgum</b>	liwit <sup>y</sup>
<b>Hurza</b>	riwats <sup>y</sup>	<b>Higi</b>	litwi	<b>Gidar</b>	

## 10.3.8.2 Word-medial

(204) \*siwra 'to fry'

Group	Root	Group	Root	Group	Root
Bata	siri	Margi	sula	Kotoko Island	
Daba	sar	Mandara	sula	Kotoko North	sil
Mafa	sara	Mofu	sawla	Kotoko Centre	
Tera	zur	Maroua	sula	Kotoko South	
Sukur	siwra	Lamang	sula	Musgum	sisal
Hurza	siwla	Higi	sili	Gidar	

(205) \*kirip<sup>y</sup> 'fish'

Group	Root	Group	Root	Group	Root
Bata	kirifi <sup>y</sup>	Margi	kilfi <sup>y</sup>	Kotoko Island	
Daba	kilif <sup>y</sup>	Mandara	kilifi <sup>y</sup>	Kotoko North	
Mafa	kilaf <sup>y</sup>	Mofu	kilif <sup>y</sup>	Kotoko Centre	
Tera	yirvi <sup>w</sup>	Maroua	kilif <sup>y</sup>	Kotoko South	kilfi
Sukur	kirif <sup>y</sup>	Lamang	kilipi	Musgum	hilif <sup>y</sup>
Hurza	kilaf <sup>y</sup>	Higi	kilipi	Gidar	kilfi <sup>y</sup>

(206) \*siraj 'leg'

Group	Root	Group	Root	Group	Root
Bata	sidi	Margi	sil	Kotoko Island	
Daba	sasalaj	Mandara	sira	Kotoko North	sali
Mafa	sasalaj	Mofu	salaj	Kotoko Centre	
Tera	sara	Maroua	sir, sar	Kotoko South	
Sukur		Lamang	sila	Musgum	
Hurza	siraj	Higi	sira	Gidar	

## 10.3.8.3 Word-final

(207) \*pir 'to untie'

Group	Root	Group	Root	Group	Root
Bata	piri	Margi	pili	Kotoko Island	felu
Daba	pil	Mandara	pila	Kotoko North	fal
Mafa	pir	Mofu	pil	Kotoko Centre	vil
Tera	piri	Maroua		Kotoko South	
Sukur	pir	Lamang	pil	Musgum	
Hurza	para	Higi	pil	Gidar	ippila

(208) \*mar 'oil'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	maɾi	<b>Margi</b>	mal	<b>Kotoko Island</b>	
<b>Daba</b>	mal <sup>y</sup>	<b>Mandara</b>	malɪ	<b>Kotoko North</b>	
<b>Mafa</b>	mar	<b>Mofu</b>	amal	<b>Kotoko Centre</b>	
<b>Tera</b>	mar	<b>Maroua</b>	mal	<b>Kotoko South</b>	amɪl
<b>Sukur</b>	mir	<b>Lamang</b>		<b>Musgum</b>	mal
<b>Hurza</b>	amar	<b>Higi</b>		<b>Gidar</b>	malɪ <sup>y</sup>

(209) \*kir 'to steal'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	hir	<b>Margi</b>	hila	<b>Kotoko Island</b>	
<b>Daba</b>	hɪl	<b>Mandara</b>	ɣɪl	<b>Kotoko North</b>	hir
<b>Mafa</b>	kɪr	<b>Mofu</b>	kɪl	<b>Kotoko Centre</b>	ɣ <sup>w</sup> ɪj
<b>Tera</b>		<b>Maroua</b>	h <sup>w</sup> ɪl	<b>Kotoko South</b>	hɪla
<b>Sukur</b>	kɪr	<b>Lamang</b>	ɣɪla	<b>Musgum</b>	hɪl
<b>Hurza</b>	kɪra	<b>Higi</b>	ɣɪli	<b>Gidar</b>	ɪhala

## 10.4 Laminal Consonants

The laminal consonants have, in many present-day languages, two realisations, one alveolar and one post-alveolar. The post-alveolar realisation is conditioned by the presence of the palatalization prosody, or sometimes by the presence of a front vowel.

### 10.4.1 \*ts

The phoneme \*ts is found in initial, medial and final positions. In many cases there has been a change from \*ts→t, but this change does not fit nicely within a particular genetic grouping or geographical area, and the changes are not predictable.

The irregular overlapping of the reflexes of \*t and \*ts may be evidence for these two proto-phonemes sharing a common origin. It is possible that there was a conditioning environment that determined which form was present, but that the conditioning environment has now been lost. Further research outside of Central Chadic is needed to establish this. Newman (1977a) does not reconstruct a separate \*ts phoneme for Proto-Chadic. In favour of the inclusion of \*ts is the pattern of the consonantal system, where \*ts functions as the voiceless laminal stop. There is also a clear distinction between \*t and \*ts in many of the languages and groups within Central Chadic. Against distinguishing the two is the lack of support from other branches of Chadic, and the absence of



a corresponding phoneme in reconstructions for other branches of Afroasiatic (Kossmann 1999; Weninger 2011). However, Ehret (1995) includes \*ts in the inventory for Proto-Afroasiatic.

Here we are treating \*ts and \*t as distinct phonemes at the level of Proto-Central Chadic and for its descendants.

#### 10.4.1.1 Word-initial

(210) \*tsivɪdʷ ‘path’

Group	Root	Group	Root	Group	Root
<b>Bata</b>	tivɪ	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	tif	<b>Mandara</b>	tivi	<b>Kotoko North</b>	
<b>Mafa</b>	tsivɪdʷ	<b>Mofu</b>	tivi <sup>y</sup> , tsivɪdʷ <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	<sup>n</sup> dziva	<b>Maroua</b>	dzivɪdʷ <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	tsivi	<b>Lamang</b>	tivij	<b>Musgum</b>	tifiɟ
<b>Hurza</b>	tsivɪdʷ	<b>Higi</b>		<b>Gidar</b>	tiva <sup>y</sup>

(211) \*tsiwi ‘to cry’

Group	Root	Group	Root	Group	Root
<b>Bata</b>	tiwi	<b>Margi</b>	tiwi, tiwa	<b>Kotoko Island</b>	tsuj
<b>Daba</b>		<b>Mandara</b>	tiwa <sup>y</sup>	<b>Kotoko North</b>	tsiwe
<b>Mafa</b>		<b>Mofu</b>	tiwi	<b>Kotoko Centre</b>	siwe
<b>Tera</b>		<b>Maroua</b>	tiwa	<b>Kotoko South</b>	tsiwja
<b>Sukur</b>		<b>Lamang</b>	tawa	<b>Musgum</b>	tiwa
<b>Hurza</b>		<b>Higi</b>		<b>Gidar</b>	

(212) \*tsik<sup>w</sup>ir ‘chicken’

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	g <sup>w</sup> itsiki	<b>Kotoko North</b>	
<b>Mafa</b>	watsak	<b>Mofu</b>	witsikar <sup>y</sup> , ma <sup>n</sup> dzik <sup>w</sup> ir <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	tsik <sup>w</sup> ar	<b>Kotoko South</b>	tsakar
<b>Sukur</b>	tak <sup>w</sup> ir	<b>Lamang</b>	ɣatak <sup>w</sup> ala	<b>Musgum</b>	miskir
<b>Hurza</b>	<sup>n</sup> dzik <sup>w</sup> ir	<b>Higi</b>		<b>Gidar</b>	

## 10.4.1.2 Word-medial

(213) \*h<sup>w</sup>itsin<sup>y</sup> 'nose'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	tsɪni <sup>y</sup>	<b>Margi</b>	h <sup>w</sup> itsir <sup>y</sup>	<b>Kotoko Island</b>	tsɪnaj
<b>Daba</b>	mɪtsɪn <sup>y</sup>	<b>Mandara</b>	hɪtɪri <sup>y</sup>	<b>Kotoko North</b>	tsɪhɪn
<b>Mafa</b>	hitsan	<b>Mofu</b>	h <sup>w</sup> itir <sup>y</sup>	<b>Kotoko Centre</b>	hɪsɪni
<b>Tera</b>		<b>Maroua</b>	hɪtɪn <sup>w</sup> , kɪtɪŋ <sup>y</sup>	<b>Kotoko South</b>	hitsine
<b>Sukur</b>	sin <sup>y</sup>	<b>Lamang</b>	hitsiŋ	<b>Musgum</b>	
<b>Hurza</b>	h <sup>w</sup> itsan <sup>y</sup>	<b>Higi</b>	hitsɪn	<b>Gidar</b>	

(214) \*pitsi 'sun'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	fiti	<b>Margi</b>	pɪtsi	<b>Kotoko Island</b>	
<b>Daba</b>	pɪts <sup>y</sup>	<b>Mandara</b>	fatsi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	pats	<b>Mofu</b>	pats	<b>Kotoko Centre</b>	
<b>Tera</b>	fɪdɑ	<b>Maroua</b>	pas	<b>Kotoko South</b>	fatsɑ
<b>Sukur</b>	pis	<b>Lamang</b>	fiti	<b>Musgum</b>	futɪj
<b>Hurza</b>	pats	<b>Higi</b>	vɪtsi	<b>Gidar</b>	

## 10.4.1.3 Word-final

(215) \*mits 'to die'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	mit	<b>Margi</b>	mitɑ	<b>Kotoko Island</b>	matɪ
<b>Daba</b>	mɪts	<b>Mandara</b>	mɪtsɑ	<b>Kotoko North</b>	madɪ
<b>Mafa</b>	mɪtsɑ	<b>Mofu</b>	mit	<b>Kotoko Centre</b>	mit
<b>Tera</b>	mit	<b>Maroua</b>	muts	<b>Kotoko South</b>	marɑ
<b>Sukur</b>	ŋ <sup>w</sup> is	<b>Lamang</b>	mitɑ	<b>Musgum</b>	midɪ <sup>y</sup>
<b>Hurza</b>	mɪts	<b>Higi</b>	mitɪ	<b>Gidar</b>	ɪmtɑ

(216) \*riwits<sup>y</sup> 'hearth'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ritɪ <sup>y</sup>	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	liwɪts <sup>y</sup>	<b>Mandara</b>	liwtsɪ <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	riwats <sup>y</sup>	<b>Mofu</b>	liwɪt <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	liwɪts <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	ruts	<b>Lamang</b>	liti	<b>Musgum</b>	liwɪt <sup>y</sup>
<b>Hurza</b>	riwats <sup>y</sup>	<b>Higi</b>	litwɪ	<b>Gidar</b>	

## 10.4.2 \*dz

The phoneme \*dz is found in initial and medial positions. Reflexes of \*dz include /z/, /ts/ and occasionally /d/. The behaviour of \*dz does not parallel the behaviour of \*ts with respect to its reflexes. There were regular changes \*dz→d in Proto-Musgum and \*dz→z in Proto-Kotoko Centre and Proto-Gidar. No rules have been established for the other changes affecting \*dz.

