

Cognate noun class markers between Northern Atlantic groups and Benue-Congo
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The chart on the following page gives the class markers in each Northern Atlantic group (Fula-Sereer (FS), Cangin, Wolof, Bainunk-Kobiana-Kasanga (BKK), Biafada-Pajade (BP), Tenda, Bak, and Bijogo) and Benue-Congo (BC, based on De Wolf's reconstruction, but also Proto-Bantu) between which I think there can be a reasonable hypothesis of cognacy. This means shared form and meaning. The connections drawn in the chart are in some cases quite liberal in both respects (form and meaning)— this is a list of class markers that *may* be cognate, with some connections being almost certain, and others rather speculative. I have shaded the markers with three levels of confidence: **darkest** = very likely cognate; **lighter** = likely cognate, but reason to doubt; **lightest** = unlikely cognate, but possible. Some even more speculative connections are left out of the chart, and discussed in the sections on the individual classes. Often the same class marker appears multiple times in the column for a given group, and may also appear in the “no reasonable cognates” list. This is in part because originally distinct classes have merged in most groups. For example, Wolof *m-* is clearly cognate with the liquid classes across Niger-Congo, but *m-* is a large class in which only a fraction of the nouns refer to liquids. Thus, modern *m-* seems to represent at least two original classes, only one of which is cognate with the liquid classes. In other cases, a class is repeated simply because there is more than one potential etymological connection to be made, even if only one is actually correct. The last column gives basic semantic features shared between the classes in that row, but these are sometimes rather non-specific. See the fuller discussion of each class for clarification.

A final <N> is a homorganic nasal, or nasal whose place can't be determined. A final <X> is a final oral consonant whose identity can't be determined. A final raised ^x indicates that the class triggers fortition/gemination, due to the earlier presence of a final oral consonant that had already been “swallowed up” at the stage of the reconstruction. The forms in the “Niger-Congo” column are pseudo-reconstructions as far as the vowels go.

I don't consider “adverbial” classes here (like Bantu locative **pa-*, manner classes, time classes) that don't have nouns in them.

Overall assessment:

Reasonable cognates to almost all Benue-Congo classes can be found in various Northern Atlantic groups. There are very few classes that could be proposed as pan-Atlantic innovations. There are of course a number of classes that appear in more than one Northern Atlantic group (though not the whole area), but not Benue-Congo; but the same could be said of any established subgroup that is artificially set apart from the rest. More importantly, BC has very few classes that are *not* found in an Atlantic group, which means that there are no convincing cases of Atlantic shared class loss from the Proto-Niger-Congo system. Since class loss is a much more common innovation than class gain, this fact is very significant. Overall the class evidence does not argue for the genetic unity of a (Northern) Atlantic subgroup. Lastly, in most Atlantic groups there is a large number of class markers without reasonable outside cognates.

NC	FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC	membership
U				u (~mu)	u			ɔ	u~mu~a	human sg.
HA						aa/ha	ha/na		u~mu~a	human sg.
BV	be	bi			bə	bə	bV(g)		ba	human pl.
GU			g < gu	gu				ŋɔ	gu	long/rigid, tree
I	dik ?		i	i			i	i	i	pl.
DE	re					er		ne	di	small and round; fruits, 'stone'
HA 2	xax ?			ha					a	pl.
MAN	'am	mV	m	ma,muN	maN	maŋ	muN	m	ma	liquids (mass)
MA			m ?		maa	ma	mu	m	ma	pl.
MAK	dak ?		m ?		ma ^x	max	mu	m	ma	pl.
KI(X)	hiX	ki ?		ki					ki	trees
GI/JI	ge	ʔi ?	j	ji	ji	ji			ji	animals
DI	ri(n)	ti~tu	ʔdi~du	di	di~du	ʔdə			du	grains, slimes, viscous liquids
TI~TU		ti~tu							tu/ti	pl./collective (incl. dimin. pl.)
BƏ	bo		b	bi	bo	o	pa	u	bu	abstract, mass, (dimin.) pl.
BU			b	bu	bu	o ?	pu	u ?	bu	round, esp. body parts, 'sun'
BU					bu		bu	u	bu ?	trees/plants
KƏ	ho ?			ki	go	ʔxo	ka	kɔ	ku	'arm, ear' (leg, armpit), deverbals
PA		pa		fa	fa	fa			pi ?	animals
WAN	ban ?	fa	w		waN					'goat,' large animals
GAN	gan		g < gaN	kaN ?	gaN	gaŋ	ga(N)			large, flat, misc., (augmentative)
BAX			b < ba ^x	ba ^x	ba ^x					deverbals, misc.
ÑA			ñ	ñaN	ña	ña				mass, pl.
GUN			g ?	guN	guN	gəŋ				powders, alcohol, viscous liquid
GUN 2	gun				guN					animals, including insects
KUX				kuN	hu ^x	xoX				'fire,' ('smoke')
JA		ca	j	ja			e ?	e ?		collective/plural
JA(N)		ca	j	ja(N)			e ?	e ?		animals
KAC	han	ka ?	ʔka ?	kaN	gaN ?	xaX	ka ?	ka ?		'wound,' 'hole,' 'mortar'
KAX				ʔka ^x	ha ^x					'sea'
TAX				ta ^x		ʔraX				'foot'

Wolof-BKK specific class markers:

BKK	Wolof	
ci ^x	s < si ^x	Wo. diminutive, BKK 'eye'
ku	k	'thing'

Class markers with no convincing cognates:

