

# Vowel Systems in Nigerian Languages: Genetic Typology versus Areal Characteristics

Dr. Matthew Harley  
SIL Nigeria

**ACAL51-52**

University of Florida

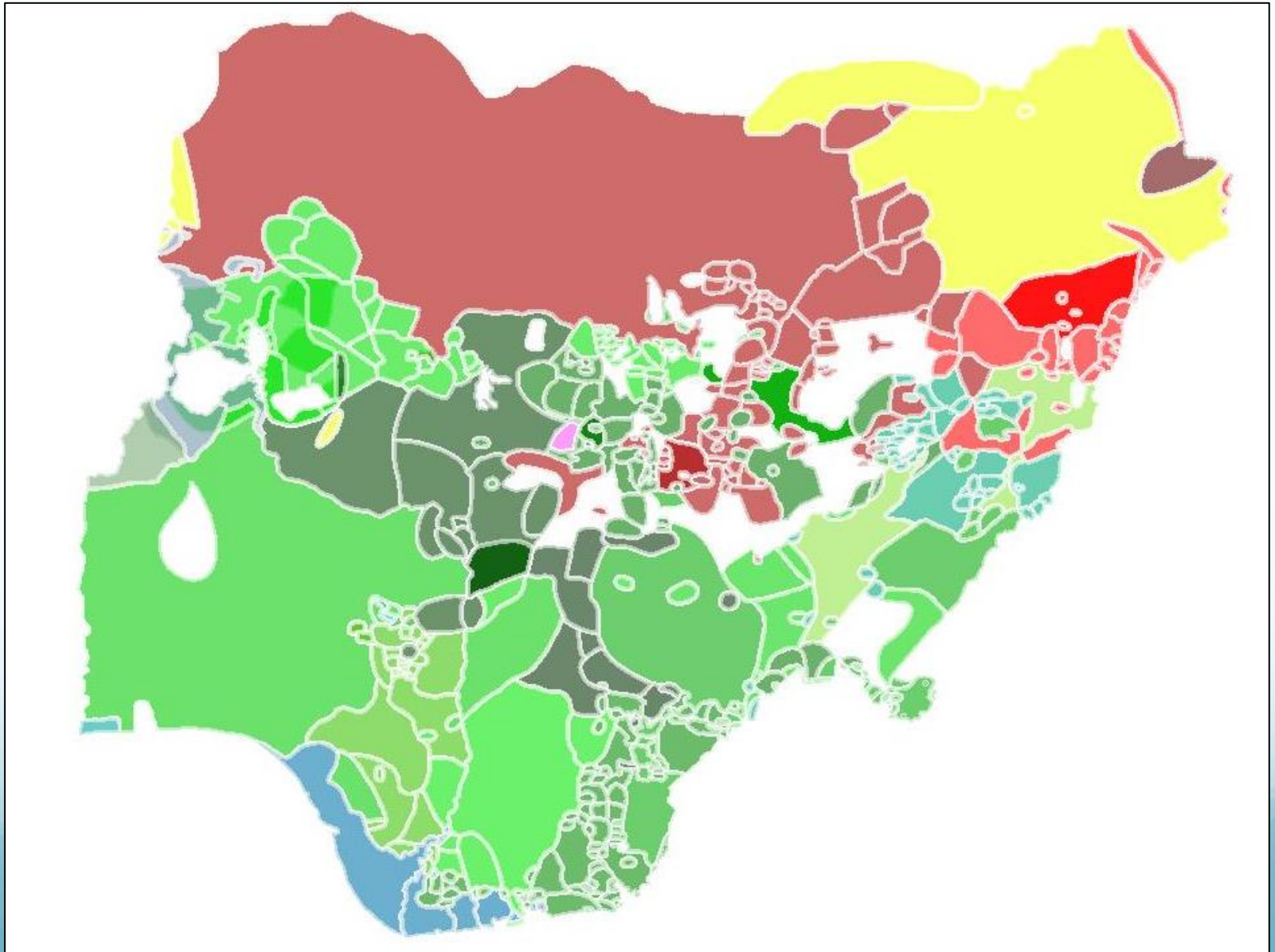
April 8-10, 2021



# Language diversity in Africa



# Nigerian languages



# Language families in Nigeria (Eberhard, Simons and Fennig 2021) – 512 indigenous living languages

Phylum	(Sub-)Family	Number	Sample	Examples
N-C	Mande	6	5	Busa, Boko, Kyenga, Shanga, Sorko
	Atlantic	3	1	Fulfulde (Nigerian, Adamawa, Benin-Togo)
	<b>Ijoid</b>	10	8	Defaka, Ijọ, Izon
	Kwa	1	1	Gungbe
	Gur	1	1	Baatonum
	Adamawa	45	9	Longuda, Awak, Mumuye
	N. Bantoid	14	6	Mambila, Samba Daka, Vute
	S. Bantoid	40	13	Tiv, Jarawa, Ejagham
	<b>Cross River</b>	67	29	Efik, Ibibio, Mbembe
	<b>Jukunoid</b>	19	13	Jukun Takum, Kutep, Jibu
	<b>Kainji</b>	57	19	C’Lela, Cicipu, Reshe
	<b>Plateau</b>	59	26	Berom, Tarok, Gyong
	Defoid	7	7	Yoruba, Igala, Işekiri, Ayere, Arigidi
	<b>Edoid</b>	31	22	Degema, Engenni, Edo
	<b>Idomoid</b>	9	9	Idoma, Eloyi, Etulo
	<b>Igboid</b>	10	7	Igbo, Ekpeye, Ikwere, Ika, Izi, Ogbah
	<b>Nupoid</b>	11	12	Nupe, Gbari, Ebira
	Other B-C	3	3	Ukaan, Akpes, Oko-Eni-Osayen
A-A	<b>West Chadic A</b>	44	22	Hausa, Ngas, Mwaghavul
	<b>West Chadic B</b>	27	11	Bade, Miya, Ngizim, Zaar
	Central Chadic	40	19	Bura, Kamwe, Glavda
	Semitic	1	1	Shuwa Arabic
	Berber	1	1	Tamajaq
Nilo-S	Saharan	4	1	Central Kanuri, Tedaga, Manga Kanuri
	Songhai	2	1	Dendi, Zarma
<b>Total</b>		<b>512</b>	<b>247</b>	

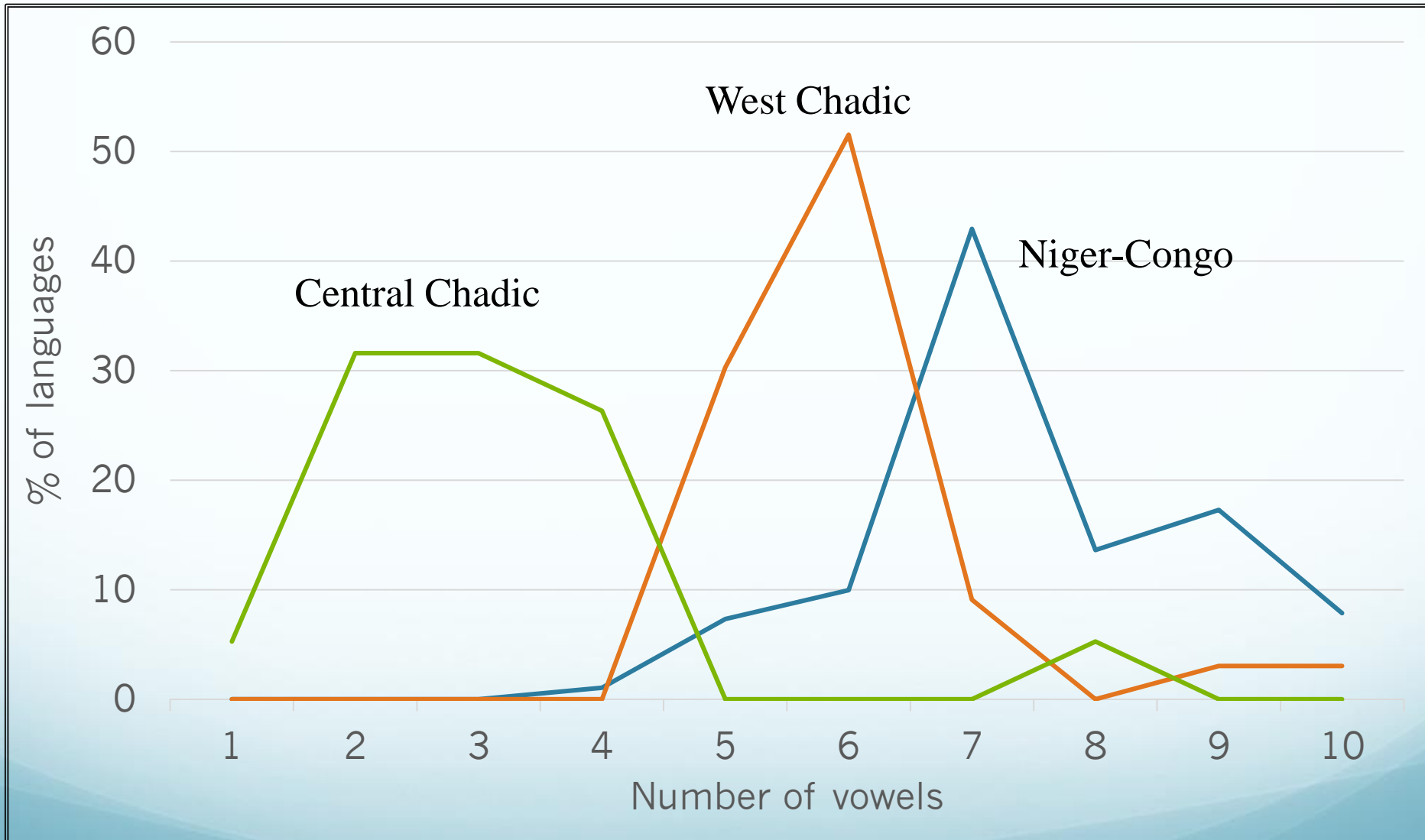
# Vowel inventory overview

Number of basic vowels	Number of languages
10	16
9	34
8	27
7	86
6	37
5	26
4	7
3	6
2	7
1	1
Total	247

# Vowel inventory overview

Number of vowels	Niger-Congo (191)		West Chadic (33)		Central Chadic (19)	
	Number	%	Number	%	Number	%
10	15	8	1	3	.	.
9	33	17	1	3	.	.
8	26	14	.	.	1	5
7	82	43	3	9	.	.
6	19	10	17	52	.	.
5	14	7	10	30	.	.
4	2	1	.	.	5	26
3	.	.	.	.	6	32
2	.	.	1	3	6	32
1	.	.	.	.	1	5