## 10.4.2.1 Word-initial

(217) \*dzavɪn 'guinea-fowl'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	zav <sup>w</sup> ɪn	<b>Margi</b>	tsivɪr	<b>Kotoko Island</b>	
<b>Daba</b>	zavɪn	<b>Mandara</b>	zabiri <sup>y</sup>	<b>Kotoko North</b>	tsafan
<b>Mafa</b>	zapan	<b>Mofu</b>	dzavɪr	<b>Kotoko Centre</b>	zavan
<b>Tera</b>	tsivan	<b>Maroua</b>	tsivɪn <sup>w</sup>	<b>Kotoko South</b>	dzavaŋ
<b>Sukur</b>	zabɪn	<b>Lamang</b>	zɪvɪn	<b>Musgum</b>	tσαavan <sup>y</sup>
<b>Hurza</b>	zavɪn	<b>Higi</b>	zɪvɪn	<b>Gidar</b>	zamvina

(218) \*dziwid<sup>y</sup> 'fly (insect)'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	dziʔi <sup>y</sup>	<b>Margi</b>	tsidɪ <sup>y</sup>	<b>Kotoko Island</b>	hadzu
<b>Daba</b>	dziwid <sup>y</sup>	<b>Mandara</b>	<sup>n</sup> dziwid <sup>y</sup>	<b>Kotoko North</b>	ts'ɪwi
<b>Mafa</b>	dziwaj	<b>Mofu</b>	dziwaj	<b>Kotoko Centre</b>	ziwid
<b>Tera</b>		<b>Maroua</b>	dziɪdziwid <sup>y</sup>	<b>Kotoko South</b>	dzadzwi
<b>Sukur</b>	dziwid <sup>y</sup>	<b>Lamang</b>	ziwdi	<b>Musgum</b>	dɪwaj
<b>Hurza</b>	dziwaj	<b>Higi</b>	zɪwid	<b>Gidar</b>	zikda <sup>y</sup>

(219) \*dzaraj 'locust'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	dzara <sup>y</sup>	<b>Mandara</b>		<b>Kotoko North</b>	
<b>Mafa</b>	dzaraj	<b>Mofu</b>	dzaraj	<b>Kotoko Centre</b>	
<b>Tera</b>	<sup>n</sup> dzere	<b>Maroua</b>	dzaraj	<b>Kotoko South</b>	
<b>Sukur</b>	dzalaj	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	dzaraj	<b>Higi</b>	dzalaj	<b>Gidar</b>	zaraj

## 10.4.2.2 Word-medial

(220) \*hiridz<sup>y</sup> 'scorpion'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	hiradzi <sup>y</sup>	<b>Margi</b>	hida <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>	ridzi <sup>y</sup>	<b>Mandara</b>	radzi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	haradz	<b>Mofu</b>	hirida <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	arats <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	<sup>m</sup> birdaj	<b>Lamang</b>	rida	<b>Musgum</b>	hiridiw
<b>Hurza</b>	ridza <sup>y</sup>	<b>Higi</b>		<b>Gidar</b>	hirzija

(221) \*hidzin<sup>y</sup> 'mortar'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	<sup>n</sup> dziri <sup>y</sup>	<b>Margi</b>	<sup>n</sup> dzir <sup>y</sup>	<b>Kotoko Island</b>	adzin
<b>Daba</b>	<sup>n</sup> dzar <sup>y</sup> , dzidzaŋ <sup>y</sup>	<b>Mandara</b>	dziri	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	dzira, dzidzaŋ <sup>y</sup>	<b>Kotoko Centre</b>	zin
<b>Tera</b>		<b>Maroua</b>	dzidziŋ <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	dzimdzi <sup>r</sup> <sup>y</sup>	<b>Lamang</b>		<b>Musgum</b>	diŋ
<b>Hurza</b>	dzira <sup>y</sup> , dzi <sup>n</sup> dzan <sup>y</sup>	<b>Higi</b>	<sup>n</sup> dzir	<b>Gidar</b>	

(222) \*y<sup>w</sup>adzi 'quiver'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	k <sup>w</sup> adza	<b>Margi</b>	k <sup>w</sup> adza <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>		<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>		<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	wadzi	<b>Lamang</b>	y <sup>w</sup> adzi	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	g <sup>w</sup> ɨtsi	<b>Gidar</b>	

### 10.4.3 \*s

The phoneme \*s is attested in all positions, though it is very rare in word-medial position.

#### 10.4.3.1 Word-initial

In initial position \*s has changed to /h/ in Kotoko Island and to /z/ in Tera.

(223) \*sa 'to drink'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	sa	<b>Margi</b>	sa	<b>Kotoko Island</b>	hi
<b>Daba</b>	sa	<b>Mandara</b>	sa	<b>Kotoko North</b>	se
<b>Mafa</b>	si	<b>Mofu</b>	sa	<b>Kotoko Centre</b>	sa
<b>Tera</b>	za	<b>Maroua</b>	si	<b>Kotoko South</b>	sja
<b>Sukur</b>	si	<b>Lamang</b>	sa	<b>Musgum</b>	si
<b>Hurza</b>	sa	<b>Higi</b>	sa	<b>Gidar</b>	isa

(224) \*sin 'to know'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	sina	<b>Margi</b>	sin	<b>Kotoko Island</b>	hin
<b>Daba</b>	sin	<b>Mandara</b>	sir	<b>Kotoko North</b>	sin
<b>Mafa</b>	sina	<b>Mofu</b>	sir	<b>Kotoko Centre</b>	sin
<b>Tera</b>	zini	<b>Maroua</b>	sin	<b>Kotoko South</b>	siŋ
<b>Sukur</b>	si	<b>Lamang</b>	sina	<b>Musgum</b>	
<b>Hurza</b>	sina	<b>Higi</b>	sina	<b>Gidar</b>	isina

(225) \*siwra 'to fry'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	siri	<b>Margi</b>	sula	<b>Kotoko Island</b>	
<b>Daba</b>	sar	<b>Mandara</b>	sula	<b>Kotoko North</b>	sil
<b>Mafa</b>	sara	<b>Mofu</b>	sawla	<b>Kotoko Centre</b>	
<b>Tera</b>	zur	<b>Maroua</b>	sula	<b>Kotoko South</b>	
<b>Sukur</b>	siwra	<b>Lamang</b>	sula	<b>Musgum</b>	sisal
<b>Hurza</b>	siwla	<b>Higi</b>	sili	<b>Gidar</b>	

#### 10.4.3.2 Word-medial

\*s is almost unattested word-medially. In the data it is only reconstructed in this position for two roots, both of which have limited distribution. This might suggest that \*s was in most cases lost in this position. For the root \**k<sup>w</sup>isim* we also have the more widely reconstructed root \**k<sup>w</sup>ihim*, with the same sense (see item (253) or the online data). This implies that there may have been a change \*s→h word-medially at a point early in the history of Central Chadic.

(226) \*k<sup>w</sup>isim 'mouse'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara		Kotoko North	k <sup>w</sup> isim
Mafa		Mofu	(?)g <sup>w</sup> amso	Kotoko Centre	k <sup>w</sup> isim
Tera		Maroua		Kotoko South	k <sup>w</sup> isim
Sukur		Lamang		Musgum	kisim <sup>w</sup>
Hurza		Higi		Gidar	

(227) \*tasirad 'seven'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	tsasarad <sup>y</sup>	Mandara		Kotoko North	
Mafa	tsarad <sup>f</sup>	Mofu	tasila	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza		Higi		Gidar	

## 10.4.3.3 Word-final

(228) \*ɣ<sup>w</sup>ibis 'to laugh'

Group	Root	Group	Root	Group	Root
Bata	m <sup>w</sup> is	Margi	m <sup>w</sup> isa	Kotoko Island	
Daba	bas	Mandara	ɣ <sup>w</sup> ibasa	Kotoko North	
Mafa	ɲ <sup>w</sup> as	Mofu	ɣ <sup>w</sup> ɪ <sup>m</sup> basa	Kotoko Centre	
Tera	mɪs	Maroua		Kotoko South	
Sukur	bis	Lamang	ɣ <sup>w</sup> ibas	Musgum	
Hurza	<sup>m</sup> bisij	Higi	ɓ <sup>w</sup> isi	Gidar	imasa

(229) \*ɣ<sup>w</sup>iris 'kidney'

Group	Root	Group	Root	Group	Root
Bata		Margi	k <sup>w</sup> ɪlsi <sup>y</sup>	Kotoko Island	
Daba	wɪlis <sup>y</sup>	Mandara	k <sup>w</sup> ɪlisi <sup>y</sup>	Kotoko North	
Mafa		Mofu	wɪlas <sup>y</sup>	Kotoko Centre	h <sup>w</sup> idɪs
Tera		Maroua		Kotoko South	ɗig <sup>w</sup> ise
Sukur	ɣ <sup>w</sup> ɪlɪsɪsɪ	Lamang	ɣ <sup>w</sup> ɪlɪsɪsɪ	Musgum	
Hurza	h <sup>w</sup> ɪlasase	Higi	ɣ <sup>w</sup> ɪlɪs <sup>j</sup> i	Gidar	

(230) \*h<sup>w</sup>isis 'hedgehog'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	h <sup>w</sup> isi	<b>Kotoko Island</b>	
<b>Daba</b>	h <sup>w</sup> asasaḅ	<b>Mandara</b>	ususa	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	h <sup>w</sup> asis	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	wisa	<b>Higi</b>	hasisi	<b>Gidar</b>	

## 10.4.4 \*z

The phoneme \*z is found in all positions, though it is most commonly found in word-initial position. There has been a change \*z→s in the Margi group (see section 3.3.7), and in the ancestor language of the Musgum, Kotoko North and Kotoko Island groups (see section 3.2.3). In Kotoko Island there was a subsequent change \*s→h.