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
'ox	y (agr)	l (IVN)	a	sa ^x	(C)I	u (sg)	ya (pl)	bi (pl)
dik (pl)	w (agr)	w ¹	a ^x	ɲaN	geŋ	gu (pl)	ka	du ²
ɗak (pl)	ka	m ³	ka	gə (pl)	(C)i	wu (pl/c)	kə (pl)	ka
rin	ki	†san	ta	saa (pl)	xaX	mu (pl)	mə (pl)	ki ⁴
ru	ku	†ka	ji 'arm'	bee (co)	ʃaŋ	ba (co)	ɲa (pl)	
ho ⁵	pi		taN	si	ʃIŋ	ʃi	wə	
ge	fi		i(N) (pl)	ya	goŋ	di		
go	sa		uN	faa?	xUŋ			
gal	su		saN	gaa (agr)	bə (sg)	<u>Joola</u>		
gol	a		ciN			e (sg/pl/c)		
			daN			si/ti (pl)		
			ga (pl)			ñV (pl)		
			da			si 'fire'		
			tiN			ti/taa		
			jiN			ñi		
			ba (co)			ña		
			baN			ma		
			nuN			l/nV		
			ka(N)			wa		
			sa/ca					
			paN?			<u>Manjak</u>		
						ngə- (pl)		

Diminutive/augmentative class markers without reasonable cognates:

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
gin	ku		ko	niN	ñaŋ	Jo. ji	ba	ka
S. onqe	njV		ño/ñi/ni	bu	faŋ	Jo. ñV		
...many			da		bə	Jo. ja		
			faN			Kw. a		
			diN			Ma. ndə		
			tu ^x /ti ^x					

¹ Likely cognate with WAN when used with large animals, but not other nouns

² Likely cognate with DI for the few mass nouns (grains), but not the "long" nouns that form the bulk of the class

³ When not used for liquids; possibly cognate with plural MA and/or MAK, if the pl. forms were extended to the sg.

⁴ Possible Atlantic cognates where used with 'tree,' but not other nouns

⁵ Possibly cognate with KƏ for a few words, but not most nouns in the class (grasses, leaves, bark)

1 The reconstructed class systems of each subgroup

In many groups, the phonological development of noun class markers does not always follow from the regular sound changes affecting lexical roots, and as such the regular sound correspondences sometimes do not hold. There are two main reasons: 1) phonological reduction/erosion, as is common in grammatical morphemes; 2) class prefixes often represent the only environment in which consonants appear word-initially in lexical words. Nonetheless, the consonants often do in fact follow the regular sound correspondences seen in roots, and so a knowledge of these correspondences is important in establishing class marker cognates.

Below is an overview of the number of classes in selected modern languages and reconstructed proto-languages. Recall that these counts do not include “adverbial classes” with no nouns in them. For proto-languages, I have not attempted to distinguish the number of agreement classes from the number of unique markers on nouns themselves. A raised “m” indicates that the class marker triggers consonant mutation.

	# of classes (noun + agr.)	# of classes (agr. only)	# of pl. cl. (agreement)	most common marker shapes on nouns
Proto-FS	~25		~5	CVC-, CV-
Fula (Gombe)	25	25	5	^(m) -(C)VC, ^(m) -(C)V
Sereer (Saalum)	19	14	6	CV ^(m) -, V ^(m) -, ^(m) -
Proto-Cangin	~20		3	CV-
Noon-Laalaa	14	12	3	∅, C-, CV-
Saafi	10	10	2	∅
Ndut-Paloor	7	7	2	∅
Pre-Wolof	>18		2	CV^(m)-
Wolof	10	10	2	∅, C-
Proto-BKK	~52		~10	CVN-, CV^(m)-, V-
Gubëeher	36	31	8	CVN-, CV-, V-
Kobiana	52	42	14	CV ^(m) -, V ^(m) -
Proto-BP	~28		8	CVN-, CV^(m)-, CVV-
Biafada	25	25	9	CV ^(m) -, CVV-
Pajade	21	16	2	CVN-, CV ^(m) -, CVV-
Proto-Tenda	~30		4 + g→6	CVC-, CV-, V-
Konyagi	31	28	9	CV ^(m) -, V ^(m) -
Bassari	18	17	9	V ^(m) -, 6V ^(m) -
Bedik	18	17	9	CV ^(m) -
Proto-Joola	~27		7	CV-, V-
Fonyi	19	13	6	CV-, V-
Kuwaataay	18	13	6	CV-, CVV-, V-
Bayot Kugere	16	9?	6?	V-, C-, CV-
Manjak	15	13	5	CV-, V-
Balanta	7	7	3	C-, Ct-, ∅
Bijogo	14	14	7	CV-, V-, m-
Proto-Bantu	21	19	8	CV-, N-
Herero	17	15	7	V-CV-, V-(N)-

1.1 Fula-Sereer

sg.		pl.	semantics
'ox-	—————	be-	human
ban-	—————	dik-	large animals, deverbial, misc.
gun-	—————		animals, incl. all insects
rin-	—————		mass nouns, dangerous animals
(ru-)	—————		misc. (Fula)
(ho-)	—————		grasses/leaves, misc. (Fula)
ge-	—————		'cow, sun, hunger'
re-	—————	dak-	fruits, round things
go-	—————		misc.
(hiX-)	—————		mainly trees (Fula)
gal-	—————		birds, long rigid things, misc.
gol-	—————	(xax-)	long flexible things, misc. (pl. Sereer)
han-		?	'hole,' misc.
('am-?)			liquids (Fula)
(bo-)			liquid/mass (Sereer), dimin. pl.?
gin-			augmentative
gan-			augmentative
+ diminutive class(es)			

Class markers are of a CV(C)- shape. It is conspicuous that the final C is *n in six markers, and *l in two (plus three diminutive markers in Fula). It is likely that earlier, a larger set of nasals could appear in C2 position, and merged as *n in PFS, and likewise a larger set of oral coronals merged as *l. Fula-Sereer *h in prefixes could also be given as *k. It is lost in Sereer, and alternates as /Ø~h~k/ in Fula. The consonant was likely already lenited in Proto-FS, but was probably earlier **k.