# Vowel inventory overview



# Niger-Congo vowel inventories

# of vowels	Ijoid (8)	Cross-River (29)	Kainji (19)	Plateau (26)	Edoid (22)	Idomoid (9)	Igboid (7)	Nupoid (12)	Defoid (7)	Jukunoid (13)	Bantoid (19)	Adamawa (9)
10	-	10	1	-	1	-	-	-	-	1	-	2
9	6	1	1	5	6	1	4	2	-	1	2	3
8	-	3	7	1	2	-	3	-	-	-	8	2
7	2	13	2	16	13	7	-	4	7	2	6	1
6	-	1	8	1	-	-	-	-	-	5	3	1
5	-	1	-	2	-	1	-	6	-	3	-	-
4	-	-	-	1	-	-	-	-	-	1	-	-



# Different vowel inventories

# Vowels	Vowel system	Number	Example languages
10 vowels	i ɪ e ε ə a ɔ o ʊ u	15	Awak, Kushi
	i ɪ e ε a ɑ ɔ o ʊ u	1	Wannu
9 vowels	i ɪ e ε a ɔ o ʊ u	28	İzən
	i ɪ e ε ə a ɔ o u	1	Hõne
	i e ε i ə a ɔ o u	1	Baangi
	i ɪ ε ə a ɔ o ʊ u	2	Waci, Kuce
	i e ε i a ɔ o ɯ u	1	Len Mambila
	i y e ε œ a ɔ o u	1	Gaa
8 vowels	i e ε ə a ɔ o u	15	Mbembe, Lokəə
	i e ε a ɔ o ʊ u	2	Ḑmalhe, Ibilo
	i ɪ e a ɔ o ʊ u	3	Igbo, Ika, Ogbah
	i e ε a ɑ ɔ o u	1	Bankal
	i e ε a ɔ o ɣ u	1	Afade
	i e ε i a ɔ o u	3	Dukawa, Utma'in, Ugare
	i e i a ɔ o ʊ u	1	Iceve-Maci
	i e i ə a ɔ o u	1	Vute

# Different vowel inventories

# Vowels	Vowel system	Number	Example languages
7 vowels	i e ε a ɔ o u	68	Yoruba, Berom, Mumuye
	i e ε i a ɔ o	1	Limbum
	i ɪ ε a ɔ ʊ u	1	Eten
	i e i ə a o u	6	Jju, Tyap, Gworog
	i e a ɔ ʌ o u	1	Ibibio
	i ε ə a ɔ o u	2	Iyive, Mada
	i ε i ə a ɔ u	1	Tarok
	i y/ʉ ε ʌ/ə a ɔ u	1	Western Ejagham
	i ɪ e ə a o u	1	Yamba
	i e æ i a o u	1	Kuteb
	i e ə a ɔ o u	1	Anaang
	i e ε ə a o u	1	Hyam
	i e ε i a o u	1	Mbembe Tigon

# Different vowel inventories

# Vowels	Vowel system	Number	Example languages
6 vowels	i e/ε ə a ɔ/o u	19	Zaar, Kanuri, Dera
	i e i a o u	8	Angas, Geji, Kwalla, Bade, Ngizim
	i e a ɔ o u	5	Tiv, Obolo, Cicipu, Tsuvadi, Mambila
	i e ε a ɔ u	1	Rigwe
	i ε i a ɔ u	4	CəHungwəryə, Mwaghavul Kamuku
5 vowels	i e/ε a ɔ/o u	26	Hausa, Fulfulde, Nupe
4 vowels	i ə a u	3	Bura, Hdi, Lamang
	i i a u	2	Tera, Shall-Zwall
	i e ə a	1	Fali of Kirya
	i a o u	1	Jibu
3 vowels	i ə a	3	Sukur, Wandala, Dghwede
	i ə a	2	Bata, Psikye
	e i a	1	Kamwe
2 vowels	ə a	5	Daba, Həba, Mafa, Nzanyi
	i a	2	Gude, Miya
1 vowel	a	1	Glavda

# Most Common Systems (>10%)

## Triangular:

9 vowels

i      u  
ɪ      ʊ  
e      o  
ɛ      ɔ  
a

(28 languages)  
(11.3%)

e.g. Ijọ, Ikwerre

7 vowels

i      u  
e      o  
ɛ      ɔ  
a

(68 languages)  
(27.5%)

e.g. Berom, Igala

# Most Common Systems

## Triangular:

6 vowels

i i/ə u

e/ɛ o/ɔ

a

(27 languages)  
(10.9%)

e.g. Angas, Zaar

5 vowels

i u

e/ɛ o/ɔ

a

(26 languages)  
(10.5%)

e.g. Hausa, Bole

# Other Common Systems

**Vertical:**

1/2/3 vowels

(i)

(ə)

a

(14 languages)

(5.7%)

e.g. Həba, Gude

# Rare systems

Asymmetrical (front heavy):

9 vowels

i        u  
ɪ  
e   ə   o  
ɛ        ɔ  
          a

e.g. Hõne

7 vowels

i        u  
           
e   ə   o  
ɛ  
          a

e.g. Hyam

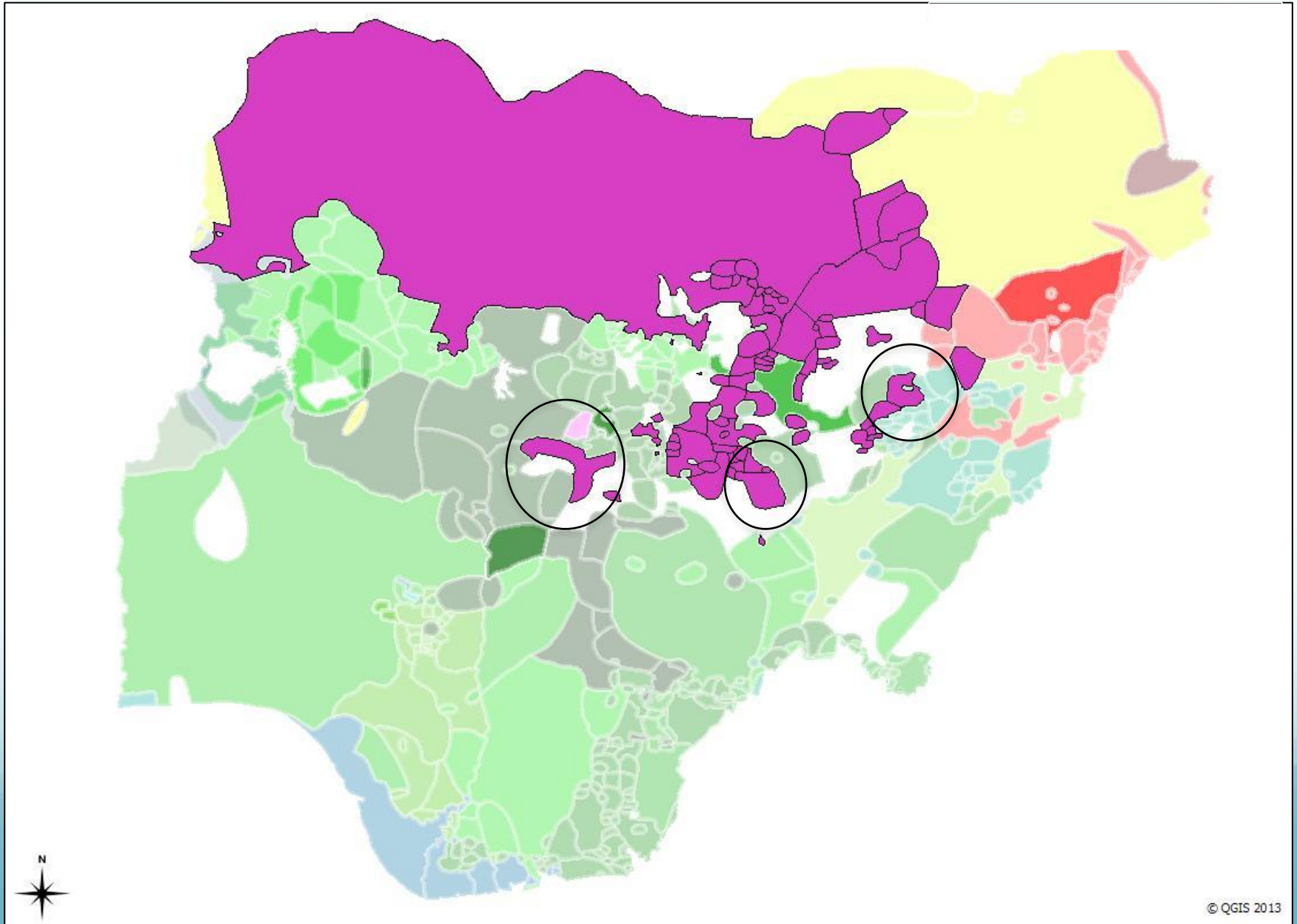




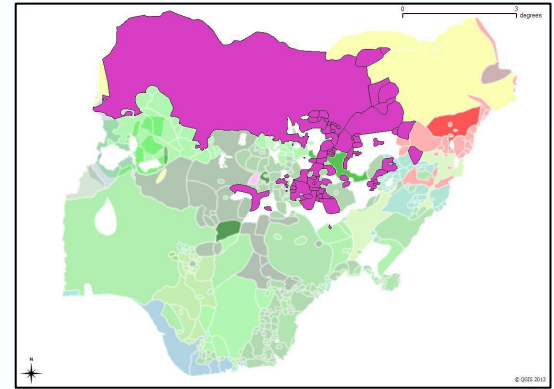
# A closer look at some sub-groups

- West Chadic
- Central Chadic
- Ijoid
- Benue-Congo
  - Edoid
  - Cross River

# West Chadic (71, all in Nigeria)



# West Chadic



6 vowels

i i/ə u

e/ɛ o/ɔ

a

(17/33 languages)

e.g. Angas, Zaar

5 vowels

i u

e/ɛ o/ɔ

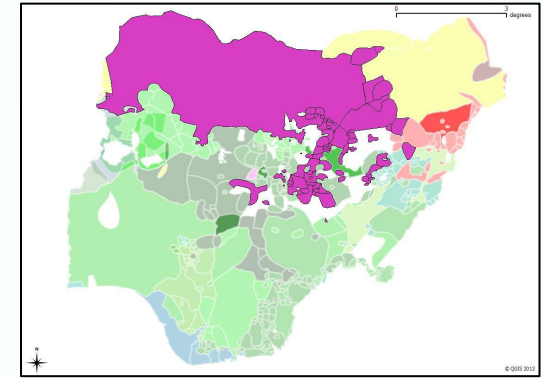
a

(10/33 languages)

e.g. Hausa, Ron

# West Chadic

Larger inventories through language contact:



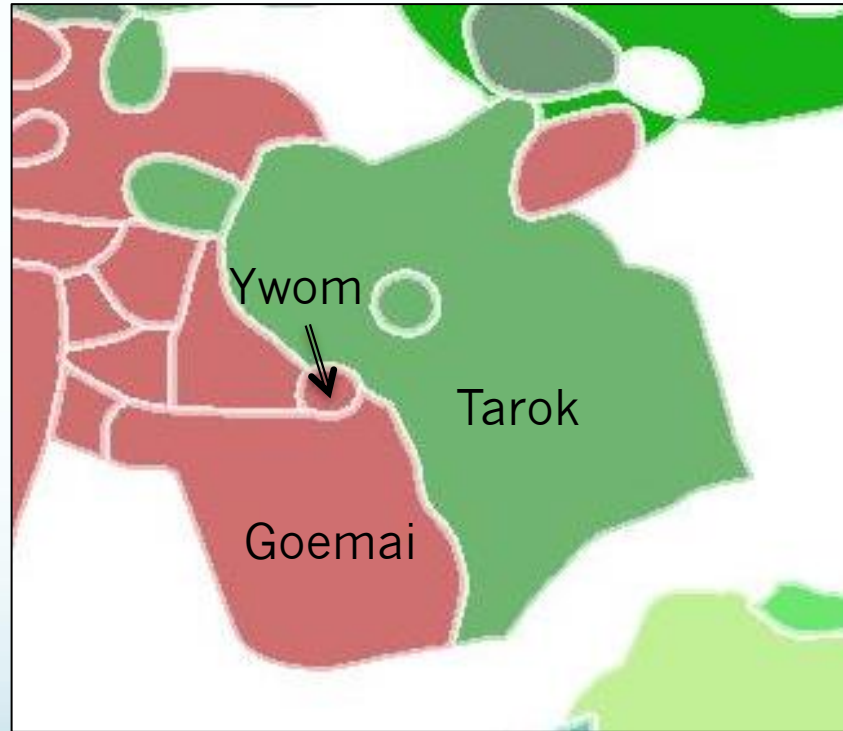
i i u

e ə o

a

7 vowels

Tarok/Ywom/  
Goemai



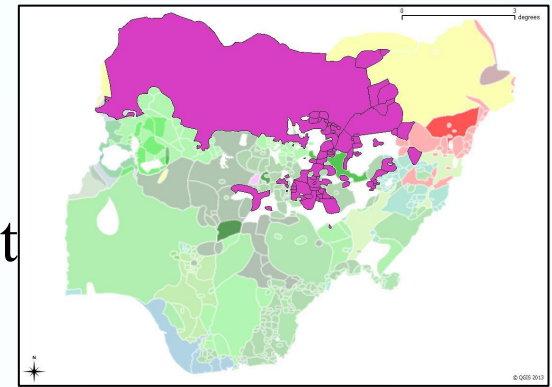
## Evidence of Tarok/Ywom/Goemai contact

- Tarok and Goemai are L2 for many Ywom.
- Oral tradition says the first Ywom clan, the Pitop, originally came from Goemai.
- Some Tarok clans trace their origin to neighbouring Chadic languages, including Ywom and Goemai.
- Many southern Tarok place names are of Ywom origin.
- Among cognates between Tarok and various Chadic languages, the overwhelming number are of Tarok origin, suggesting that the direction of borrowing was Tarok > Chadic (Longtau 2004).

N.B. Ywom also has the labial-velar plosives /kp/ and /gb/, highly unusual for a Chadic language, but common in Plateau languages. However few words containing them have cognates in Tarok, suggesting many of them have their origin in other BC languages (Blench 2013).

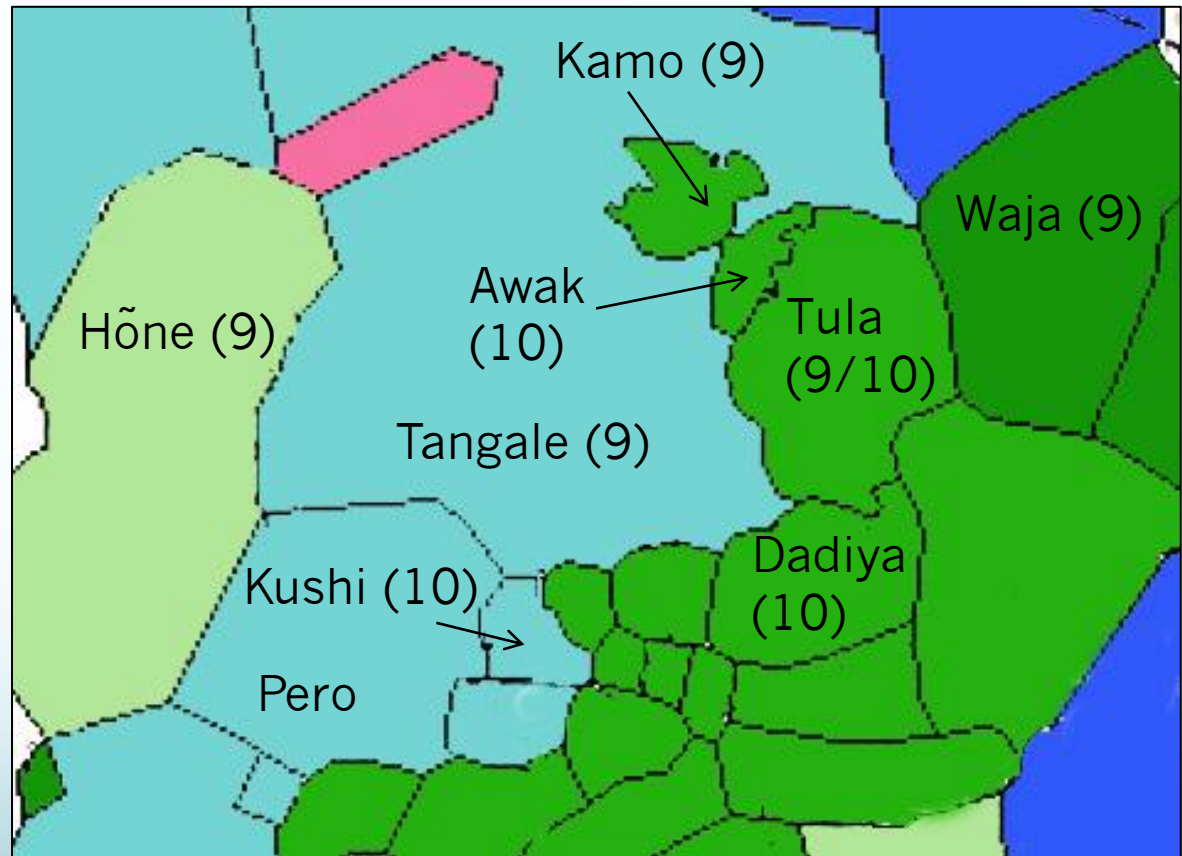
# West Chadic

Larger inventories through language contact



i	u
ɪ	ʊ
e	o
ɛ	ɔ
	a
9 vowels - Tangale	

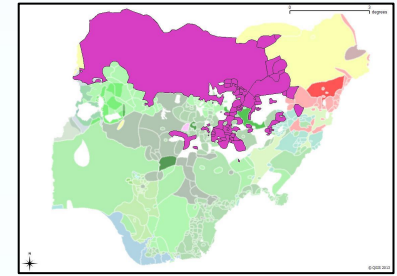
i	u	
ɪ	ʊ	
e	ə	o
ɛ		ɔ
	a	
10 vowels - Kushi		



## Evidence of Tangale/Jukunoid contact (Storch 2002)

- Numerous Jukunoid loans in neighbouring Chadic (and Adamawa languages), but very few Chadic loans in Jukunoid.
- “Closely knit economic networks, slavery, intermarriage, and – above all – the spiritual and magic powers of the Jukun sacred kings and priest-chiefs were [catalysts] for an intensive contact and diglossia situation.” This is supported by the fact that most Jukun loans words in Chadic belong to the religious and socio-political semantic domains (e.g. yámbà ‘mother creator God’)
- The loss of stem-final consonants in certain Jukun lects (e.g. Wannu) is compensated for by regular and predictable vowel changes involving the creation of –ATR vowels from their +ATR counterparts.
- Neutralisation of consonant distinctions in neighbouring Chadic languages (e.g. Piya-Kwonci) has also generated new vowels.

# West Chadic



Nasal vowels through language contact:

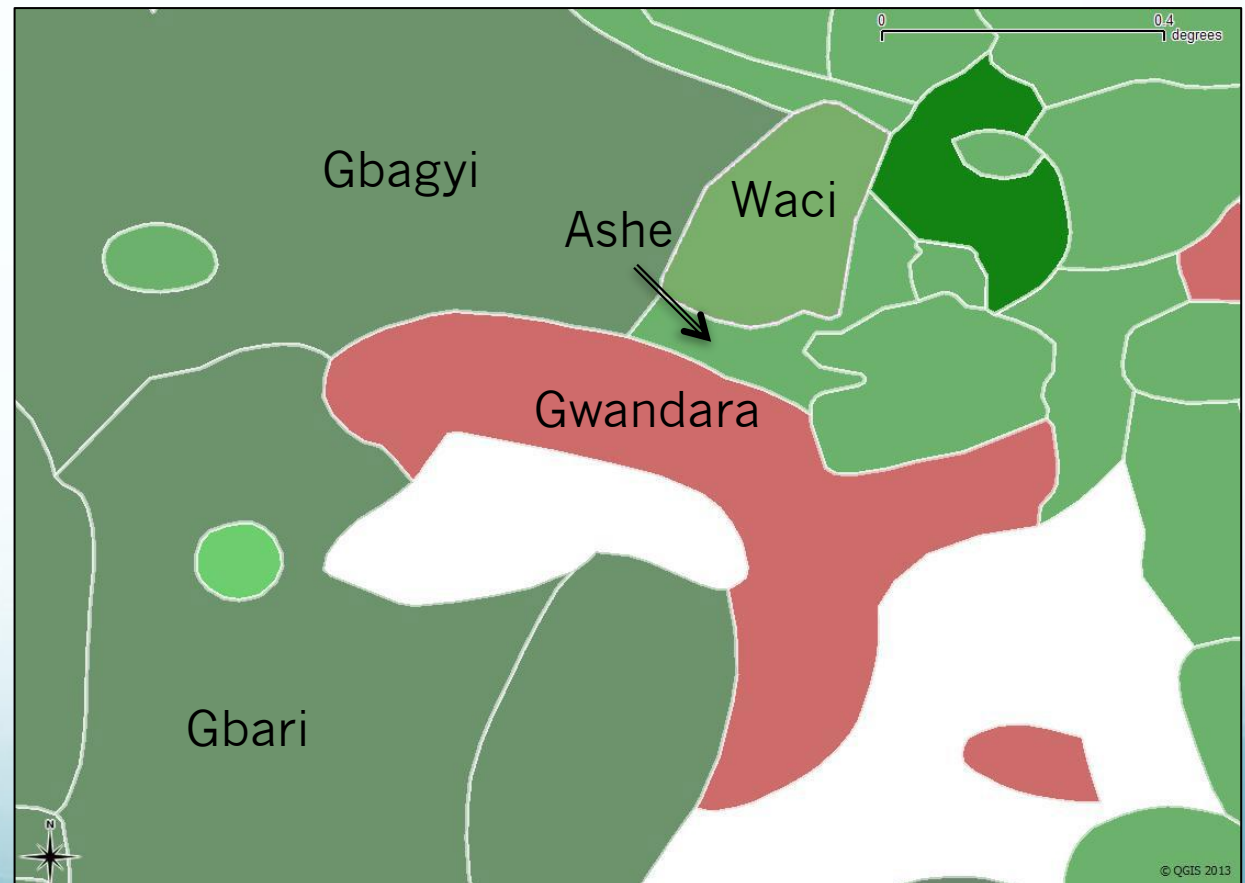
i ã      u ã

e      o

a ã

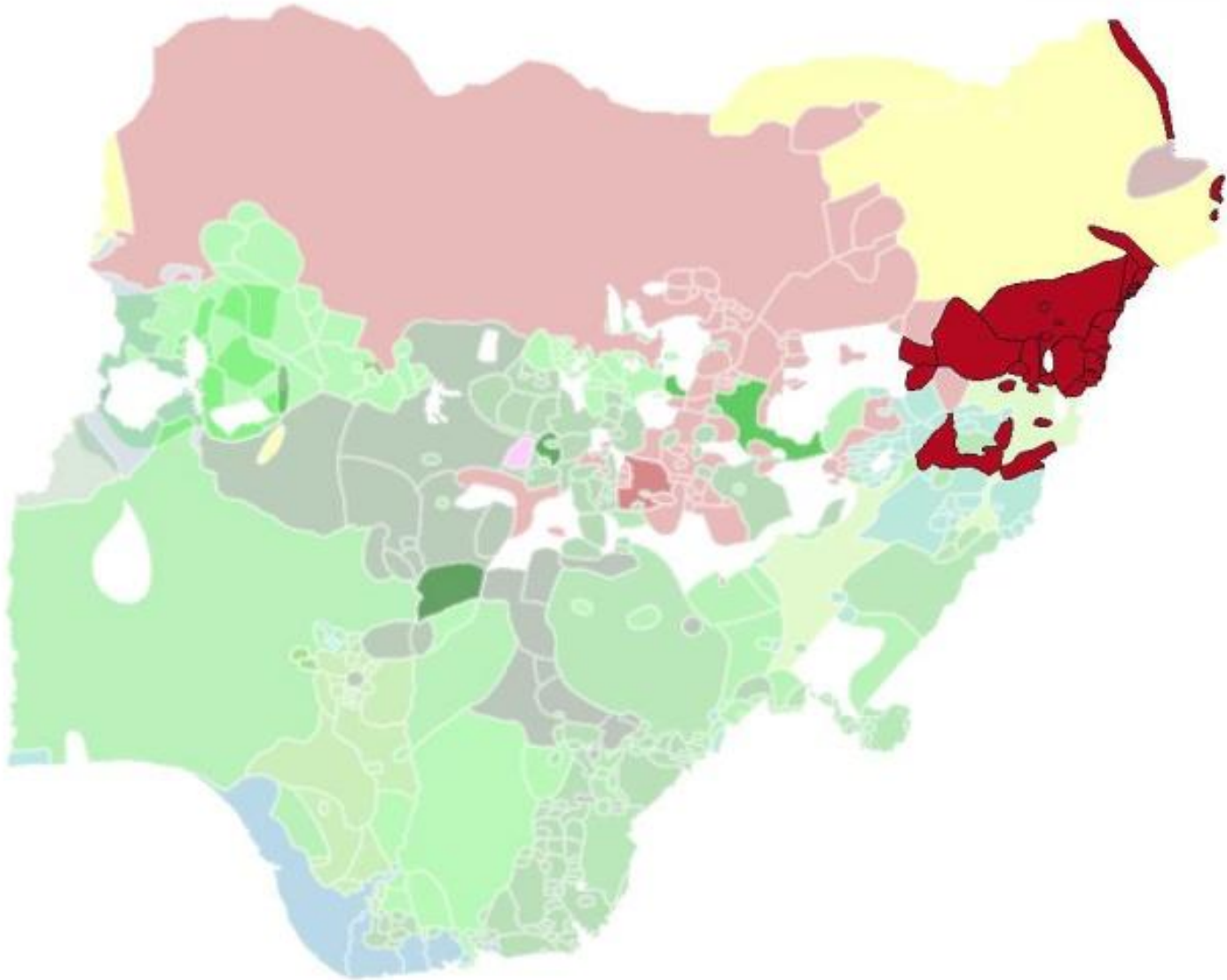
5 vowels

Gwandara





# Central Chadic/Biu-Mandara (40 in Nigeria)



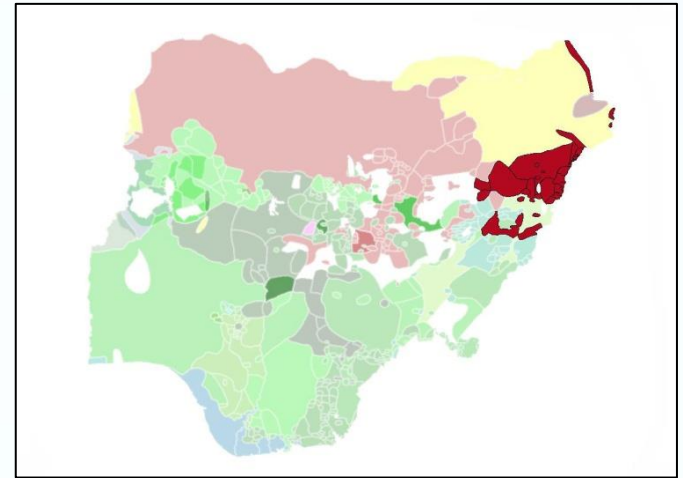
# Central Chadic/Biu-Mandara

1/2/3 vowels

(i)

(ə)

a



“Languages mainly of the Central Chadic (sub-branch A) can be analysed as having maximally two phonemic vowels /a, ə/, or just one /a/, or none at all, depending on the level of abstractness of analysis”

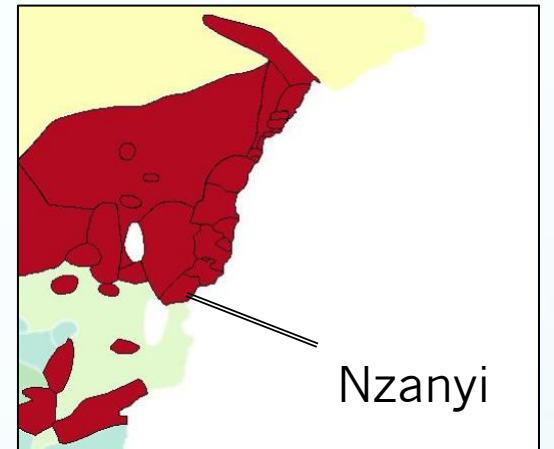
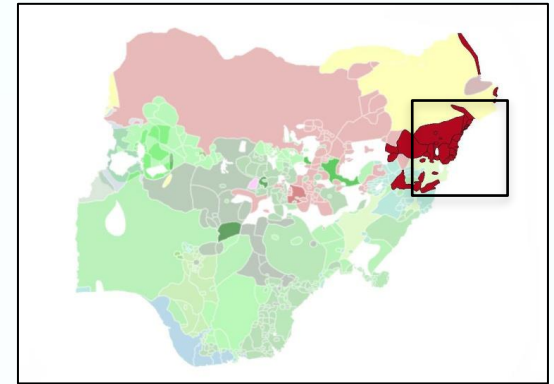
(Wolff 2019:274)

# Nzanyi

(i) - epenthetic

ə

a

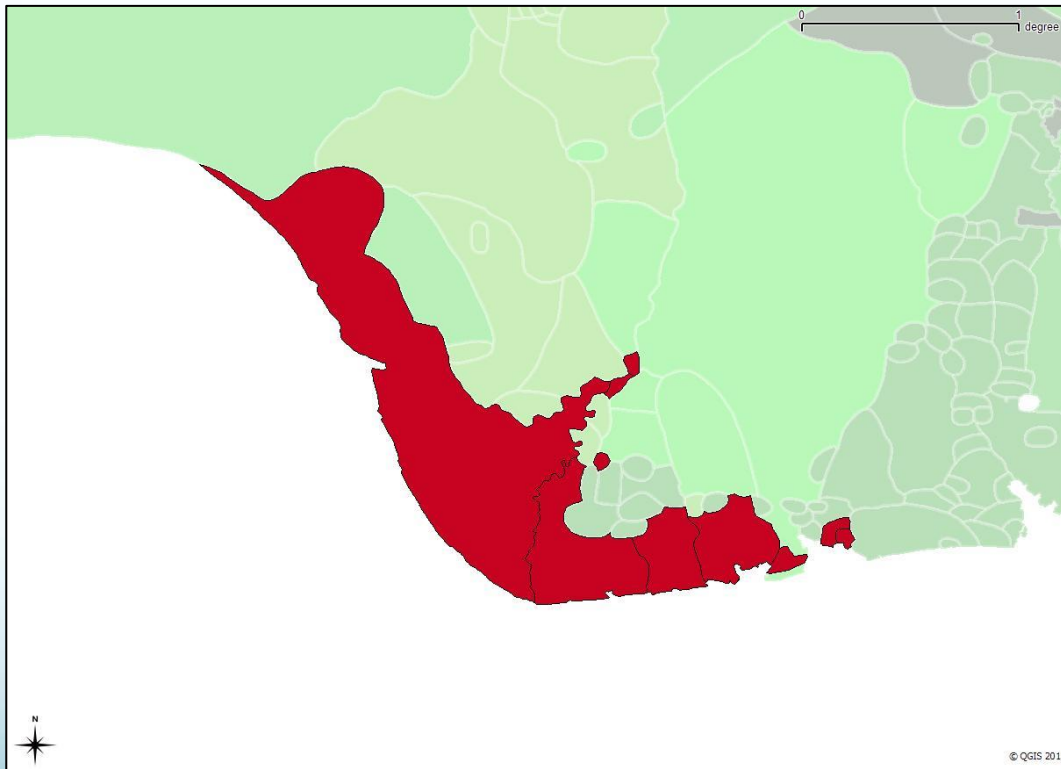
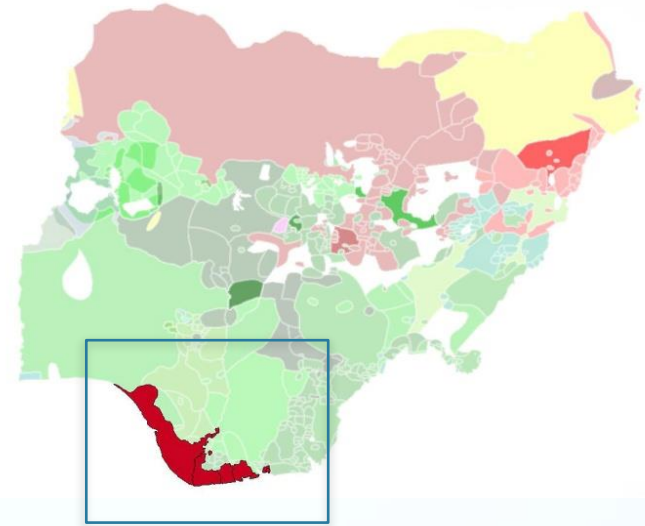