## 10.4.4.1 Word-initial

(231) \*ziwid<sup>y</sup> 'string'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	za <sup>ʔ</sup> wi	<b>Margi</b>	siwid	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	zawad	<b>Kotoko North</b>	sire
<b>Mafa</b>		<b>Mofu</b>	ziwad <sup>y</sup>	<b>Kotoko Centre</b>	sad̄i
<b>Tera</b>	zoo	<b>Maroua</b>	ziwid <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	ziḅi <sup>y</sup>	<b>Lamang</b>	zi <sup>ʔ</sup> wi	<b>Musgum</b>	
<b>Hurza</b>	zawaj	<b>Higi</b>	zi <sup>ʔ</sup> wi	<b>Gidar</b>	

(232) \*zi<sup>m</sup>b<sup>w</sup>id<sup>f</sup> 'navel'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	zi <sup>m</sup> b <sup>w</sup> id̄i <sup>y</sup>	<b>Margi</b>	si <sup>m</sup> b <sup>w</sup> id̄iw <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	zi <sup>m</sup> bi <sup>y</sup>	<b>Kotoko North</b>	sa <sup>m</sup> bu
<b>Mafa</b>	zimal <sup>y</sup>	<b>Mofu</b>	zi <sup>m</sup> bal <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	zi <sup>m</sup> bid	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	zi <sup>m</sup> b <sup>w</sup> id̄f	<b>Gidar</b>	

(233) \*zi<sup>ɓ</sup>g<sup>w</sup>a 'donkey'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	za <sup>ɓ</sup> ga <sup>w</sup>	Mandara	zi <sup>ɓ</sup> g <sup>w</sup> a	Kotoko North	
Mafa	za <sup>ɓ</sup> g <sup>w</sup> a	Mofu	azi <sup>ɓ</sup> g <sup>w</sup> a	Kotoko Centre	
Tera		Maroua	zi <sup>ɓ</sup> gi <sup>w</sup>	Kotoko South	
Sukur	zi <sup>ɓ</sup> g <sup>w</sup> a	Lamang	zuŋa	Musgum	
Hurza	zi <sup>ɓ</sup> g <sup>w</sup> a	Higi		Gidar	

## 10.4.4.2 Word-medial

(234) \*zim 'to eat'

Group	Root	Group	Root	Group	Root
Bata	zim	Margi	sim	Kotoko Island	him
Daba	zim	Mandara	ziwa	Kotoko North	sım
Mafa		Mofu	zim	Kotoko Centre	zım
Tera	zim	Maroua	zuma, zimi	Kotoko South	h <sup>w</sup> ıma
Sukur		Lamang	za	Musgum	simi, zum
Hurza		Higi	zimi	Gidar	izıma

(235) \*k<sup>w</sup>ızın<sup>y</sup> 'grass'

Group	Root	Group	Root	Group	Root
Bata	k <sup>w</sup> ızini	Margi	k <sup>w</sup> ısar	Kotoko Island	
Daba		Mandara	k <sup>w</sup> ıziri <sup>y</sup>	Kotoko North	
Mafa	kızan <sup>y</sup>	Mofu	k <sup>w</sup> ızir <sup>y</sup>	Kotoko Centre	
Tera	wızın	Maroua	gızın <sup>y</sup>	Kotoko South	
Sukur		Lamang	k <sup>w</sup> ızın	Musgum	
Hurza	g <sup>w</sup> ıdzad <sup>y</sup>	Higi	g <sup>w</sup> ızın	Gidar	

## 10.4.4.3 Word-final

(236) \*ha<sup>m</sup>bız<sup>y</sup> 'blood'

Group	Root	Group	Root	Group	Root
Bata	za <sup>m</sup> be	Margi	masi <sup>y</sup>	Kotoko Island	
Daba	ha <sup>m</sup> bız	Mandara	mızı <sup>y</sup>	Kotoko North	
Mafa	ba <sup>m</sup> baz <sup>y</sup>	Mofu	ha <sup>m</sup> bız <sup>y</sup>	Kotoko Centre	
Tera		Maroua	hi <sup>m</sup> bis <sup>w</sup>	Kotoko South	
Sukur	mu <sup>m</sup> bus	Lamang		Musgum	
Hurza	mıza <sup>y</sup>	Higi	mimi	Gidar	



#### 10.4.5 \*<sup>n</sup>dz

There is only one root that has been reconstructed containing \*<sup>n</sup>dz, but it is well-attested. \*<sup>n</sup>dz is found in a few roots in the proto-languages of eleven of the eighteen groups within Central Chadic.

(237) \*<sup>n</sup>dzah ‘to sit’

Group	Root	Group	Root	Group	Root
<b>Bata</b>	<sup>n</sup> dza	<b>Margi</b>	<sup>n</sup> zi	<b>Kotoko Island</b>	
<b>Daba</b>	<sup>n</sup> dza	<b>Mandara</b>	<sup>n</sup> dza	<b>Kotoko North</b>	
<b>Mafa</b>	<sup>n</sup> dzaha	<b>Mofu</b>	<sup>n</sup> dza	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	<sup>n</sup> za	<b>Lamang</b>	<sup>n</sup> zak <sup>w</sup>	<b>Musgum</b>	
<b>Hurza</b>	<sup>n</sup> dzahaj	<b>Higi</b>	<sup>n</sup> dza	<b>Gidar</b>	

#### 10.4.6 \*j

The phoneme \*j is found in all positions, though there are no roots reconstructed with it in word-initial position. It is very common in word-final position, which may be due to it originating as a determiner which later petrified as /j/ (Wolff 2006).

It is common for \*j to become desegmentalised, and to be reanalysed as either the palatalization of a consonant (as in the Proto-Sukur entry for ‘bird’ 0) or else as a word-level prosody (as in the Proto-Bata entry for ‘rainy season’ (238)). Even when it remains as a segment, \*j can easily metathesize with other consonants in the root (e.g. Proto-Higi ‘egg’ (239)).

##### 10.4.6.1 Word-initial

There are no roots reconstructed with initial \*j.

##### 10.4.6.2 Word-medial

(238) \*vija ‘rainy season’

Group	Root	Group	Root	Group	Root
<b>Bata</b>	va <sup>y</sup>	<b>Margi</b>	vija	<b>Kotoko Island</b>	
<b>Daba</b>	vija	<b>Mandara</b>	vija	<b>Kotoko North</b>	
<b>Mafa</b>	vija	<b>Mofu</b>	vija	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	vija	<b>Kotoko South</b>	
<b>Sukur</b>	vi	<b>Lamang</b>	vija	<b>Musgum</b>	pija
<b>Hurza</b>	vija	<b>Higi</b>	vija	<b>Gidar</b>	

\*d̪ijik<sup>w</sup> 'bird'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	d̪ijak <sup>w</sup>	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	d̪ijak	<b>Kotoko North</b>	
<b>Mafa</b>	d̪ijak	<b>Mofu</b>	d̪ijij <sup>w</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	d̪iki	<b>Maroua</b>	d̪ijiw	<b>Kotoko South</b>	
<b>Sukur</b>	ʔak	<b>Lamang</b>	d̪ijak	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	d̪ijik <sup>w</sup> ɪ	<b>Gidar</b>	

## 10.4.6.3 Word-final

(239) \*d̪ij 'egg'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	d̪aʒi	<b>Margi</b>	ɬɬi <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>	naʒid <sup>y</sup>	<b>Mandara</b>	d̪ijija	<b>Kotoko North</b>	enɬi
<b>Mafa</b>	ɬaɬaj	<b>Mofu</b>	d̪ijij	<b>Kotoko Centre</b>	enɬi
<b>Tera</b>		<b>Maroua</b>	ataɬ <sup>y</sup>	<b>Kotoko South</b>	nsi
<b>Sukur</b>	d̪a <sup>n</sup> gaʒaj	<b>Lamang</b>	ɬiɬi	<b>Musgum</b>	ʒat <sup>y</sup>
<b>Hurza</b>	ɬaj	<b>Higi</b>	jiɬi	<b>Gidar</b>	d̪a <sup>n</sup> gl̪a <sup>y</sup>

(240) \*maj 'mouth'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ma	<b>Margi</b>	mja	<b>Kotoko Island</b>	
<b>Daba</b>	ma	<b>Mandara</b>	wa	<b>Kotoko North</b>	
<b>Mafa</b>	ma	<b>Mofu</b>	maj	<b>Kotoko Centre</b>	
<b>Tera</b>	me	<b>Maroua</b>	ma <sup>y</sup>	<b>Kotoko South</b>	me
<b>Sukur</b>	ɲ <sup>w</sup> ɪ	<b>Lamang</b>	waj	<b>Musgum</b>	maj
<b>Hurza</b>	ma <sup>y</sup> , ʔam	<b>Higi</b>	mi	<b>Gidar</b>	ma

## 10.5 Velar Consonants

## 10.5.1 \*k

The phoneme \*k is found in all positions. It has undergone few regular sound changes, but there are widespread sporadic changes to \*k→h.