In Fula the original prefixes have become suffixes, leaving a word-initial trace in the form of consonant mutation induced by the earlier marker-final consonant. Furthermore, the marker-initial consonant undergoes a number of changes due to interactions with the root-final consonant, leading to a complicated system of four suffix grades (e.g. *-al~wal~gal~ngal*).

Sereer prefixes are found on nouns/adjectives, as well as vowel-initial determiners. The shapes of the markers in these two environments differs greatly. On determiners, they are of a shape (C)(V)C-, preserving what is usually C2 of the original PFS marker (e.g. *n-* from **gun-* and **rin-*). In one case (*r-* or *l-* by dialect) it is C1 (from **re-*) that is preserved, and *fān-* (from **ban-*) has been reduced to *f-* in most dialects. **be-* has irregularly lenited to *w-*. Original high vowels are lost on determiner prefixes, but /a, o/ remain. On nouns, C2 has fused with the root-initial consonant, leading to a three-grade mutation system, for which see Merrill (2018). C1 has been preserved in some classes, but lost in others. In the Nyominka dialect, C1 *g is preserved, but it is lost in other dialects (e.g. *ga-II* vs. *a-II* from **gal*). See Merrill (2019) for a more in depth discussion of PFS class markers and their evolution in Sereer.

1.2 Cangin

PC noun pfx	det. pfx	membership
Ø	w-	default class
y-, Ø	y-	‘person,’ ‘thing,’ perhaps family members
N-	n-	animals, trees?, misc.
mV-	m-	liquids/powders
fa-, fi-, Ø	f-	animals (<i>fā-</i>), mass nouns (<i>fā-</i>), spatial nouns (<i>fī-</i>), misc.
ki-	k-	infinitives/deverbal, languages, misc.
ka-	k-	infinitives/deverbal, misc.
ku-	k-	diminutives, misc.
pi-	p-	long and flexible
nji-	nj-	diminutive (possible NLS innovation)
ca-, Ø	c-	plural, collective/mass, deverbal/abstract
ti~tu-	t-	plural of <i>k-</i> , <i>t-</i> , <i>nj-</i> ; collective/mass, deverbal/abstract
bi-	ḃ-	‘people,’ perhaps ‘women, men’ (<i>bi-</i> on some sg. human nouns)
(ca-, pa-, sa-, su-, a-, i-)	mostly f-	frozen prefixes; <i>ca-</i> and <i>pa-</i> on a number of animal and other nouns, the others on only one or two nouns each

In the modern languages, class prefixes appear in two forms (as in Sereer): on nouns, and on vowel-initial determiners (often fused as a suffix on the noun itself). On determiners, all prefixes are of a C- shape. On nouns themselves, only Noon-Laalaa preserves prefixes, where they can be of a CV- or C- shape. Even in Noon-Laalaa, most nouns are unprefixated, and this would have been the case in Proto-Cangin as well, with the “default” class marked by no prefix on the noun, and *w- as an agreement marker. The system of Noon-Laalaa is by far the most conservative. Saafi has a reduced number of classes, and no prefixes on nouns. Ndut-Paloor has even fewer classes, and only shows agreement on suffixed determiners.

Owing to the large number of classes without clear outside cognates, it is difficult to establish the development of consonants in Cangin prefixes. However there is very strong evidence that original PNC voiced egressive stops **b, d, j, g devoiced to PC *p, t, c, k in prefixes— note that in other environments these same stops lenite in PC. Compare the shape of markers in different groups:

	Cangin	Fula-Sereer	Wolof	BKK	Tenda	Biaf.-Paj.
g	—	gal-, gol-, gun-, go-, ge-, gan-	g-, ga(N)-	gu-, guN-, (ga-), (gaN-)	gaŋ-, geŋ-, gəŋ-, goŋ-	go-, gaN-, guN-
j	—	—	ja-, (ji-)	ja-, ji-, ja(N)-, jiN-	ji-	ji-
d	—	ri(n)-, re-, ru-	di~du-	di-, da-, diN-	er-, (də-)	di-
b	—	ban-, bo-	bu-, ba ^x -, b-	bu-, ba ^x -, bi-, ba-	—	bu-, ba ^x -, bo-
k	ka-, ku-, ki-	han-, ho-, hiC-	ka-, k-	kaN-, ka ^(x) -, ku-, kuN-, ki-, ki ^(x) -	xaC-, xoC-, xoŋ-, xo-	—
c	ca-	—	si ^x -, saN-	ciN-, ci ^x -, (ca-)	faŋ-, feŋ-	sa ^x -, si-, saa-
t	ti~tu-	—	—	ta-, ta ^x -, tiN-	(raC-)	—
p	pi-, pa-	—	—	fa-, (faN-)	fa-	fa-, faa-

There is good evidence from individual classes to support this devoicing change (see DI, JA, JA(N)), but for other classes (notably the k- and p-initial ones), there are no strong cognate candidates to support it, and as such it is not certain that these consonants could be traced to earlier ****g** and ****b**. Note that the PC voiceless stops ***p, t, k** in prefixes can almost certainly also come from PNC voiceless stops.