Plain	Palatalised	Labialised
Ca	Cja	C <sup>w</sup> a
Cə	Ce	Co
Ci	Ci	Cu

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'bead'	[músìrɛ́]	/m <sup>w</sup> sɾ-ə/	[mósə̀rí]	/m <sup>w</sup> -ə-s-ə-r-j/

# Ijoid (10 languages, all in Nigeria)

Proto-Ijoid (9 vowels)

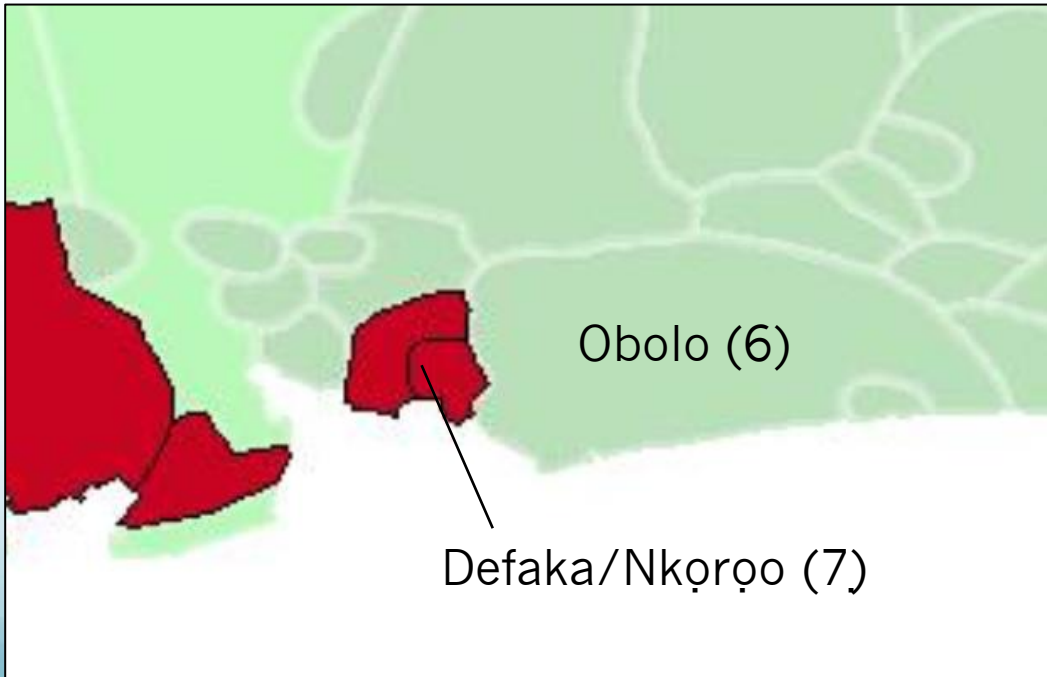
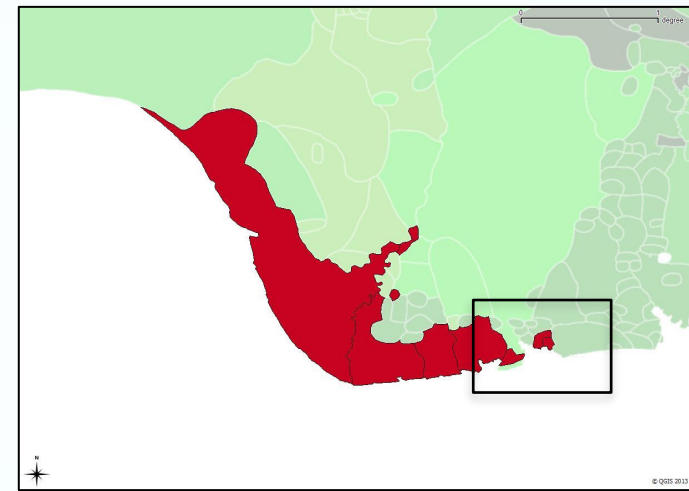


i	u
ɪ	ʊ
e	o
ɛ	ɔ
	a

9 vowels

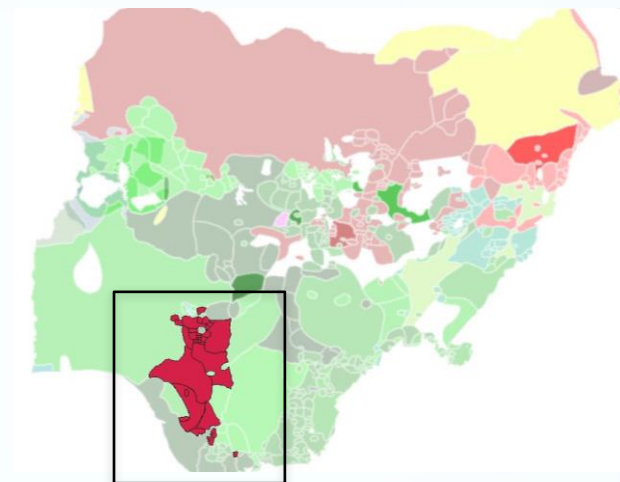
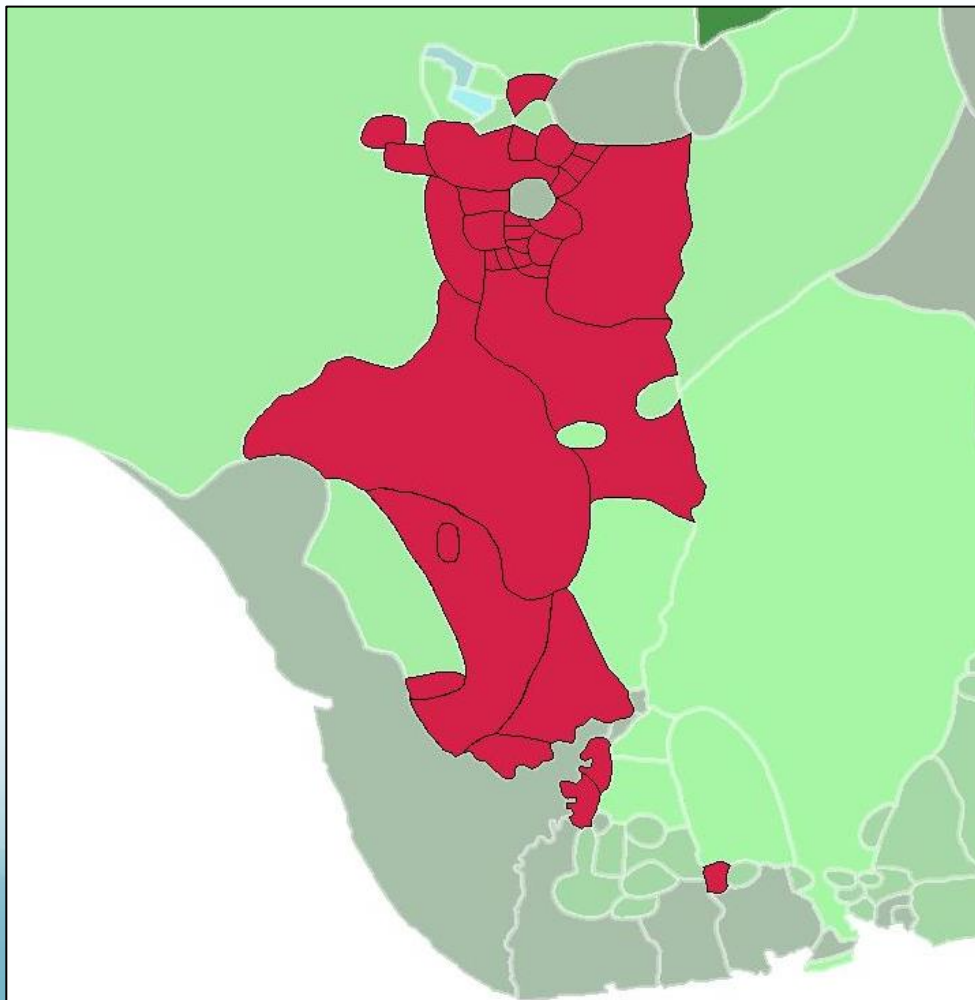
# Ijoid

All have 9 vowels except Defaka/Nkoro (7 vowels), which have lost /i/ and /u/ due to the influence of neighbouring Obolo (Williamson 1989:110)



# Edoid (31 languages, all in Nigeria)

Proto-Edoid: 10 vowels (Elugbe 1983)