## 10.5.1.1 Word-initial

(241) \*kirip<sup>y</sup> 'fish'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	kirifi <sup>y</sup>	<b>Margi</b>	kilfi <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>	kilif <sup>y</sup>	<b>Mandara</b>	kilifi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	kilaf <sup>y</sup>	<b>Mofu</b>	kilif <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	yirvi <sup>w</sup>	<b>Maroua</b>	kilif <sup>y</sup>	<b>Kotoko South</b>	kilfi
<b>Sukur</b>	kirif <sup>y</sup>	<b>Lamang</b>	kilipi	<b>Musgum</b>	hilif <sup>y</sup>
<b>Hurza</b>	kilaf <sup>y</sup>	<b>Higi</b>	kilipi	<b>Gidar</b>	kilfi <sup>y</sup>

(242) \*kir 'to steal'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	hir	<b>Margi</b>	hila	<b>Kotoko Island</b>	
<b>Daba</b>	hil	<b>Mandara</b>	ɣil	<b>Kotoko North</b>	hir
<b>Mafa</b>	kir	<b>Mofu</b>	kil	<b>Kotoko Centre</b>	ɣ <sup>w</sup> ij
<b>Tera</b>		<b>Maroua</b>	h <sup>w</sup> il	<b>Kotoko South</b>	hila
<b>Sukur</b>	kir	<b>Lamang</b>	ɣila	<b>Musgum</b>	hil
<b>Hurza</b>	kira	<b>Higi</b>	ɣili	<b>Gidar</b>	ihala

(243) \*kidim 'crocodile'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	kirim	<b>Margi</b>	karam, him	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	kirwi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	kirdam, gidam	<b>Mofu</b>	kirim, gidam	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	hirim <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	kilim	<b>Lamang</b>	kiram	<b>Musgum</b>	hirim <sup>w</sup>
<b>Hurza</b>	gidam	<b>Higi</b>	kilim	<b>Gidar</b>	

## 10.5.1.2 Word-medial

(244) \*hikin 'three'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	mahikin	<b>Margi</b>	maakir	<b>Kotoko Island</b>	
<b>Daba</b>	mahkad	<b>Mandara</b>	hikiri	<b>Kotoko North</b>	
<b>Mafa</b>	mahkar	<b>Mofu</b>	mahkir	<b>Kotoko Centre</b>	
<b>Tera</b>	mahkan	<b>Maroua</b>	maakaŋ	<b>Kotoko South</b>	
<b>Sukur</b>	maakin	<b>Lamang</b>	hikina	<b>Musgum</b>	
<b>Hurza</b>	maakan	<b>Higi</b>	maxkin	<b>Gidar</b>	

In many of the proto-languages of the groups, there is a prefix ma- attached to this root. A similar prefix occurs with the reflexes of several other numerals. The origin of the prefix is not known.

## 10.5.1.3 Word-final

(245) \*dawik 'goat'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ih <sup>w</sup> i	<b>Margi</b>	k <sup>w</sup> i	<b>Kotoko Island</b>	
<b>Daba</b>	ŋh <sup>w</sup> a	<b>Mandara</b>	dawak	<b>Kotoko North</b>	
<b>Mafa</b>	dawik	<b>Mofu</b>	dawak	<b>Kotoko Centre</b>	ny <sup>w</sup> a
<b>Tera</b>		<b>Maroua</b>	ʔawi	<b>Kotoko South</b>	awa
<b>Sukur</b>	ʔijik <sup>w</sup>	<b>Lamang</b>	ag <sup>w</sup> i	<b>Musgum</b>	jawak
<b>Hurza</b>	awak	<b>Higi</b>	k <sup>w</sup> i	<b>Gidar</b>	hawa

(246) \*sirik<sup>y</sup> 'jealousy'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	sirih <sup>i</sup>	<b>Margi</b>	silka	<b>Kotoko Island</b>	
<b>Daba</b>	sirah <sup>y</sup>	<b>Mandara</b>	sili	<b>Kotoko North</b>	
<b>Mafa</b>	sirak <sup>y</sup>	<b>Mofu</b>	silik <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	ziri	<b>Maroua</b>	silan <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	sirih	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	sirak	<b>Higi</b>	silki	<b>Gidar</b>	

(247) \*hadik 'thorn'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	dih <sup>i</sup>	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	adaki	<b>Kotoko North</b>	
<b>Mafa</b>	hitak	<b>Mofu</b>	hadak	<b>Kotoko Centre</b>	
<b>Tera</b>	<sup>n</sup> deki	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	dzik <sup>y</sup>	<b>Lamang</b>	tiki	<b>Musgum</b>	hadak <sup>y</sup>
<b>Hurza</b>	adak	<b>Higi</b>	tiki	<b>Gidar</b>	

### 10.5.2 \*g

The phoneme \*g is rare, with only five examples found amongst the reconstructions. It occurs in word-initial and word-medial positions. There are few regular changes, though it commonly has as reflexes \*k or \*ɣ.

#### 10.5.2.1 Word-initial

(248) \*gir 'to grow'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	gir	<b>Margi</b>	kila	<b>Kotoko Island</b>	
<b>Daba</b>	gɪl	<b>Mandara</b>	gɪla	<b>Kotoko North</b>	
<b>Mafa</b>	gɪla	<b>Mofu</b>	gɪl	<b>Kotoko Centre</b>	
<b>Tera</b>	gor	<b>Maroua</b>	gɪl	<b>Kotoko South</b>	
<b>Sukur</b>	gir	<b>Lamang</b>	gɪla	<b>Musgum</b>	
<b>Hurza</b>	ɣira	<b>Higi</b>	kil	<b>Gidar</b>	

#### 10.5.2.2 Word-medial

(249) \*rigid<sup>y</sup> 'bow (weapon)'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ragi	<b>Margi</b>	laga	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	lika	<b>Kotoko North</b>	
<b>Mafa</b>	lakad <sup>y</sup> , lalaŋ	<b>Mofu</b>	hɪligid <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	ri	<b>Maroua</b>	halak <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	raj	<b>Lamang</b>	liyed	<b>Musgum</b>	gi <sup>n</sup> dɪliŋ <sup>y</sup>
<b>Hurza</b>	liɣa <sup>y</sup>	<b>Higi</b>	liɣij	<b>Gidar</b>	

(250) \*vigid<sup>y</sup> 'hole'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	viɣi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	vavad <sup>y</sup>	<b>Mofu</b>	vid <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	vigid <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	vud	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>		<b>Gidar</b>	viva <sup>w</sup>

### 10.5.3 \*h

The phoneme \*h is one of the best-attested phonemes in Proto-Central Chadic, and is found in all positions.

It is very common for \*h to be lost in present-day languages. When this happens, the loss may be compensated for using one of two strategies. The first is the reduplication of the first syllable, and the second is the replacement of \*h

with another consonant, typically /m/, though Mafa, for example, uses /v/ and Mandara /n/ (see section 3.4.5).

The label \*h is used, as this is the default realisation in most of the present-day languages. However the phoneme patterns as part of the velar series with respect to labialization, and so may have been realised as [x] in Proto-Central Chadic.

### 10.5.3.1 Word-initial

Where \*h occurs in word-initial position before a full vowel, the \*h has been lost in many languages (see for example \*hadik ‘thorn’, given in section 10.3.2.2).

(251) \*himid<sup>y</sup> ‘wind’

Group	Root	Group	Root	Group	Root
Bata	midî	Margi	samad <sup>y</sup>	Kotoko Island	ha <sup>m</sup> badî
Daba	mid <sup>y</sup>	Mandara		Kotoko North	samade
Mafa	mamad <sup>y</sup>	Mofu	himid <sup>y</sup>	Kotoko Centre	simadî
Tera		Maroua	himid <sup>y</sup>	Kotoko South	simade
Sukur	mid <sup>y</sup>	Lamang		Musgum	simad <sup>y</sup>
Hurza	himade	Higi		Gidar	simja

(252) \*hiridz<sup>y</sup> ‘scorpion’

Group	Root	Group	Root	Group	Root
Bata	hiradzi <sup>y</sup>	Margi	hida <sup>y</sup>	Kotoko Island	
Daba	ridzi <sup>y</sup>	Mandara	radzi <sup>y</sup>	Kotoko North	
Mafa	haradz	Mofu	hirida <sup>y</sup>	Kotoko Centre	
Tera		Maroua	arats <sup>y</sup>	Kotoko South	
Sukur	<sup>m</sup> birdaj	Lamang	rida	Musgum	hiridiw
Hurza	ridza <sup>y</sup>	Higi		Gidar	hirzija

### 10.5.3.2 Word-medial

(253) \*k<sup>w</sup>ihim ‘mouse’ (cf. (226) \*k<sup>w</sup>isim)

Group	Root	Group	Root	Group	Root
Bata	h <sup>l</sup> imi	Margi		Kotoko Island	
Daba		Mandara	k <sup>w</sup> ihim	Kotoko North	
Mafa	k <sup>w</sup> ama	Mofu	k <sup>w</sup> ihim	Kotoko Centre	
Tera	y <sup>w</sup> im	Maroua		Kotoko South	
Sukur	k <sup>w</sup> im	Lamang		Musgum	
Hurza	k <sup>w</sup> iham	Higi	k <sup>w</sup> im	Gidar	

## 10.5.3.3 Word-final

(254) \*nih 'to ripen'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	na	<b>Margi</b>	niya	<b>Kotoko Island</b>	
<b>Daba</b>	na	<b>Mandara</b>	na	<b>Kotoko North</b>	na
<b>Mafa</b>	nih	<b>Mofu</b>	nih <sup>w</sup>	<b>Kotoko Centre</b>	naha
<b>Tera</b>		<b>Maroua</b>	nih <sup>y</sup>	<b>Kotoko South</b>	winha
<b>Sukur</b>		<b>Lamang</b>		<b>Musgum</b>	niyi
<b>Hurza</b>	nah	<b>Higi</b>	naka	<b>Gidar</b>	

(255) \*h<sup>w</sup>idfi<sup>y</sup> 'cough'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	widfi <sup>h</sup>	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	h <sup>w</sup> idfi <sup>h</sup> <sup>y</sup>	<b>Kotoko North</b>	h <sup>w</sup> idfi <sup>h</sup>
<b>Mafa</b>	wi <sup>h</sup>	<b>Mofu</b>	h <sup>w</sup> idfi <sup>h</sup> <sup>y</sup>	<b>Kotoko Centre</b>	widfi <sup>h</sup>
<b>Tera</b>	k <sup>w</sup> i <sup>h</sup> za	<b>Maroua</b>	hir <sup>h</sup> <sup>y</sup>	<b>Kotoko South</b>	wasja
<b>Sukur</b>	za <sup>y</sup>	<b>Lamang</b>		<b>Musgum</b>	h <sup>w</sup> a <sup>t</sup>
<b>Hurza</b>	zi <sup>h</sup> za <sup>y</sup>	<b>Higi</b>	ʔi <sup>h</sup>	<b>Gidar</b>	wir <sup>h</sup>

(256) \*vinah 'to vomit'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	vina	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	vina	<b>Mandara</b>	viraha	<b>Kotoko North</b>	
<b>Mafa</b>	vinaha <sup>y</sup>	<b>Mofu</b>	vinaha	<b>Kotoko Centre</b>	vinahi
<b>Tera</b>	vinah	<b>Maroua</b>		<b>Kotoko South</b>	vinaha
<b>Sukur</b>	vinah	<b>Lamang</b>	vinah	<b>Musgum</b>	fi <sup>h</sup> na <sup>y</sup>
<b>Hurza</b>	vinah <sup>y</sup>	<b>Higi</b>	vinih <sup>w</sup> i	<b>Gidar</b>	

## 10.5.4 \*ɣ

The phoneme \*ɣ is found in all positions. Only six instances have been reconstructed.