1.3 Wolof

agr.	frozen noun prefixes	membership
k-	k-	‘person,’ ‘thing’ only
ñ-	ñ-	pl. of ‘person,’ a few other nouns
b-	b-, †bu-, ba ^x -	default sg. class
y-	y-	pl.
g-	g-, †g ^w -, ga-, gaN-, k-, ka-	trees, misc.
w-	w-, †u-, wa-?	large animals, misc.
m-	m-	liquids, misc.
j-	ja-, jaN-, ji-, di~du-	some animals, mass nouns, diseases, misc.
l-	l-	misc.
s-	si ^x -, saN-	diminutive (productive), powders/mass

Wolof uses C- prefixes on determiners as in Cangin. On nouns, there is a consonant mutation system resulting from earlier prefix consonants, and a number of nouns retain frozen prefixes, some of which alternate when the same root is placed in different classes, or (at least traditionally) between singular and plural forms for some nouns. Frozen prefixes marked with † appear only in earlier sources. See Merrill (2021) for an in-depth discussion.

1.4 Bainunk-Kobiana-Kasanga

sg.	pl.	membership	
u-	i(N)-/ja-	humans	
	(bi-)	'child' (Kobiana pl. = collective <i>bi-</i>)	
saN-	ñaN-	crabs, 'scorpion, rooster, roof,' flat, leaves	
ciN-		string/rope-shaped	
kaN-		concave or convex; places; coll. of a few vegetables?	
(a ^X -)	(ga-)	small and round (KK)	
bu-	i-	mainly round (many unpaired body parts)	
ci ^X -		'eye'	
gu-	ha-	long and rigid, languages, 'speech,' misc.	
ki-		'ear, leg, (arm)'	
(ji-)		'hand/arm'	
(uN-)	(daN-)	trees (KK)	
(ki ^(X) -)	(muN-)	trees (Bainunk)	
(paN-)	ba-	small, bead-like (pl. = collective <i>ba-</i>)	
a-	CL- -aŋ	animals, insects (Bainunk), misc.	
ba ^X -		animals, misc.	
bi-		'day, road, death,' misc.; insect swarms (Guñ., Guj.)	
fa-		animals: 'goat,' etc.	
jaN-		animals (large and/or dangerous), insects (KK), misc.	
ji-		animals (dog-sized)	
ka ^(X) -		'fish,' perhaps 'meat'	
kuN-		'fire'	
ta-		birds (pl. -aŋ), cloth? (pl. = collective <i>ja-</i>)	
ta ^X -		'dawn, foot,' cloth?	
ku-		—	'thing'
ko-		(ño-)	diminutive
(tu ^X /ti ^X -)		(ni/ñi-)	diminutive (KK)
da-	diN-	augmentative; 'smoke, dust, day'?	
(faN-)		augmentative (Kobiana)	

coll./mass/single-number

ba-	coll. of round objects, incl. vegetables
ja-	coll. of leaves, grasses, 'hair,' etc.
di-	'earth, sand,' grains, formless masses
muN-	liquids (borr. Bak?)
(ma-)	liquids (KK)
tiN-	viscous liquids; insect swarms (Guñ.)
guN-	'honey, palm wine,' some nominalizations
jiN-	terms for years, 'noise' and noises
(nuN-)	places (Kobiana)
(sa/ca-)	'heat, cold'
(gaN-)	'health'
bi-	insect swarms (Guñ., Guj.), 'children' (Ko.) (see sg. <i>bi-</i>)
kaN-	(see sg. <i>kaN-</i>)

Proto-BKK contained a large number of class prefixes, as do all modern BKK languages. The CV(N)- markers allow for only three vowels (with one possible exception, dimin. *ko-*, but this is likely borrowed from Bainunk into Kasanga, and not found in Kobiana). The final nasal is homorganic, and lost before vowels and when the marker stands alone (as it does in some Bainunk grammatical contexts). These have not been subject to much phonological reduction in the modern languages. In Bainunk, Guñaamolo merges CV- and CVN- prefixes in agreement, and in other languages there is also sometimes confusion between CV- and CVN- prefixes, but in general they remain distinct. Fortis mutation no longer operates, as all fortition-inducing classes but **ba^x-* have been lost as productive classes in Bainunk, and this appears on very few nouns (it does induce fortition of /x/ to /k/ in some Gubëeher infinitive verb forms). In KK, earlier prefix-final nasals now induce “Grade III” nasal mutation. Prefix consonants generally develop as in roots, but note that Proto-BKK exhibited allophony between voiceless stops and continuants: **t~r*, **c~ʃ*, **k~x* (but **f* in all positions, except when geminated/prenasalized). Word-initially, the stop allophones are used, and so these are the ones found in prefixes.