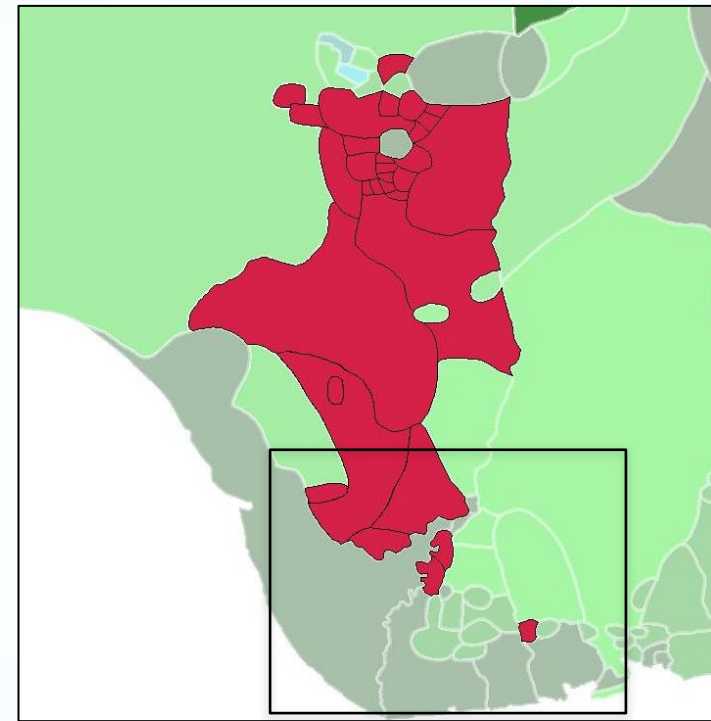
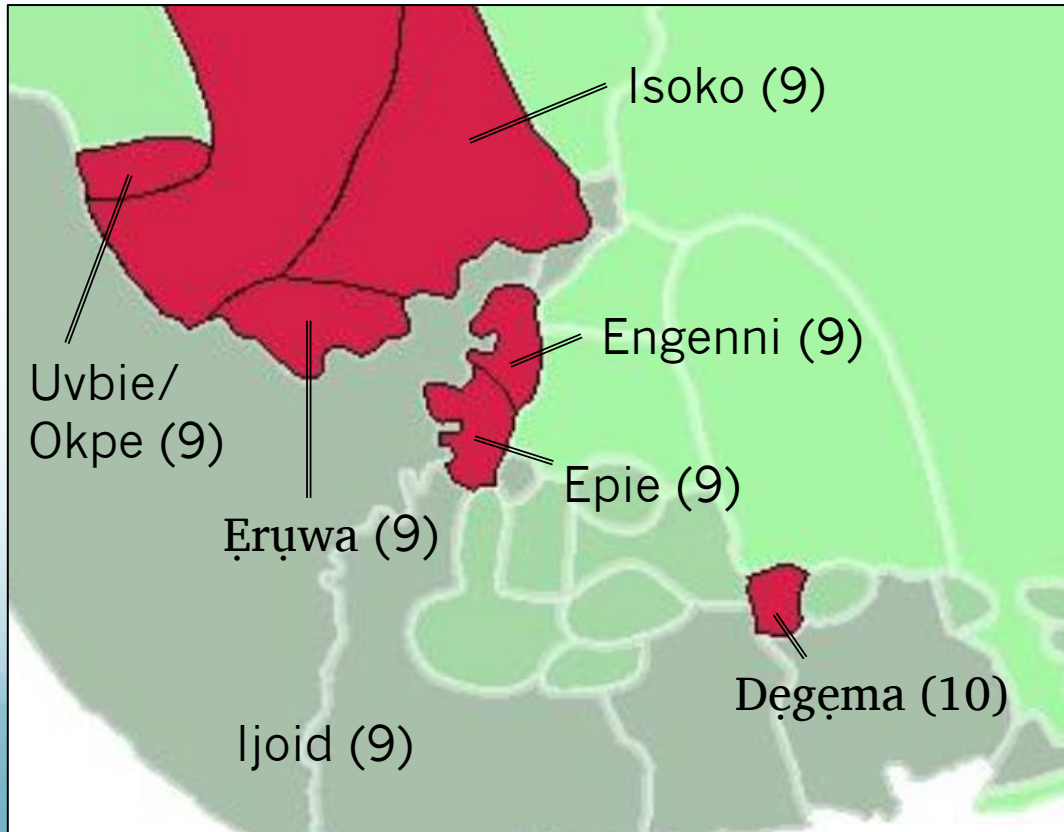


i	u
(i)	(u)
e	o
ɛ	ɔ
	a

7/9 vowels

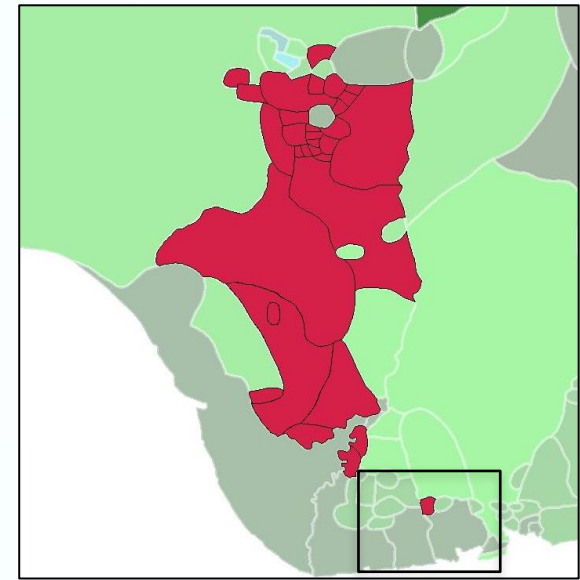
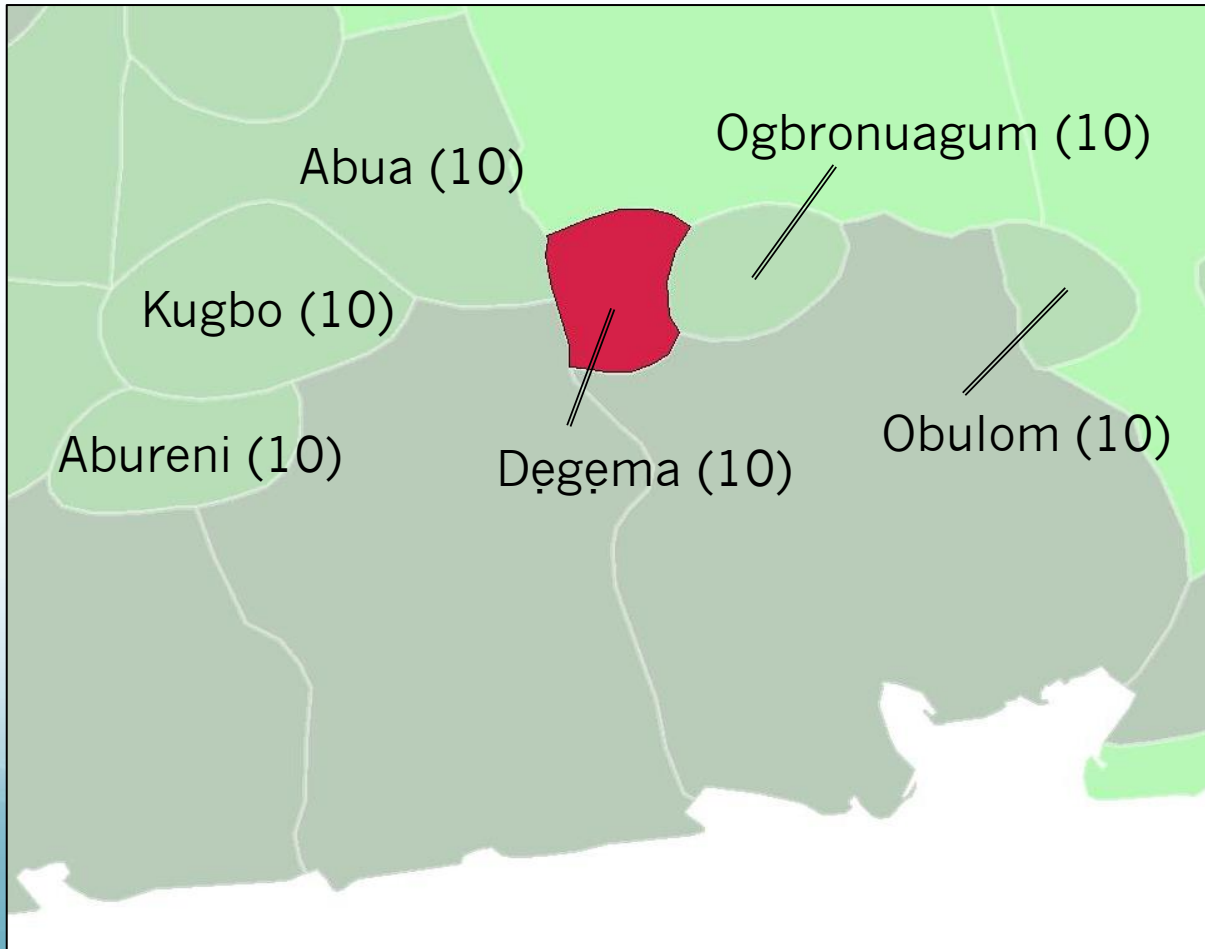
# Edoid

All seven Edoid languages with 9/10 vowels are in the south in contact with Ijoid or other 9/10 vowel languages.



# Edoid

Degema – the only Edoid language still with a clear 10-vowel system, surrounded by other 10-vowel languages.

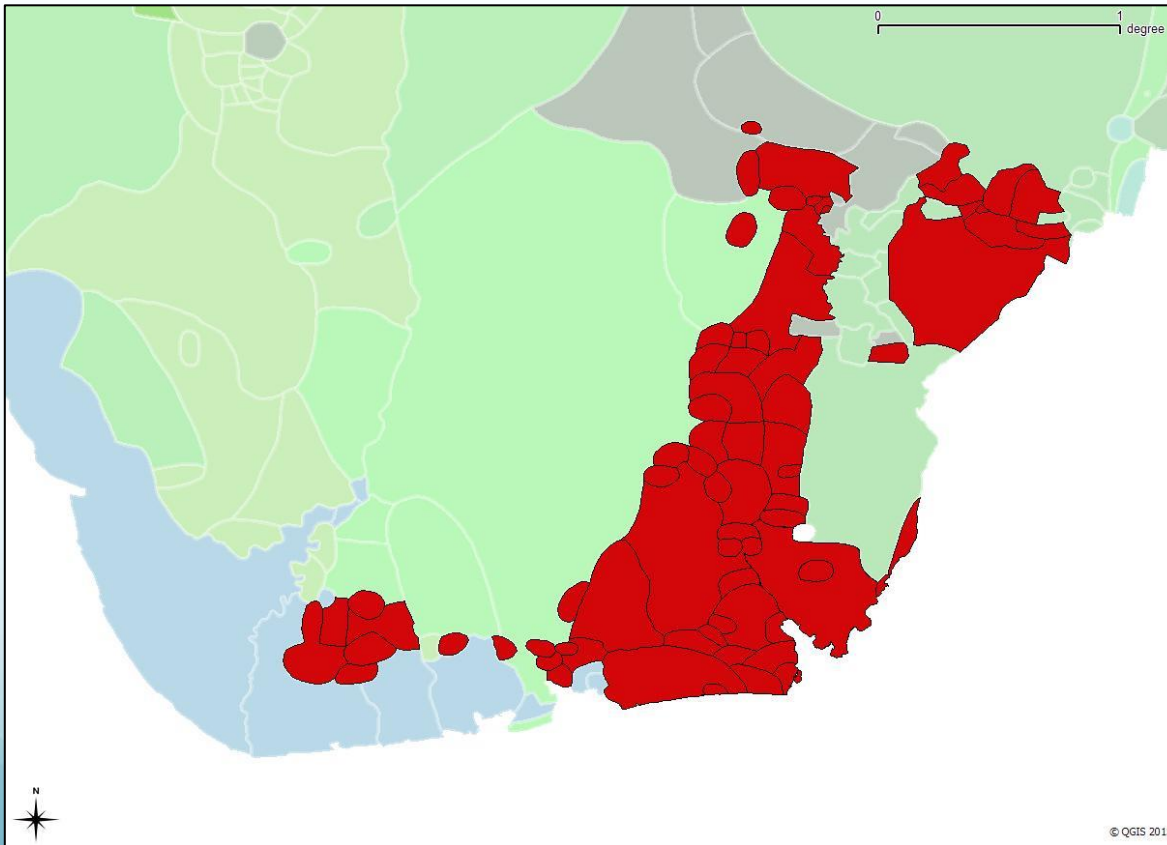
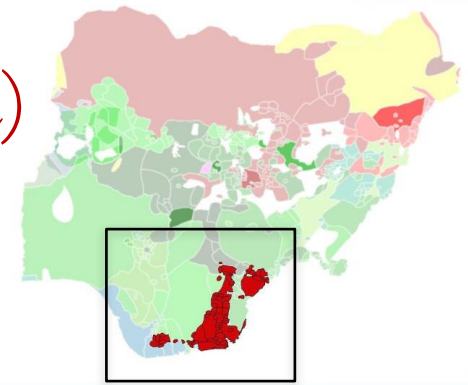




# Cross River (67 languages, all in Nigeria)

Proto-Cross-River (10 vowels).