In many present-day languages this phoneme has been lost altogether, having merged with either \*h or \*g. Merger with \*h has occurred in Mandara and Malgwa of the Mandara group, Muyang and Moloko of the Mofu group, and possibly in Proto-North Kotoko-Musgum. Merger with \*g occurred in Dghwede in the Mandara group and Proto-Meri in the Mofu group. \*ɣ was lost in Proto-Mofu subgroup within the Mofu group.

## 10.5.4.1 Word-initial

(257) \*ɣaj 'hut'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	haji	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	ga <sup>y</sup>	<b>Mandara</b>	ɣaj	<b>Kotoko North</b>	ho
<b>Mafa</b>	gaj	<b>Mofu</b>	ɣaj	<b>Kotoko Centre</b>	ɣaa
<b>Tera</b>		<b>Maroua</b>	gaj	<b>Kotoko South</b>	ye
<b>Sukur</b>	ɣi	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	aga	<b>Higi</b>	ɣaj	<b>Gidar</b>	

(258) \*ɣin 'head'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɣini	<b>Margi</b>	kir	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	ɣira	<b>Kotoko North</b>	
<b>Mafa</b>	jaŋ, gid	<b>Mofu</b>	ɣir	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	jiŋ, hir	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	ɣiŋ	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	ɣin	<b>Gidar</b>	

(259) \*ɣanad<sup>y</sup> 'tongue'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	gana <sup>y</sup>	<b>Margi</b>	gar <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>	ganad	<b>Mandara</b>		<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>		<b>Kotoko Centre</b>	
<b>Tera</b>	ɣina	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	ɣanaj	<b>Lamang</b>	ɣaniɟ	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	ɣaniɟ	<b>Gidar</b>	

## 10.5.4.2 Word-medial

(260) \*dayilij 'girl'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	dahalaj	<b>Mandara</b>	dahili <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	dahla	<b>Mofu</b>	dahilaj	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	dili <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	digili	<b>Lamang</b>	dayali	<b>Musgum</b>	
<b>Hurza</b>	dalaj	<b>Higi</b>	diyilji	<b>Gidar</b>	



## 10.5.4.3 Word-final

(261) \*hajay 'squirrel'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ajay	Kotoko North	jaga
Mafa		Mofu	hajaŋ	Kotoko Centre	
Tera		Maroua	ajaw	Kotoko South	ajahe
Sukur		Lamang	jaye	Musgum	jaja
Hurza	ajah	Higi		Gidar	

(262) \*niy 'to see'

Group	Root	Group	Root	Group	Root
Bata	niy	Margi		Kotoko Island	
Daba		Mandara	niya	Kotoko North	
Mafa		Mofu	nik	Kotoko Centre	
Tera	na	Maroua	nahi	Kotoko South	
Sukur		Lamang	niya	Musgum	
Hurza		Higi	niyi	Gidar	

10.5.5 \*<sup>h</sup>g

Although /<sup>h</sup>g/ is a phoneme in many present-day Central Chadic languages, there are no reliable roots reconstructed for Proto-Central Chadic containing \*<sup>h</sup>g. Its status must be considered doubtful. The following example is illustrative of the problems in reconstructing this phoneme.

(263) \*ra<sup>h</sup>gaɬ<sup>y</sup> 'brain'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara		Kotoko North	erɬ'i
Mafa		Mofu	a <sup>n</sup> diɬ <sup>y</sup> , araɬ <sup>y</sup> , ɖa <sup>h</sup> gaɬ <sup>y</sup>	Kotoko Centre	meres'i
Tera		Maroua	alaɬ <sup>y</sup>	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	mikila <sup>h</sup> gaɬ <sup>y</sup>	Higi		Gidar	

## 10.6 Labialized Velar Consonants

The Proto-Central Chadic labialized velar consonants play an important role in Central Chadic, as, along with \*w, they are the source of all the labialization and back-rounded vowels that occur in the present-day languages. In many of the reflexes in vowel prosody languages, the labialization component is realised as a word-level labialization prosody which backs and rounds the vowels. In the

consonant prosody languages, in some cases the labialization component has transferred from the velar onto a labial consonant.

In almost all cases, the labialized consonants are better attested than the equivalent non-labialized consonants.

Labialized velars have been lost completely in the Musgum group, with the labialization component being transferred to the vowels in the form of labialization prosody.

### 10.6.1 \*k<sup>w</sup>

The phoneme \*k<sup>w</sup> is well-attested in all positions. In some cases it may have the reflexes /g<sup>w</sup>/ or /h<sup>w</sup>/, and the labialization component is sometimes lost. These changes appear to be unsystematic, with the exceptions of the regular change \*k<sup>w</sup>→g<sup>b</sup> in Malgbe (Kotoko North) and possibly \*k<sup>w</sup>→g<sup>w</sup> in Proto-Higi.

#### 10.6.1.1 Word-initial

(264) \*k<sup>w</sup>inij 'urine'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	k <sup>w</sup> ini	<b>Kotoko Island</b>	k <sup>w</sup> araj
<b>Daba</b>		<b>Mandara</b>	k <sup>w</sup> irij	<b>Kotoko North</b>	k <sup>w</sup> ire
<b>Mafa</b>	k <sup>w</sup> iraj	<b>Mofu</b>	k <sup>w</sup> inaj	<b>Kotoko Centre</b>	k <sup>w</sup> ine
<b>Tera</b>		<b>Maroua</b>	k <sup>w</sup> inaj	<b>Kotoko South</b>	kimadé
<b>Sukur</b>	k <sup>w</sup> ir <sup>y</sup>	<b>Lamang</b>	k <sup>w</sup> ani	<b>Musgum</b>	
<b>Hurza</b>	mikadaj	<b>Higi</b>		<b>Gidar</b>	kina <sup>y</sup>

(265) \*k<sup>w</sup>izin 'grass'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	k <sup>w</sup> izini	<b>Margi</b>	k <sup>w</sup> isar	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	k <sup>w</sup> iziri <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	kizan <sup>y</sup>	<b>Mofu</b>	k <sup>w</sup> izir <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	wizin	<b>Maroua</b>	giziri <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	k <sup>w</sup> iziri	<b>Musgum</b>	
<b>Hurza</b>	g <sup>w</sup> idzad <sup>y</sup>	<b>Higi</b>	g <sup>w</sup> izin	<b>Gidar</b>	

The Proto-Hurza root results from a number of sound changes, including a word-final \*n→r and a subsequent \*r→d. However it should be noted that the word-final \*n→r change did not include Proto-Hurza, so this root may have been transmitted via Proto-Mofu or Proto-Mandara.

(266) \*k<sup>w</sup>itir<sup>y</sup> 'tail'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	h <sup>w</sup> itiri	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	k <sup>w</sup> ital <sup>y</sup>	<b>Mandara</b>	k <sup>w</sup> itili <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	h <sup>w</sup> adar, fitar <sup>w</sup>	<b>Mofu</b>	h <sup>w</sup> itil <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	tur	<b>Lamang</b>	h <sup>w</sup> itil	<b>Musgum</b>	
<b>Hurza</b>	k <sup>w</sup> itar <sup>y</sup>	<b>Higi</b>		<b>Gidar</b>	kitir <sup>w</sup>

## 10.6.1.2 Word-medial

(267) \*tsik<sup>w</sup>ir 'chicken'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	g <sup>w</sup> itsiki	<b>Kotoko North</b>	
<b>Mafa</b>	watsak	<b>Mofu</b>	witsikar <sup>y</sup> , ma <sup>n</sup> dzik <sup>w</sup> ir <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	tsik <sup>w</sup> ar	<b>Kotoko South</b>	tsakar
<b>Sukur</b>	tak <sup>w</sup> ir	<b>Lamang</b>	yatak <sup>w</sup> ala	<b>Musgum</b>	miskir
<b>Hurza</b>	<sup>n</sup> dzik <sup>w</sup> ir	<b>Higi</b>		<b>Gidar</b>	

(268) \*ɗak<sup>w</sup>ir 'grey hair'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	hihɪl <sup>w</sup>	<b>Mandara</b>	k <sup>w</sup> ɪli	<b>Kotoko North</b>	
<b>Mafa</b>	k <sup>w</sup> araj	<b>Mofu</b>	ɗak <sup>w</sup> ɪl	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	hal <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	k <sup>w</sup> ir	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	ɗak <sup>w</sup> ar	<b>Higi</b>		<b>Gidar</b>	

(269) \*ɗak<sup>w</sup>a<sup>y</sup> 'white'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	k <sup>w</sup> ik <sup>w</sup> ɪɗak <sup>y</sup>	<b>Mandara</b>	maɗak <sup>w</sup> ɪ	<b>Kotoko North</b>	
<b>Mafa</b>	k <sup>w</sup> aɗ <sup>y</sup>	<b>Mofu</b>	k <sup>w</sup> aɗak <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	k <sup>w</sup> aɗak <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>		<b>Musgum</b>	miɗik <sup>w</sup> ɪj
<b>Hurza</b>	k <sup>w</sup> aɗak <sup>y</sup> , maɗak <sup>w</sup> a <sup>y</sup>	<b>Higi</b>		<b>Gidar</b>	