1.5 Biafada-Pajade

sg.	pl.	membership
u-	———— bə-	humans
bu-	———— maa-	body parts, misc.
ba ^x -	———— saa-	abstract, deverbal, misc.
bu-	———— gə/go-	trees, plants
waN-	———— ña-	animals
gaN-	———— bo-	broad + flat, misc.
guN-	———— (bu/bu-)	insects, some other animals
go-	———— ma ^x -	augmentative (Biafada)
ji-	———— + ɓV-	‘arm, leg, ear, armpit,’ deverbal, long + rigid, misc.
niN-		animals
hu ^x -		diminutive
faa-		‘fire,’ ‘smoke’
(ŋaN-)		‘path’
(ha ^x -)		animals (Pajade)
(sa ^x -)		‘sea’ (Biafada)
(si-)		‘house’ (Biafada)
(ya-)		‘article of clothing’ (Biafada)
(gaa-)		location nouns (Biafada)
		agreement for unprefixing nouns (Biafada)
coll./mass		
maN-		liquids
guN-		powders, viscous liquids
di~du-		grains, slimy liquids
ña-		‘meat, nose, sauce,’ abstract
bo-		‘night, blood, rainy season,’ grains, abstract, Pa. ‘children’
bee-		a few mass/collective nouns

Some prefixes have a long vowel, which is rare outside of BP. Original CVN- prefixes result in “Grade III” nasal mutation in Biafada, but these are analyzed as CVN- in Pajade. Fortition induced by grade II classes is still a productive process in both languages. Wilson (1984) notes that Biafada *bu-I* (could be from either **bu-* or **bu-*) is used as an augmentative plural class, but does not mention the augmentative singular. Bassène (2015) gives the augmentative singular as *gu-III*, but does not mention its plural.

1.6 Tenda

sg.	pl.	membership
ha/aa-	— ɓə-	humans
gaŋ-	— ɓaŋ-	trees/plants, flat things, augmentative, misc.
goŋ-	— ɓoŋ-	misc., pejorative
(ge-)	— (ɓe-)	tools (Konyagi)
geŋ-	— ɓeŋ-	misc.
er-	— ma-	round things, fruits, misc.
o-	— max-	abstract concepts, long rigid things, expanses of land
∅		misc. (most borrowings are in this class)
ji-		animals, incl. ‘sheep’ and ‘dog’
	o-	animal plural, used for some animals in different classes
(C)i-?	— ma-/max-?	various inanimates, used as agr. for unprefixed nouns?
(ɓə-)		misc. (Bassari, Bedik, likely two distinct classes)
fa-	— + ma(x)-	animals, perhaps singular of <i>ñā-</i> collective
xoC-		‘fire, smoke,’ a few abstract nouns
xaC-		misc.
(xoŋ-)		misc. abstract nouns (Konyagi)
ʃaŋ-		animals, misc.
(ʃeŋ-)		animals, misc. (Konyagi)
†xo-		‘leg’
(ñaŋ-)	— ɓəŋ	diminutive (Bassari-Bedik)
(faŋ-)		diminutive (Konyagi)
coll.		
maŋ-		liquids (including some powders), languages
ñā-		slimes and masses of plant fibers
gəŋ-		beer, ‘night, powder’
†də-		millet

The final C of CVC- prefixes can be recovered from Bassari-Bedik determiners (e.g. Bassari *ok* from **max-re* and Bedik *ed* from **er-re*). Unfortunately a number of CVC- classes are preserved only in Konyagi, so the final consonant cannot be determined. The final nasal is always *ŋ, which likely represents the merger of a wider range of possible nasals at some earlier stage. CVŋ- prefixes induce “Grade III” nasal mutation in all languages, and CVX- prefixes (where X is an oral consonant) induce “Grade II” fortis mutation (earlier gemination). Note that for *g- initial classes, the plural is formed by changing the consonant to *ɓ, perhaps the result of stacking personal plural **ɓə-* on the singular noun. The personal singular **aa-* is notable for having a long vowel. Both central vowels *ə and *ɛ are found in prefixes, and otherwise it may

be that only three vowels were contrasted: *a, *o, *e. There is limited evidence for an *e, *i contrast, but *i is perhaps not justified— **ji-* (Bedik *jə-*, Ba, Ko *i-*) may in fact be **jə-*, and the “*(C)i-” class is perhaps not related between Konyagi *i-I* (where it is found on a number of nouns) and Bassari *i-I*, used as an agreement marker for unprefixated nouns.

A number of classes are only active in Konyagi, but are frozen in cognate Bassari-Bedik nouns. Two prefixes may be found only as frozen CV sequences on “unprefixated” nouns (see DI, KƏ). Konyagi is the most conservative in terms of the number of classes, but the prefixes have undergone phonological reduction. Bassari has undergone even more reduction, with classes all of a V- or 6V- shape. Bedik is the most conservative in terms of prefix shape, notably preserving /g, j/, and nasals. In Konyagi and Bassari, the nasal-initial classes develop as follows:

Bassari: *ma- > *w̃a- > *wa- > o- *ñā- > *ỹa- > *ya- > e-
 Konyagi: *ma- > *w̃æ- > wæ- *ñā- > *ỹæ- > yæ-

1.7 Joola

sg.	pl.	membership
a-	ku-	humans
	e-	humans
	+ bVk-	‘person’ and some other common nouns
	bV-	(Kuwaataay) animals and ‘children’
	fa-	(Kuwaataay) ‘man,’ ‘woman’
	+ ñim-	(Kuwaataay) mostly family members
e-	si/ti-	animals, “default”
fu-	ku-	fruits, round, body parts, misc.
ka(a)-	wu-	misc.
bu-		trees, misc.
n/IV-	ñV-	(Kuwaataay) trees, misc.
di-		Fo. ‘place,’ Kw. ‘eye, snake, thing, piece of meat’
ja-		augmentative; some Eeg. mass; Kw. personified animals
ji-	mu-	diminutive; Kw. ‘dance, taking animals to pasture’
a-		diminutive (Kuwaataay)

coll./mass/single-number

ba(a)-	mass/abstract; productive collective, deverbial
fa(a)-	‘smoke, blood,’ insect collective (Bayot pl.), misc.
mu-	liquids
ma-	abstract; ‘truth,’ colors
si-	‘fire,’ Kw. ‘seeds’
ñi-	misc.
ñā-	Eeg. small deverbial class, Bayot misc.
wa-	(Fonyi) ‘thing, wild animals, just before dawn’
bu-	‘palm wine,’ misc., collective of some count nouns
e-	misc. mass nouns
ti/taa-	‘sun,’ Fo. abstract
ti-	location nouns
w-	‘feces,’ ‘hair,’ Bayot ‘women’