Sub-group with most 10-vowel languages (10/29)

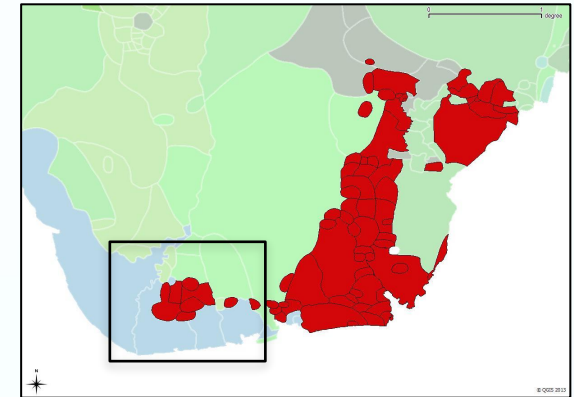
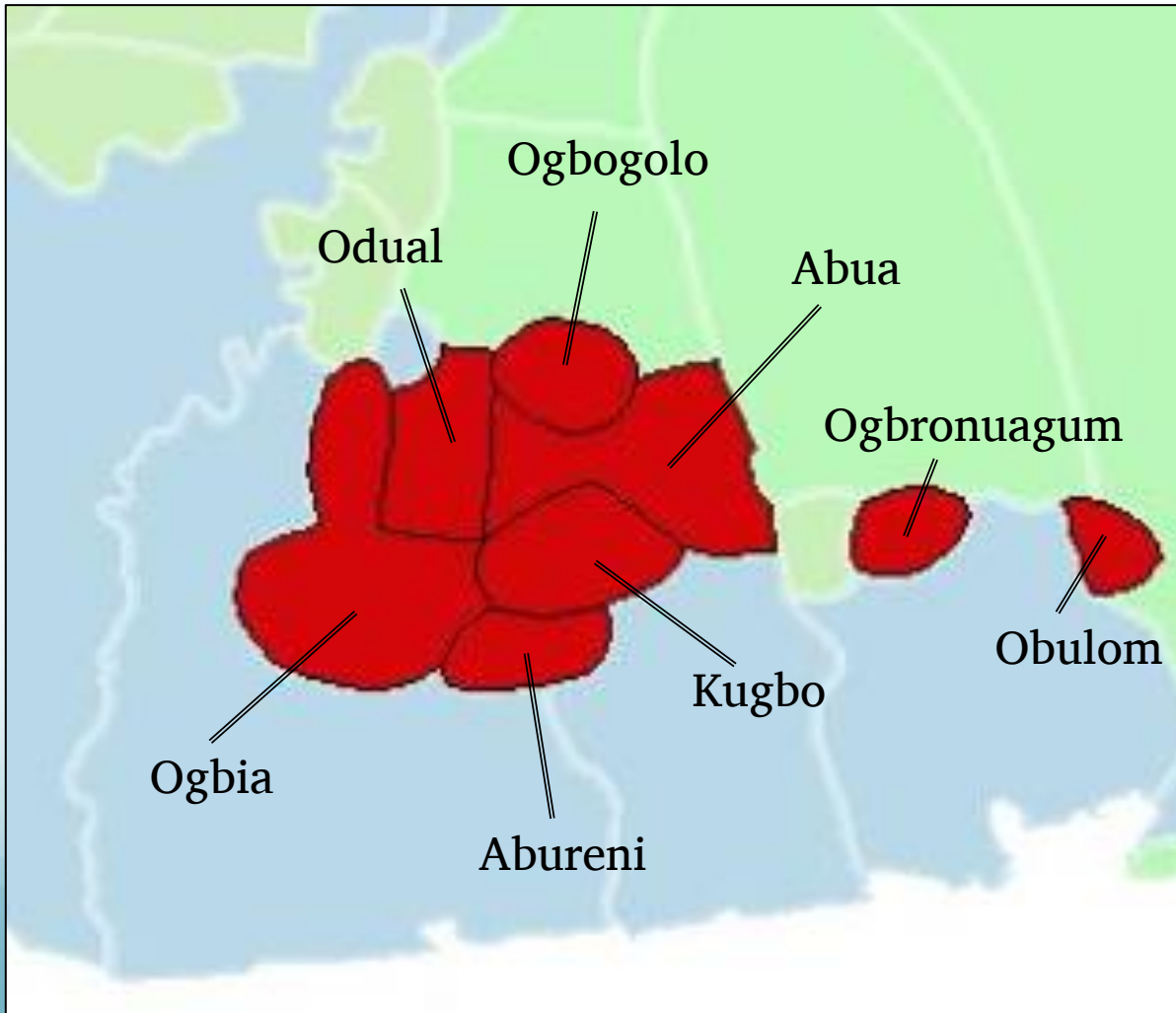


i	u
(ɪ)	(ʊ)
e	(ə)
ɛ	ɔ
	a

Mostly 7-10  
vowels

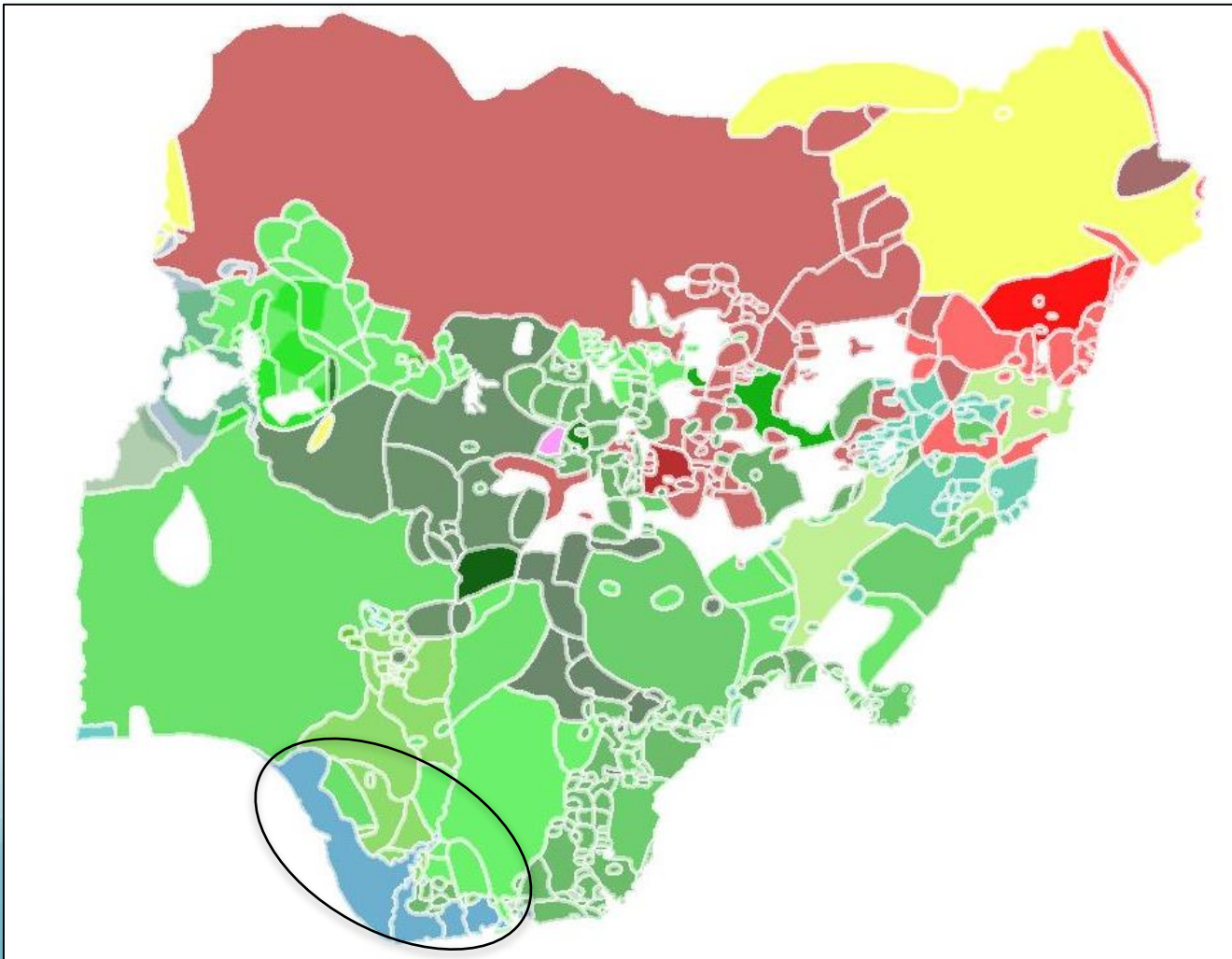
# Cross River (67 languages, all in Nigeria)

Isolated cluster of 10-vowel languages in SW.