### 10.6.1.3 Word-final

(270) \*hak<sup>w</sup> 'fire'

Group	Root	Group	Root	Group	Root
Bata	g <sup>w</sup> i	Margi	hiʔ <sup>w</sup> i	Kotoko Island	aw
Daba	k <sup>w</sup> ah <sup>w</sup> i	Mandara		Kotoko North	hiw
Mafa	hak <sup>w</sup> a	Mofu	ak <sup>w</sup> i	Kotoko Centre	awi
Tera		Maroua	awi	Kotoko South	ag <sup>w</sup> a
Sukur	k <sup>w</sup> i	Lamang		Musgum	huu, ak <sup>w</sup> i
Hurza	ak <sup>w</sup> a	Higi	ɣ <sup>w</sup> i	Gidar	

(271) \*dijik<sup>w</sup> 'bird'

Group	Root	Group	Root	Group	Root
Bata		Margi	dijak <sup>w</sup>	Kotoko Island	
Daba		Mandara	dijak	Kotoko North	
Mafa	dijak	Mofu	dijij <sup>w</sup>	Kotoko Centre	
Tera	diki	Maroua	dijiw	Kotoko South	
Sukur	ʔak	Lamang	dijak	Musgum	
Hurza		Higi	dijik <sup>w</sup> i	Gidar	

(272) \*pidak<sup>w y</sup> 'razor'

Group	Root	Group	Root	Group	Root
Bata	pidik <sup>w a y</sup>	Margi	park <sup>w i y</sup>	Kotoko Island	
Daba	pidak <sup>w y</sup>	Mandara	pidak <sup>w y</sup>	Kotoko North	
Mafa	pidak <sup>w y</sup>	Mofu	pidak <sup>w y</sup>	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	pidak <sup>w y</sup>	Lamang		Musgum	
Hurza		Higi	pidik <sup>w</sup>	Gidar	

### 10.6.2 \*g<sup>w</sup>

The phoneme \*g<sup>w</sup> is found in initial and medial positions. In Malgbe of the Kotoko North group it has the reflex /g̃b/.

#### 10.6.2.1 Word-initial

(273) \*g<sup>w</sup>avan 'cobra'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	gavan <sup>w</sup>	Mandara		Kotoko North	
Mafa	g <sup>w</sup> ivan	Mofu	g <sup>w</sup> avanɲ	Kotoko Centre	
Tera		Maroua	gavan <sup>w</sup>	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	g <sup>w</sup> avan	Higi	g <sup>w</sup> avanɲ	Gidar	

(274) \*g<sup>w</sup>ila 'left'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	g <sup>w</sup> ila	Mandara		Kotoko North	geli
Mafa	g <sup>w</sup> ila	Mofu	g <sup>w</sup> ila	Kotoko Centre	yilan
Tera		Maroua	g <sup>w</sup> ila	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	g <sup>w</sup> ila	Higi	g <sup>w</sup> ila	Gidar	

(275) \*g<sup>w</sup>ivih 'field'

Group	Root	Group	Root	Group	Root
Bata	v <sup>w</sup> i	Margi	fak <sup>w</sup>	Kotoko Island	
Daba		Mandara	g <sup>w</sup> ivih	Kotoko North	
Mafa		Mofu	g <sup>w</sup> ivih	Kotoko Centre	
Tera		Maroua	g <sup>w</sup> iva	Kotoko South	
Sukur		Lamang	wivah	Musgum	
Hurza	g <sup>w</sup> ivih	Higi	wivih	Gidar	

### 10.6.2.2 Word-medial

(276) \*ɓig<sup>w</sup>ami<sup>y</sup> 'camel'

Group	Root	Group	Root	Group	Root
Bata	ɓig <sup>w</sup> ami <sup>y</sup>	Margi	ɓig <sup>w</sup> am	Kotoko Island	log <sup>w</sup> ime
Daba	ɓakama <sup>w</sup>	Mandara	ɓig <sup>w</sup> ami	Kotoko North	logome
Mafa		Mofu	ɓig <sup>w</sup> ama <sup>y</sup>	Kotoko Centre	
Tera	ɓimox	Maroua		Kotoko South	
Sukur	ɓig <sup>w</sup> am	Lamang		Musgum	lukma
Hurza	ɓig <sup>w</sup> ama <sup>y</sup>	Higi	ɓig <sup>w</sup> ami	Gidar	ɓagama <sup>w</sup>

(277) \*dzag<sup>w</sup>a 'hat'

Group	Root	Group	Root	Group	Root
Bata		Margi	dzak <sup>w</sup> a	Kotoko Island	<sup>n</sup> dzak <sup>w</sup> a
Daba		Mandara	dzak <sup>w</sup> i	Kotoko North	sag <sup>w</sup> a
Mafa		Mofu	dzag <sup>w</sup> i	Kotoko Centre	
Tera		Maroua	dzak <sup>w</sup> i	Kotoko South	dzak <sup>w</sup> i
Sukur		Lamang	dzig <sup>w</sup> a	Musgum	zagaw
Hurza	dzig <sup>w</sup> a	Higi		Gidar	

(278) \*dzig<sup>w</sup>ir 'hump'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	dzik <sup>w</sup> ir <sup>y</sup> , madagara	<b>Kotoko Island</b>	
<b>Daba</b>	d̥ig <sup>w</sup> ir <sup>y</sup>	<b>Mandara</b>		<b>Kotoko North</b>	sig <sup>w</sup> ire
<b>Mafa</b>		<b>Mofu</b>	madzigir, mitak <sup>w</sup> ar	<b>Kotoko Centre</b>	zirk <sup>w</sup> a
<b>Tera</b>	d̥ig <sup>w</sup> il	<b>Maroua</b>		<b>Kotoko South</b>	dzaŋk <sup>w</sup> ara
<b>Sukur</b>	dzig <sup>w</sup> id̥	<b>Lamang</b>		<b>Musgum</b>	zig <sup>w</sup> irij
<b>Hurza</b>	dzig <sup>w</sup> ar	<b>Higi</b>		<b>Gidar</b>	

10.6.3 \*h<sup>w</sup>

The phoneme \*h<sup>w</sup> occurs almost entirely in initial position. The fricative component is frequently lost, and the labialization component may then be reanalysed as /w/, a word-level prosody, or else appear on a different consonant. This is a widespread sporadic process, rather than a regular predictable process. The examples given are those where \*h<sup>w</sup> has been widely retained.

## 10.6.3.1 Word-initial

(279) \*h<sup>w</sup>irip 'seed'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	h <sup>w</sup> irif̥i	<b>Margi</b>	h <sup>w</sup> ilfi	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	h <sup>w</sup> ilfid̥i	<b>Kotoko North</b>	g <sup>w</sup> ilfan
<b>Mafa</b>	h <sup>w</sup> alfej	<b>Mofu</b>	h <sup>w</sup> ilfad̥ <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	h <sup>w</sup> ilfa	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	h <sup>w</sup> ilfa	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	h <sup>w</sup> ilifi	<b>Gidar</b>	

(280) \*h<sup>w</sup>id̥ 'belly'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	h <sup>w</sup> id̥i	<b>Kotoko North</b>	
<b>Mafa</b>	h <sup>w</sup> ad̥	<b>Mofu</b>	h <sup>w</sup> id̥	<b>Kotoko Centre</b>	
<b>Tera</b>	h <sup>w</sup> ira	<b>Maroua</b>	wuru	<b>Kotoko South</b>	
<b>Sukur</b>	h <sup>w</sup> id̥	<b>Lamang</b>	hudi	<b>Musgum</b>	war
<b>Hurza</b>		<b>Higi</b>	h <sup>w</sup> id̥	<b>Gidar</b>	

## 10.6.3.2 Word-medial

(281) \*sih<sup>w</sup>ani<sup>y</sup> 'dream'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	sini <sup>y</sup>	<b>Margi</b>	si <sup>ɽ</sup> wini <sup>y</sup>	<b>Kotoko Island</b>	
<b>Daba</b>	sini <sup>y</sup>	<b>Mandara</b>	sih <sup>w</sup> ani <sup>y</sup>	<b>Kotoko North</b>	saware
<b>Mafa</b>	siwina <sup>y</sup>	<b>Mofu</b>	siwna <sup>y</sup>	<b>Kotoko Centre</b>	siwane
<b>Tera</b>	zine	<b>Maroua</b>	misin <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	siwani	<b>Musgum</b>	hijni <sup>y</sup>
<b>Hurza</b>	siwna <sup>y</sup>	<b>Higi</b>	s <sup>j</sup> iwin	<b>Gidar</b>	issina <sup>y</sup>

10.6.4 \*ɣ<sup>w</sup>

The phoneme \*ɣ<sup>w</sup> is found almost always in initial position. The phoneme no longer exists in many of the present-day languages. Its reflexes include /w/ in Mandara and Malgwa of the Mandara group and the Mofu subgroup of the Mofu group, /g/ in Dghwede of the Mandara group, /h<sup>w</sup>/ in Muyang and Moloko of the Mofu group and /g<sup>w</sup>/ in Proto-Meri of the Mofu group.