Class markers are mostly of a (C)V- shape (one or two CVC-), with only three vowel qualities contrasted outside of the prefix *e-*. Kuwaataay has long /aa/ in some prefixes (notably *kaa-*). In agreement, modern languages often merge agreement patterns for original classes beginning in the same consonant. Original *u and *i enter into /i~u/ alternations based on the following vowel in many languages. The original quality is generally preserved before /a/, but for the smaller classes it can be difficult to know if the original vowel was *i or *u. The sound correspondences for consonants in roots hold also in prefixes. The personal plural prefixes exclusive to Kuwaataay may be innovations. Coly (2012) gives *nim-* for Payne's (1992) *ñim-*. The attestation of Joola prefixes in four modern languages is as follows:

PJ singular	Fonyi	Eegimaa	Kuwaataay	Bayot
a-	a-	a-	a-	a-, ya-
e-	e-	e-	e-	e~d-
fu-	fu-	fu~fi-	hu~hi-	o~f-
ka(a)-	ka-	ga-	ka(a)-	ka~k-
bu-	bu-	bu~bi-	—	bu-
l/nV-	—	—	nu~ni-	—
di-	di-	—	di-	e~d-
ja-	ja-	ja-	ja-	—
ji-	ji-	ju~ji-	(ju~ji-)	ji~j-
a- (dim)	—	—	a-	—
collective/mass/single number				
ba(a)-	ba-	ba-	ba(a)-	ba-
fa(a)-	fa-	fa-	ha(a)-	fi-
mu-	mu-	mu~mi-	mu~mi-	mu~m-
ma-	ma-	ma-	—	ma-
si-	si-	s-	si-	—
ñi-	ñi~ñu-	ñu~ñi-	—	—
ña-	—	ña-	—	ña-
wa-	wa-	—	—	—
bu-	bu-	bu~bi-	bu~bi-	bu-
e-	e-	e-	e-	e-
ti/taa-	ti-	ti-	taa-	—
ti-	ti-	ti-	ti-	t-
w-	—	w-	—	o~w-
plural				
ku-	ku-	gu-	ku~ki-	ku-
si/ti-	si-	su~si-	su~si-	i~t-
e-	—	e-	e-	e~v-
bV _k -	buk-	bug-	bak-	buk-
wu-	u-	u-	wu-	e~v-
mu-	mu-	mu~mi-	mu~mi-	mu~m-
ñV-	ñi~ñu-	—	ñu~ñi-	—
bV-	—	—	bu~bi-	—
ñim-	—	—	ñim-	—
fa-	—	—	ha-	—

Barry (1987) identifies three Joola subgroups: Central, Western, and Southern. Most modern languages, including the well-studied Fonyi and Banjál (Eegimaa) are in the Central group. Western is well represented by Kuwaataay, and Southern comprises Bayot and Gubaare (sometimes classified as a Bayot dialect). Compared to Central Joola, the Kuwaataay system is rather divergent. It has a number of classes not found in Central Joola, and uses some classes in different sg./pl. pairings. Bayot is in fact very similar to Central Joola in terms of the class inventory (i.e. there are no classes exclusive to Southern Joola or to Western and Southern Joola), but the phonological form of prefixes differs greatly. It has C- and (C)V- allomorphs of prefixes before vowel- and consonant-initial roots respectively; e.g. *f-íó* ‘breast,’ *o-ku* ‘head’ from **fú-*. The large plural class *e~v-* seems to be a merger of original **e-* and **wu-*. A similar merger between singular **e-* and **di-* likely accounts for the *e~d-* class. Note that *di-* is very rare in other Joola languages (more common in Kuwaatay than Central Joola), and in fact *d-* does not appear on many Bayot nouns (12 in Diagne’s lexicon, mostly insects). Original **di-* seems to have been an uncommon diminutive class which was lost in Central Joola— Fonyi locative *di-* is likely etymologically distinct. Bayot *ya-* is used with many animals, while many others are in *e~d-*. It may represent a separate class from **a-* originally.

The plural class *si/ti-* has /t/ in Bayot Kugere and Gubaare, and /s/ in all other Joola languages, including Bayot Kuxinge. This sound correspondence is found in lexical roots, and Barry (1987: 164) reconstructs a separate phoneme **s*³ for this sound.