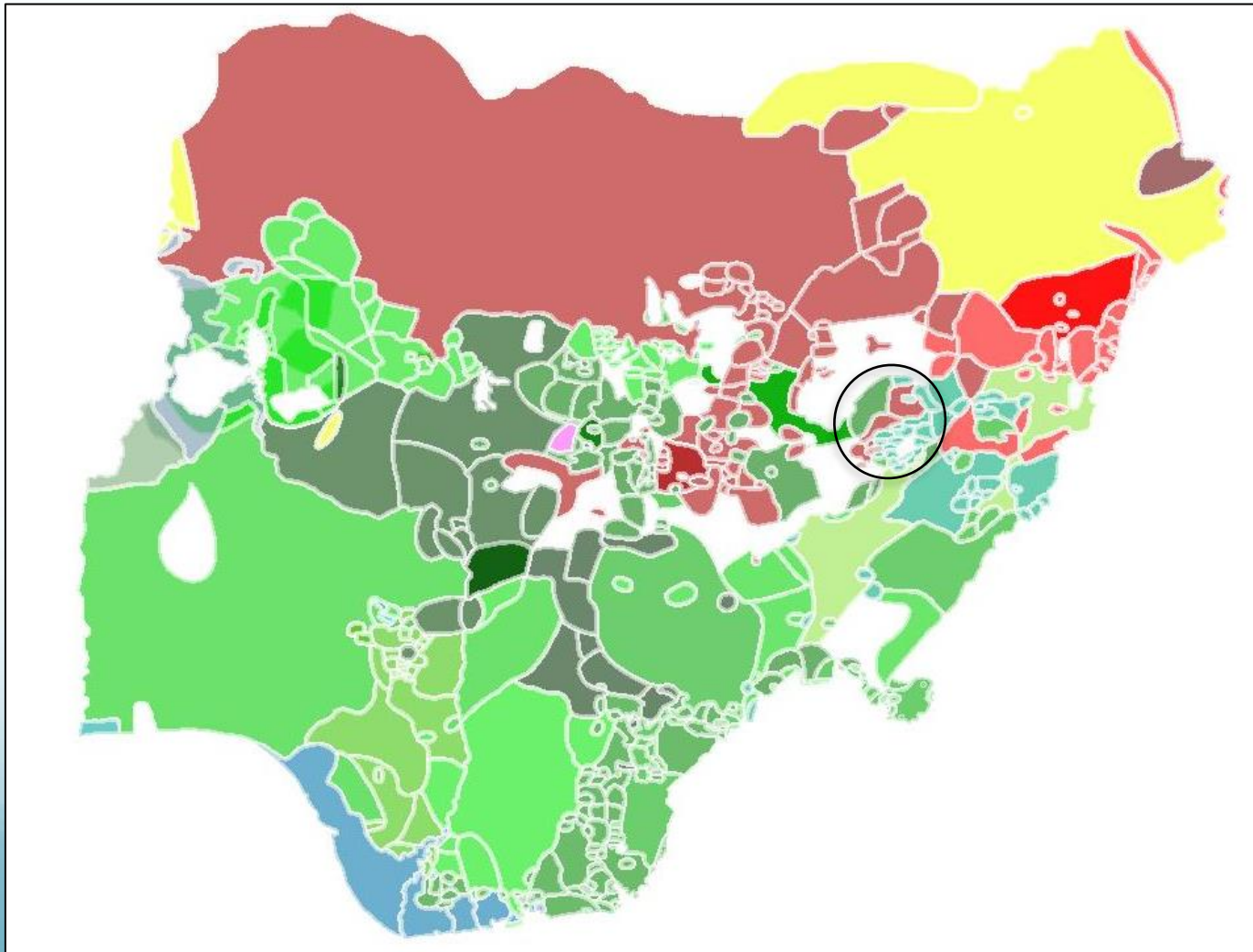
# Main 9/10 vowel retention area in Nigeria

South coast - relatively geographically isolated by the coast.



## Main 9/10 vowel diffusion area in Nigeria

A major intersection of Adamawa/Chadic/Benue-Congo languages.



# Summary

- Huge diversity of vowel systems in Nigeria.
- Language contact has led to languages both acquiring and losing certain vowel contrasts.
- Languages are more likely to maintain a large vowel inventory (or develop a larger one) if they are in regular contact with other languages with similar inventories.
- Conversely, languages are more likely to lose certain vowel contrasts if they are in regular contact with other languages with smaller inventories.
- The broad picture is in line with previous proposals that Proto-Volta-Congo (and possibly Niger-Congo) had a large inventory of 10 vowels, whilst Proto-Chadic had a fairly small vowel inventory of perhaps 1-3 vowels.

## Selected references

- Blench, 2013. 'However did Ywom become so strange?', Paper presented at the 7<sup>th</sup> Biennial International Colloquium on the Chadic Languages, 12-14 September, Hamburg University, Hamburg.
- Capo, H. B. C. 1985. 'On the high non-expanded vowels in Yoruboid', *Studies in African Linguistics* 16:1, pp103-121.
- Connell, Bruce A. 2007. 'Mambila fricative vowels and Bantu spirantisation', *Africana Linguistica* 13, pp7-31.
- Dimmendall, Gerrit Jan, 2001. 'Areal diffusion versus genetic inheritance: An African perspective'. In Alexandra Y. Aikhenvald and R. M. W. Dixon (eds.) *Areal diffusion and genetic inheritance: Problems in comparative linguistics* Oxford: Oxford University Press, pp358-392.
- Longtau, Selbut R. 2004. 'An Exploration for Linguistic Evidence of Inter-Group Relations between Speakers of Tarok and other East Benue-Congo Languages in Prehistory', Paper presented at the Conference of the Linguistic Association of Nigeria, 14-17<sup>th</sup> November 2006, Abuja.
- Storch, Anne. 2002. 'Layers of language contact in Jukun', Paper presented at the Language Contact Workshop, Charles University, Prague, 29<sup>th</sup> May 2002.
- Zogbo, Lynell Marchese 2019. 'Central vowels in the Kru language family: Innovation and areal spreading'. In Emily Clem, Peter Jenks & Hannah Sande (eds.), *Theory and description in African Linguistics: Selected papers from the 47th Annual Conference on African Linguistics*, Berlin: Language Science Press, pp725–750.

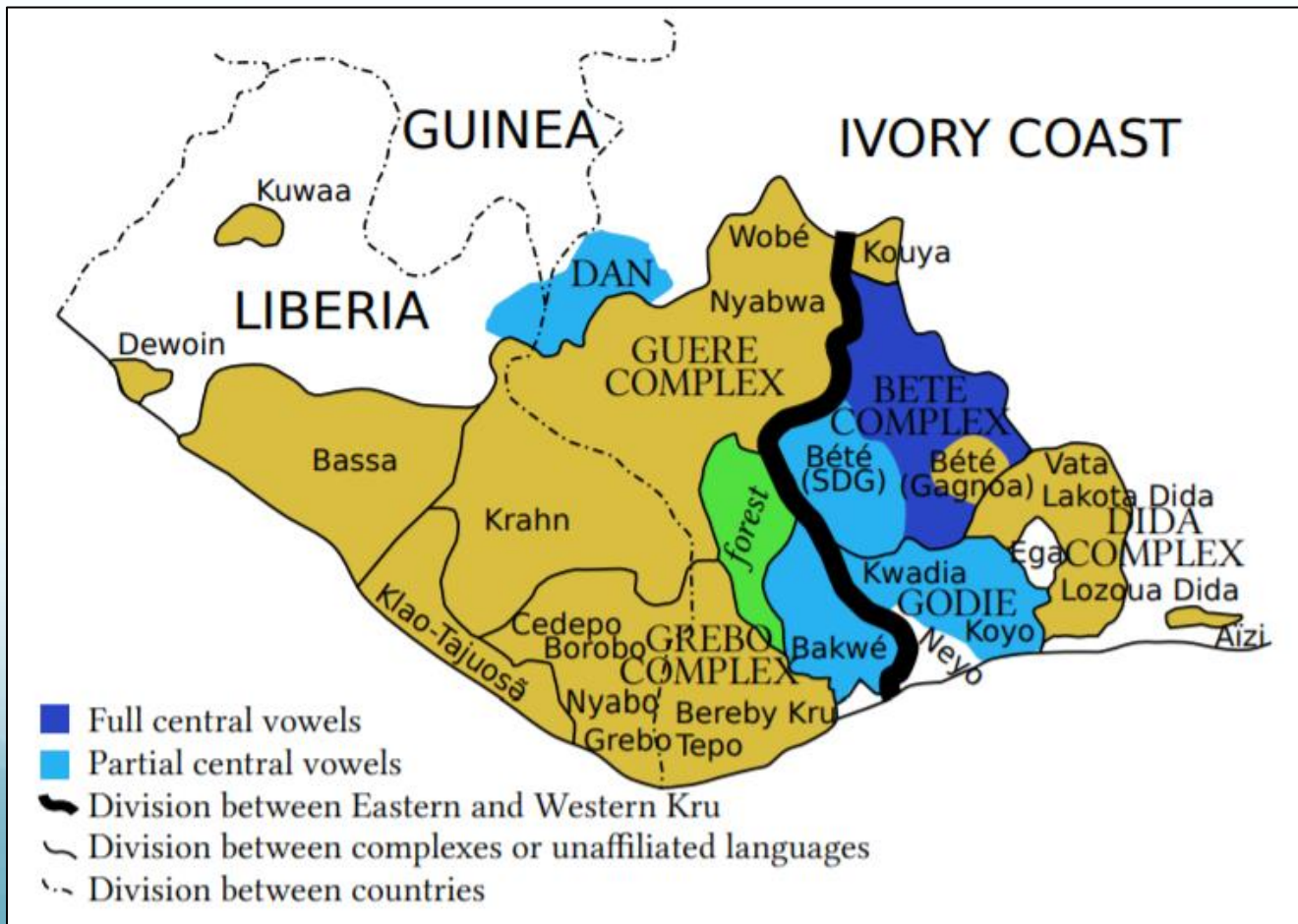
## Appendix A: Innovation and areal diffusion and in Kru (Zogbo 2019)

Some Kru languages (Cote D'Ivoire) have up to 13 phonemic vowels.

Proto-Kru: assumed to have a symmetric 9-vowel system.

Western Kru (WK) – all but Bakwé with just one central vowel /a/

Eastern Kru (EK) – several with up to five central vowels.



## Appendix A: Innovation and areal diffusion and in Kru (Zogbo 2019)

- EK: First vowel in CVLV sequences often centralises, particularly when followed by certain suffixes.
- Dialectal variation also likely played a part.
- Extra central vowels first innovated in parts of EK, then spread to neighbouring languages.
- “highly probable that Bakwé...has acquired central vowels through language contact” (p747)
- Bakwé separated from other Western Kru languages by the Tai forest, preventing further diffusion in WK.
- Also spreading to Dan (Mande) through historical contact with Kru.



## Appendix B: Innovation and areal diffusion in Yoruba dialects

Eastern dialects of Yoruba (e.g. Ijeṣa, Irun, Ifaki, Ekiti) developed a 9-vowel system with cross-height vowel harmony from a Proto-Defoid 7-vowel system as a result of prolonged contact with 9-vowel and 10-vowel Edoid languages and Epira (Nupoid), spoken on the Eastern Yoruba borderland. (Capo 1985).

Contact with 9/10 vowel systems led to the following stem-final vowel changes:

/ẽ/ > [ĩ]

/õ/ > [ũ]

/ẽ/ and /õ/ are rather unstable and have disappeared in most Yoruba dialects, merging with /ẽ/ and /õ/ in the present day 7-vowel dialects.

The innovation of /ĩ/ and /ũ/ eventually led to a full 9-vowel system with full vowel harmony through assimilation.

## Appendix C: Areal diffusion of fricative vowels in Bantoid

High central fricative vowel /ɨ/ in Ekajuk (S Bantoid) & Len Mambila (N Bantoid), written as <v> in Ekajuk.

Len Mambila: /ɨ/ is similar to the first degree or ‘superclose’ vowels in Eastern Grassfields Bantu languages. Many lexical items with /ɨ/ are shared between Len and Grassfields Bantu, but not with other Mambiloid languages.

“the area now inhabited by Len speakers was formerly a Grassfields speaking region; the encroachment of Mambila speakers, conceivably intermarrying with Grassfields speakers, resulted in the assimilation of the Grassfields speakers and, ultimately, in the formation of Len” (Connell 2007:31)