## 10.6.4.1 Word-initial

(282) \*ɣ<sup>w</sup>ipa 'flour'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	h <sup>w</sup> ipɪ	<b>Margi</b>	ip <sup>w</sup> ɪ	<b>Kotoko Island</b>	
<b>Daba</b>	ɲfa	<b>Mandara</b>	k <sup>w</sup> ipɪ	<b>Kotoko North</b>	
<b>Mafa</b>	g <sup>w</sup> ifa	<b>Mofu</b>	g <sup>w</sup> ipa	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	hapa	<b>Kotoko South</b>	
<b>Sukur</b>	p <sup>w</sup> a	<b>Lamang</b>	h <sup>w</sup> ipaw	<b>Musgum</b>	
<b>Hurza</b>	hi <sup>m</sup> biga	<b>Higi</b>	ɣ <sup>w</sup> ipɪ	<b>Gidar</b>	gipa

(283) \*ɣ<sup>w</sup>ɪbis 'to laugh'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	m <sup>w</sup> is	<b>Margi</b>	m <sup>w</sup> isa	<b>Kotoko Island</b>	
<b>Daba</b>	bas	<b>Mandara</b>	ɣ <sup>w</sup> ɪbasa	<b>Kotoko North</b>	
<b>Mafa</b>	ɲg <sup>w</sup> as	<b>Mofu</b>	ɣ <sup>w</sup> ɪ <sup>m</sup> basa	<b>Kotoko Centre</b>	
<b>Tera</b>	mis	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	ɓis	<b>Lamang</b>	ɣ <sup>w</sup> ɪbas	<b>Musgum</b>	
<b>Hurza</b>	<sup>m</sup> bisiɟ	<b>Higi</b>	ɓ <sup>w</sup> isi	<b>Gidar</b>	ɪmasa

(284) \*ɣ<sup>w</sup>irip 'blind'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	wirifi	<b>Margi</b>	wilifu	<b>Kotoko Island</b>	
<b>Daba</b>	wilif	<b>Mandara</b>	ɣ <sup>w</sup> ilifi	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	ɣ <sup>w</sup> ilif	<b>Kotoko Centre</b>	ny <sup>w</sup> if
<b>Tera</b>		<b>Maroua</b>	hilif <sup>w</sup>	<b>Kotoko South</b>	ɣ <sup>w</sup> ajra
<b>Sukur</b>		<b>Lamang</b>	ɣ <sup>w</sup> ilpa	<b>Musgum</b>	
<b>Hurza</b>	ɣ <sup>w</sup> iraf	<b>Higi</b>	ɣ <sup>w</sup> ilifi	<b>Gidar</b>	

#### 10.6.4.2 Word-medial

(285) \*diɣ<sup>w</sup>ivan 'leopard'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	digiv <sup>w</sup> a	<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>		<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	divar	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	divaŋ	<b>Kotoko South</b>	
<b>Sukur</b>	dig <sup>w</sup> avak	<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	diɣ <sup>w</sup> ava	<b>Gidar</b>	

#### 10.6.5 \*ŋ<sup>w</sup>

The phoneme \*ŋ<sup>w</sup> is rare and cannot be reconstructed with full confidence. The following three items are ones where there is some support from the data.

##### 10.6.5.1 Word-initial

(286) \*ŋ<sup>w</sup>is 'woman'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	k <sup>w</sup> isi	<b>Kotoko North</b>	
<b>Mafa</b>	ŋ <sup>w</sup> az	<b>Mofu</b>	ŋ <sup>w</sup> as, mikis	<b>Kotoko Centre</b>	
<b>Tera</b>	nufu	<b>Maroua</b>	ŋ <sup>w</sup> as	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>		<b>Gidar</b>	



## 10.6.5.2 Word-medial

(287) \*zi<sup>ɓ</sup>g<sup>w</sup>a ‘donkey’

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>	za <sup>ɓ</sup> ga <sup>w</sup>	<b>Mandara</b>	zi <sup>ɓ</sup> g <sup>w</sup> a	<b>Kotoko North</b>	
<b>Mafa</b>	za <sup>ɓ</sup> g <sup>w</sup> a	<b>Mofu</b>	azi <sup>ɓ</sup> g <sup>w</sup> a	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	zi <sup>ɓ</sup> gi <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>	zi <sup>ɓ</sup> g <sup>w</sup> a	<b>Lamang</b>	zuŋa	<b>Musgum</b>	
<b>Hurza</b>	zi <sup>ɓ</sup> g <sup>w</sup> a	<b>Higi</b>		<b>Gidar</b>	

(288) \*ɓg<sup>w</sup>its ‘hair’

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	g <sup>w</sup> ɪdzi <sup>y</sup>	<b>Kotoko North</b>	
<b>Mafa</b>	ɓg <sup>w</sup> atsi	<b>Mofu</b>	a <sup>ɓ</sup> g <sup>w</sup> its <sup>y</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>	ɣ <sup>w</sup> asi	<b>Maroua</b>	ɓg <sup>w</sup> itsi <sup>y</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>		<b>Gidar</b>	

## 10.6.6 \*w

The phoneme \*w is very well-attested in all positions. \*w may combine with another consonant to form a labialized consonant, or may be desegmentalised and be reanalysed as the labialization prosody (see section 11.3).

## 10.6.6.1 Word-initial

(289) \*wɪpad ‘four’

Group	Root	Group	Root	Group	Root
<b>Bata</b>	f <sup>w</sup> ad	<b>Margi</b>	f <sup>w</sup> adɪ	<b>Kotoko Island</b>	
<b>Daba</b>	fad <sup>w</sup>	<b>Mandara</b>	ufadɪ	<b>Kotoko North</b>	
<b>Mafa</b>	fad	<b>Mofu</b>	wifad	<b>Kotoko Centre</b>	
<b>Tera</b>	foda	<b>Maroua</b>	mufad	<b>Kotoko South</b>	fodɪ
<b>Sukur</b>	fwad	<b>Lamang</b>	wifad	<b>Musgum</b>	pɪdɪ <sup>w</sup>
<b>Hurza</b>	fudaw	<b>Higi</b>	wifadɪ	<b>Gidar</b>	padɪ <sup>w</sup>

(290) \*zim 'to eat'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	zim	<b>Margi</b>	sim	<b>Kotoko Island</b>	him
<b>Daba</b>	zim	<b>Mandara</b>	ziwa	<b>Kotoko North</b>	sim
<b>Mafa</b>		<b>Mofu</b>	zim	<b>Kotoko Centre</b>	zim
<b>Tera</b>	zim	<b>Maroua</b>	zuma, zimi	<b>Kotoko South</b>	h <sup>w</sup> ima
<b>Sukur</b>		<b>Lamang</b>	za	<b>Musgum</b>	simi, zum
<b>Hurza</b>		<b>Higi</b>	zimi	<b>Gidar</b>	izima

(291) \*wivin 'grinding stone'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	bura	<b>Kotoko Island</b>	
<b>Daba</b>	ɲvin	<b>Mandara</b>	uvira	<b>Kotoko North</b>	
<b>Mafa</b>		<b>Mofu</b>	var <sup>y</sup>	<b>Kotoko Centre</b>	vin
<b>Tera</b>	vina	<b>Maroua</b>	van	<b>Kotoko South</b>	vuna
<b>Sukur</b>	ban	<b>Lamang</b>	buna	<b>Musgum</b>	funay
<b>Hurza</b>	van	<b>Higi</b>	vina	<b>Gidar</b>	bwin

### 10.6.6.2 Word-medial

(292) \*ɬiwid<sup>y</sup> 'meat'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	ɬiwi <sup>y</sup>	<b>Margi</b>		<b>Kotoko Island</b>	hu
<b>Daba</b>	ɬij <sup>y</sup>	<b>Mandara</b>	ɬiwid <sup>y</sup>	<b>Kotoko North</b>	ɬiw
<b>Mafa</b>	ɬiwad <sup>y</sup>	<b>Mofu</b>	ɬiw	<b>Kotoko Centre</b>	ɬiw
<b>Tera</b>	ɬu	<b>Maroua</b>		<b>Kotoko South</b>	asu
<b>Sukur</b>	ɬiwid <sup>y</sup>	<b>Lamang</b>	ɬi <sup>w</sup> i	<b>Musgum</b>	ɬiwit
<b>Hurza</b>	ɬiwad <sup>y</sup>	<b>Higi</b>	ɬij	<b>Gidar</b>	ɬiwi

(293) \*siwra 'to fry'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	siri	<b>Margi</b>	sula	<b>Kotoko Island</b>	
<b>Daba</b>	sar	<b>Mandara</b>	sula	<b>Kotoko North</b>	sil
<b>Mafa</b>	sara	<b>Mofu</b>	sawla	<b>Kotoko Centre</b>	
<b>Tera</b>	zur	<b>Maroua</b>	sula	<b>Kotoko South</b>	
<b>Sukur</b>	siwra	<b>Lamang</b>	sula	<b>Musgum</b>	sisal
<b>Hurza</b>	siwla	<b>Higi</b>	sili	<b>Gidar</b>	

(294) \*dawim 'honey'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>	wimi	<b>Kotoko Island</b>	
<b>Daba</b>	baɓam <sup>w</sup>	<b>Mandara</b>	ɗama	<b>Kotoko North</b>	mam
<b>Mafa</b>	<sup>m</sup> gbam	<b>Mofu</b>	awim	<b>Kotoko Centre</b>	imam
<b>Tera</b>		<b>Maroua</b>	amam	<b>Kotoko South</b>	amama
<b>Sukur</b>	mam	<b>Lamang</b>	omo	<b>Musgum</b>	wamaj
<b>Hurza</b>	wimam	<b>Higi</b>		<b>Gidar</b>	amima

## 10.6.6.3 Word-final

(295) \*kiriw 'ten'

Group	Root	Group	Root	Group	Root
<b>Bata</b>		<b>Margi</b>		<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	kilawa	<b>Kotoko North</b>	
<b>Mafa</b>	k <sup>w</sup> iraw	<b>Mofu</b>	kiraw	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	kiri <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>		<b>Musgum</b>	
<b>Hurza</b>	kira <sup>w</sup>	<b>Higi</b>		<b>Gidar</b>	

(296) \*hadik<sup>w</sup> 'grasshopper'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	aɗik <sup>w</sup>	<b>Margi</b>	haɗiw	<b>Kotoko Island</b>	
<b>Daba</b>	wajak	<b>Mandara</b>	hijiwi	<b>Kotoko North</b>	hajaw
<b>Mafa</b>	jak <sup>w</sup>	<b>Mofu</b>	hajak <sup>w</sup>	<b>Kotoko Centre</b>	
<b>Tera</b>		<b>Maroua</b>	hajak <sup>w</sup>	<b>Kotoko South</b>	
<b>Sukur</b>		<b>Lamang</b>	hiʔi	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	haɗik	<b>Gidar</b>	hajɗaŋ <sup>y</sup>