1.8 Manjak

sg.		indef pl.	def pl. (if different)
na-	—	ba-	humans
a-	—		family members
u-	—	ngə-	“default” class, borrowings, misc.
ka-	—	i-	
m(a)N-	—	ngə-	liquid, abstract, ‘mouth’
bə-	—	mə-	ngə-
pə-	—	kə-	trees, misc.
ndə-	—		diminutive
u-	—		collective
ba-	—		abstract, collective
trə-	—		locative, ‘place,’ ‘older sibling’
(də-)	—		Mankanya ‘place’

The class system of Proto-Manjak (presented above) is nearly identical to the system of each modern language/dialect. The class system of Manjak is reduced in comparison to Joola, with which cognates can be straightforwardly identified for most classes. Joola **u*, **i* corresponds to Manjak /ə/ in prefixes, but **a* remains Manjak /a/. Consonants develop as in roots. One notable difference from Joola is the personal plural *ba-*, with its allomorph *bak-*. Joola has **bV*k- corresponding to Manjak *bak-*, but no true cognate to *ba-*. The liquid/abstract prefix *m-* is described by Buis (1990) as having no vowel /ə/ (distinct from plural *mə-*), and generally co-occurs with prenasalization of the root in Mankanya, given by Gaved (2020) as *mn-* with a rare variant *man-* (also found in Manjak). Noun roots in other classes can also be prenasalized, but there are no other strong associations between particular classes and prenasalization. In Mankanya, the vowel /ə/ is absent, and plural *ngə-* is *ŋ-*. Manjak is the only Northern Atlantic

group to mark definiteness with class prefix alternations, but only for plurals, and only for certain classes.

1.9 Balanta

sg.		pl.	
ha-	——	bɪ(g)-	humans; bɪg- before a vowel in agreement
f-	——	g-	
Ø~ʊ-	——	Ø~ʊ-	
b-	——	Ø~ʊ-	
gɪ-	——	Ø~ʊ-	

The Balanta class system is greatly reduced. It is notable for using C- prefixes even on nouns—there is no epenthetic vowel, and the initial CC sequences undergo various phonetic transformations. Original Bak high vowels (= Joola *u, *i, Manjak /ə/) are deleted, and *a remains as /ɪ/. For Ø~ʊ-, nouns are unprefixes, and ʊ- is the agreement marker.

1.10 Bak comparison

These classes can be reconstructed to Proto-Bak based on their appearance in multiple groups:

*Bak	Joola	Manjak	Balanta	semantics
ha-	a-	na-	ha-	human sg.
bV(g)-	bVk-	ba(k)-	bɪ(g)-	human pl.
pu-	fu-	pə-	f-	sg.
bu-	bu-	bə-	b-	sg.
ga(N)-	ka-	ka-	gɪ-	sg.
(w)u-		u-	Ø~ʊ-	sg.
gu-	ku-	kə-	g-	pl.
wu-	wu-	u-	Ø~ʊ-	pl./coll.
mu-	mu-	mə-		pl.
mN-	mu-	mN-		liquid
ba-	ba-	ba-		mass/coll.
ɕi-	ti-	trə-		location nouns
di-	di-	də-		location nouns

The original system likely contained at least as many classes as Joola, with classes lost in each group, especially Manjak and Balanta. I have no explanation for /n/ in Manjak *na-*. The original vowel in *bVg- is not clear. Balanta, Manjak, and Western Joola suggest *a, but the rest of Joola has /u/.

1.11 Bijogo

sg.		pl.	membership
ɔ-	—	ya-	humans
ε-	⌵	u-	“default” class, animals, borrowings
		i-	
		kɔ-	
u-	⌶	ŋa-	some trees, misc.; ‘head, face’ with <i>b</i> -
ka-	⌷		large (aug.), incl. long + rigid; languages; age groups; fruits
kɔ-	⌸		paired body parts, large class, semantically diverse
ŋɔ-	⌹	mɔ-	“semantically empty”; infinitive, ‘tree’
nɛ-	⌺	m-	small and round, diminutive, misc.

coll./mass/single number	
m-	liquids
ŋa-	abstract, mass
ε-	some collective/mass, esp. for grains
ba-	augmentative (derived)
wɔ-	‘place’

This is the modern system of the Bubaque (*Ka-gbaaga*) dialect presented in Segerer (2000: 215), with uncommon sg./pl. pairings omitted. The system of other dialects appears to be identical. As argued by Segerer, original ***g*, ***d* in class prefixes become /ŋ/, /n/ in Bijogo. Prefix ***ɓ* and ***b* are lost on most nouns, but retained in agreement (see Bɔ, BU). Most prefixes show a harmonic alternation between vowel heights. Those of the shape *Cɔ-* have /ɔ~o~u/, while *ε-* and *ɔ-* have /ε~e/ and /ɔ~o/. The *nɛ-* class goes even further, showing full vowel assimilation to the root. The underlying vowel is made clear in the pronoun *nɛ-g*, in which the underlying vowel always emerges. Prefixes with /i, u, a/ do not alternate.

2 Cognates between subgroups

2.1 U, HA — human singular

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
			u (mu)	u	ha/aa	ha/na	ɔ	u~mu~a

Markers with a vowel *u* or *a* are found in different languages for the human singular prefix, as elsewhere in Niger-Congo. In Bak, the Manjak cluster uses *na-* (*a-* for some family members), while Balanta has *ha-*, and Joola *a-* (from **ha-* as in Balanta). Tenda generally has **aa-*, but Bedik shows evidence for **ha-* in two words: *hál* < **ha-an* ‘person’ and *hébè* < **ha-bi* ‘girl.’ BP and BKK have *u-*, likely cognate with Bijogo *ɔ-*, and Wolof, Cangin, and FS do not use cognate markers. The form *mu* pops up in a few places. In Bainunk, the form of the agreement marker is *mu* in some contexts, like as the relative marker *mu*. In Wolof the 3rd person singular subject pronoun is *mu*. Of course the prefixes of a form U and HA in different groups are not truly cognate, but it is likely that both were used in PNC, perhaps with each appearing in particular grammatical contexts. It is furthermore not clear that any of these markers are “cognate” in the true sense, as any resemblances are quite possibly due to chance when dealing with prefixes of a V- shape. I believe this to be the case regarding PFS **ox-*, which may line up with U in terms of the vowel, but certainly not in the presence of the consonant.