(297) \*<sup>n</sup>diw 'person'

Group	Root	Group	Root	Group	Root
<b>Bata</b>	i <sup>n</sup> diw	<b>Margi</b>	<sup>n</sup> du	<b>Kotoko Island</b>	
<b>Daba</b>		<b>Mandara</b>	wi <sup>n</sup> ɗi	<b>Kotoko North</b>	
<b>Mafa</b>	<sup>n</sup> da <sup>w</sup>	<b>Mofu</b>	<sup>n</sup> daw	<b>Kotoko Centre</b>	
<b>Tera</b>	<sup>n</sup> dik <sup>w</sup> i	<b>Maroua</b>		<b>Kotoko South</b>	
<b>Sukur</b>	<sup>n</sup> diw	<b>Lamang</b>	mi <sup>n</sup> du	<b>Musgum</b>	
<b>Hurza</b>		<b>Higi</b>	wi <sup>n</sup> ɗi	<b>Gidar</b>	

## 10.7 A Comparison with Newman's Consonantal Inventory

Newman's reconstruction for the consonant inventory of Proto-Chadic was as follows (rearranged):

	Labial	Alveolar	Laminal	Velar	Palatalized Velar	Labialized-Velar
<b>Plosive</b>	p	t	ts	k	k <sup>j</sup>	k <sup>w</sup>
	b	d	dz	g	g <sup>j</sup>	g <sup>w</sup>
<b>Implosive</b>	ɓ	ɗ		ɠ		
<b>Fricative</b>	f	ɬ	s, ʂ (i.e. ʃ)	x	x <sup>j</sup>	x <sup>w</sup>
			z			
<b>Nasal</b>	m	n				
<b>Liquid</b>		r				
<b>Approximant</b>			j			w

Table 112 - Proto-Chadic consonants

The Proto-Central Chadic consonant inventory is repeated here. Phonemes in parentheses are considered marginal.

	Labial	Alveolar	Laminal	Velar	Labialized-Velar
<b>Plosive</b>	p	t	ts	k	k <sup>w</sup>
	b	d	dz	g	g <sup>w</sup>
<b>Implosive</b>	ɓ	ɗ			
<b>Fricative</b>		ɬ	s	h	h <sup>w</sup>
	v	ʂ	z	ɣ	ɣ <sup>w</sup>
<b>Nasal</b>	m	n			
	<sup>m</sup> b	<sup>n</sup> d	<sup>n</sup> dz	( <sup>ɠ</sup> g)	( <sup>ɠ</sup> g <sup>w</sup> )
<b>Liquid</b>		r			
<b>Approximant</b>			j		w

Table 113 - Proto-Central Chadic consonants

There are a number of important differences. Firstly, Newman reconstructs a set of palatalized velar consonants for Proto-Chadic, though only \*g<sup>j</sup> appears in his reconstructed roots.

Secondly, Newman does not reconstruct any pre-nasalized phonemes, though he does bring out the issue. It is entirely possible that pre-nasalized consonants did not exist in Proto-Chadic, but developed in Proto-Central Chadic.

Thirdly, and most significantly, there are large differences in how the fricatives have been reconstructed. Newman includes a phoneme \*ʒ, with unclear phonetic form, possibly [ʒ]. According to Newman, this phoneme developed into a voiceless lateral fricative in Proto-Central Chadic, merging with \*ɬ. It is not possible to distinguish this phoneme from \*ɬ in Central Chadic. A possibility that Newman does not give is that this phoneme was realised as a voiced lateral fricative in Proto-Chadic.

Newman only has one voiced fricative \*z, whereas in Proto-Central Chadic there is a voiced/voiceless contrast at all places of articulation. For the velar fricatives, this may reflect an historical change where a voicing distinction came into existence early in the history of Central Chadic. This is a plausible scenario, given the variation in voicing between some of the reflexes of the velar fricatives, and the lack of clear patterning. For the alveolar fricatives, the voiced lateral fricative is fairly rare in Proto-Central Chadic, and could indeed be an innovation.

Newman includes a third glottalised consonant \*ʔ, with a variety of reflexes and no clear point of articulation. For Proto-Central Chadic, no equivalent phoneme has been reconstructed. Where there is a glottalized palatal or velar consonant, this is shown to be the result of the fusion of two phonemes (see section 10.1.2).

Amongst the labial phonemes, Newman reconstructs \*p and \*f as separate phonemes, whereas for Proto-Central Chadic they are reconstructed as a single phoneme. In neither case is the situation clear (see section 10.2.1). The change from Proto-Chadic \*b to Proto-Central Chadic \*v accounts for the other difference amongst the labial phonemes.

## 10.8 Statistics

The following statistics are based on 171 reconstructed roots where there are reflexes in at least six of the groups within Central Chadic and data from more than ten languages. Figures are given for the occurrences of each phoneme in different positions in the word, ordered by place and point of articulation, and by overall frequency in the data. Summary statistics are given for each place of articulation, and each manner of articulation. If the same phoneme appears twice in a root, this is counted as two occurrences.

*10.8.1 Phonemes ordered by place and point of articulation*

	Initial	Medial	Final	Total	Overall percentage
<b>p</b>	7	4	7	18	4%
<b>b</b>	2	0	0	2	0%
<b>v</b>	11	11	2	24	6%
<b>ɸ</b>	0	1	1	2	0%
<b>m</b>	9	10	8	27	6%
<b><sup>m</sup>b</b>	5	4	0	9	2%
<b>t</b>	3	2	2	7	2%
<b>d</b>	3	3	0	6	1%
<b>ɬ</b>	10	3	3	16	4%
<b>ɓ</b>	3	1	1	5	1%
<b>ɗ</b>	12	7	18	37	9%
<b>n</b>	2	8	20	30	7%
<b><sup>n</sup>d</b>	2	1	0	3	1%
<b>r</b>	4	30	12	46	11%
<b>ts</b>	5	4	3	12	3%
<b>dz</b>	7	3	0	10	2%
<b>s</b>	9	2	4	15	4%
<b>z</b>	5	2	1	8	2%
<b><sup>n</sup>dz</b>	1	0	0	1	0%
<b>j</b>	1	6	13	20	5%
<b>k</b>	7	2	4	13	3%
<b>g</b>	2	3	0	5	1%
<b>h</b>	16	2	11	29	7%
<b>ɣ</b>	3	1	2	6	1%
<b><sup>ɳ</sup>g</b>	1	1	0	2	0%
<b>k<sup>w</sup></b>	8	5	5	18	4%
<b>g<sup>w</sup></b>	3	6	0	9	2%
<b>h<sup>w</sup></b>	8	1	0	9	2%
<b>ɣ<sup>w</sup></b>	9	1	0	10	2%
<b><sup>ɳ</sup>g<sup>w</sup></b>	0	1	0	1	0%
<b>w</b>	6	12	4	22	5%

*10.8.2 Phonemes ordered by total number of instances*

	Initial	Medial	Final	Total	Overall percentage
<b>r</b>	4	30	12	46	11%
<b>d</b>	12	7	18	37	9%
<b>n</b>	2	8	20	30	7%
<b>h</b>	16	2	11	29	7%
<b>m</b>	9	10	8	27	7%
<b>v</b>	11	11	2	24	6%
<b>w</b>	6	12	4	22	9%
<b>j</b>	1	6	13	20	5%
<b>k<sup>w</sup></b>	8	5	5	18	4%
<b>p</b>	7	4	7	18	4%
<b>ʈ</b>	10	3	3	16	4%
<b>s</b>	9	2	4	15	4%
<b>k</b>	7	2	4	13	3%
<b>ts</b>	5	4	3	12	3%
<b>dz</b>	7	3	0	10	2%
<b>ɣ<sup>w</sup></b>	9	1	0	10	2%
<b><sup>m</sup>b</b>	5	4	0	9	2%
<b>g<sup>w</sup></b>	3	6	0	9	2%
<b>h<sup>w</sup></b>	8	1	0	9	2%
<b>z</b>	5	2	1	8	2%
<b>t</b>	3	2	2	7	2%
<b>d</b>	3	3	0	6	1%
<b>ɣ</b>	3	1	2	6	1%
<b>ʎ</b>	3	1	1	5	1%
<b>g</b>	2	3	0	5	1%
<b><sup>n</sup>d</b>	2	1	0	3	1%
<b>b</b>	2	0	0	2	0%
<b>ɓ</b>	0	1	1	2	0%
<b><sup>ŋ</sup>g</b>	1	1	0	2	0%
<b><sup>n</sup>dz</b>	1	0	0	1	0%
<b><sup>ŋ</sup>g<sup>w</sup></b>	0	1	0	1	0%



*10.8.3 Statistics by place of articulation*

The alveolar phonemes are the most common in the reconstructed roots. All the other points of articulation are more or less equally common. Labialized velars are uncommon in word-final position.

	Initial	Medial	Final	Total	Percentage
<b>Labial</b>	34	30	18	82	19%
<b>Alveolar</b>	39	55	56	150	35%
<b>Laminal</b>	28	17	21	66	15%
<b>Velar</b>	30	11	17	58	14%
<b>Labialized velar</b>	36	26	9	71	17%

*10.8.4 Statistics by manner of articulation*

Voiceless plosives and fricatives are more common than voiced plosives and fricatives. Implosives and nasals are also more common than voiced plosives. Overall, fricatives are much more common than plosives.

	Initial	Medial	Final	Total	Percentage
<b>Voiceless plosive</b>	29	15	14	58	14%
<b>Voiced plosive</b>	17	15	0	32	7%
<b>Voiceless fricative</b>	44	10	25	79	19%
<b>Voiced fricative</b>	31	16	6	53	12%
<b>Implosive</b>	15	10	19	44	10%
<b>Nasal</b>	11	18	28	57	13%
<b>Pre-nasalized plosive</b>	9	7	0	16	4%
<b>Liquid/approximant</b>	11	48	29	88	21%