Throughout Niger-Congo, it is common for certain common nouns referring to family members to be unprefixes, e.g. Bantu “class 1a.” This phenomenon is found in BKK, BP, Tenda, and Fula-Sereer (note that in Cangin and Wolof, all personal nouns are synchronically unprefixes).

2.2 BV — human plural

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
be	bi			bə	bə	bV(g)		ba
					bo?			bo

All groups except Wolof, Bijogo, and probably BKK use a **b*-initial marker for the human plural class. The vowel differs between groups. Tenda and BP have *bə-*, though BP also uses *ba-* as a non-human plural marker. Fula has *bə* (there is no evidence from Sereer for the vowel), and Cangin has *bi-* on the few nouns that contain this prefix. In Bak, Joola has *buk-* and in Kuwaataay *bak-*, Manjak has *ba(k)-*, and Balanta *bi(g)-*.

The vowel correspondence seen in this prefix is unique among class prefixes. It seems likely that it was some central, ə-like vowel. However note that it is entirely distinct from the correspondence for which I use the symbol *ə* in pseudo-reconstructions (see *Bə*, *Kə*), which may have also represented some (non-low) central vowel. It is perhaps relevant that a number of Atlantic languages (most notably the Tenda group) have two contrastive central vowels.

It is notable that this class is absent in Wolof and BKK, where the regular reflex of earlier **b* is *Ø* or (in Wolof) /w/. Wolof personal plural *ĩ-* is naturally unrelated. BKK uses a number of class prefixes for the personal plural: **ĩaN-*, **ja-*, and **i(N)-*. The last of these is perhaps relevant. The Kobiana-Kasanga prefix has no final nasal (e.g. Kobiana *ĩ-li* ‘people’), while it is present in all Bainunk languages as *iN-*. If these classes are cognate between Bainunk and KK, there is no easy way to reconcile the discrepancy. Assuming that **i-* as in KK is original, a connection with BV in other groups may be warranted. Since this personal plural prefix exhibits a unique vowel correspondence among prefixes, there is nothing to prevent connecting the BKK prefix based on its vowel quality. However the nasal is more of a

problem— there would be no apparent reason for innovating it in Bainunk, whereas the loss of an original nasal in KK could be the result of influence from the non-human BKK plural class **i-* (see I). For this reason I see a connection between BV and BKK **i(N)-* to be very unlikely.

In Bijogo, the regular outcome of ***b* is /b/, and so the human plural class prefix *ya-* is not likely to be cognate. However, in two other Bijogo prefixes, ***b* and ***b* are seemingly deleted (see BΘ and BU)— note that other voiced stops also undergo irregular developments in Bijogo prefixes (nasalization of ***g*, ***d*). Nonetheless, a development to /y/ could not be easily explained, and of course there is no way to determine what the Bijogo vowel ought to be if it did have a cognate to BV. I find it extremely unlikely that Bijogo *ya-* is cognate.

Bantu class 2a **bo-* has a clear parallel in Bassari, though it is far from guaranteed that the pattern is truly cognate. Class 2a is used with certain human nouns referring to family members, which are unprefixated in the singular. Bassari shows the same pattern, with unprefixated human singular nouns taking *bo-I* in the plural rather than *bə-I*. Bedik shows the same phenomenon, but the equivalent to Bassari *bo-I* is *ba-I*. Given that a reasonable connection to Bantu class 2a **bo-* (in both form and function) is found only in Bassari, tracing this pattern to PNC would be quite speculative, but is certainly possible.

2.3 GU — long+rigid, and/or tree

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
		g (gu)	gu				ŋɔ	gu

Among Atlantic groups this class is only clearly found in BKK and Wolof. In both languages it is a very large class, and contains long, rigid objects. This is the semantic center of the class in BKK. The Wolof *g-* class has a wider range of functions, but this class represents multiple historical classes that have fallen together. Wolof *g-* at least in part must come from **gu-*, and is recorded as *g^v-* by Dard (1826). Wolof *g-* is the class for all trees, which might be connected with Benue-Congo *gu-*. However this use may have simply grown out of its use as the class for long, rigid objects (which trees fit rather well). It is also possible that Wolof *g-* carries on the original tree class KI(X). In the end I think the connection between Benue-Congo *gu-* and Wolof, BKK *gu-* is somewhat tenuous.

GU may also exist in Bijogo as *ŋo-*. The phonological match is perfect, and it does contain *ŋu-te* ‘tree,’ and some other long, rigid objects like *ŋɔ-kɛɛt* ‘arrow.’ However on the whole the class does not have very identifiable semantics, and Segerer identifies it as somewhat of a “generic” class prefix on nouns like ‘thing, animal, fish.’ It is also the infinitive prefix.

A connection between the Wolof and BKK class and BP **go-* (Biafada *gə-*, Pajade *ko-*) is tempting, but probably not sustainable. BP **go-* is most clearly related to the KΘ class, and in Pajade the semantics of this class (paired body parts and deverbal nouns) can account for almost all of the members. However Biafada ‘rib, firewood, branch, gun’ do not fit with KΘ, and seem to fit better with GU. The obstacle is that 5 BP classes can be reconstructed with **u*, and all retain /u/ in Biafada. Similarly, the Tenda class **o-* is most clearly related to BΘ, but in Konyagi and Bedik the class also has a number of long, rigid objects (‘arrow, stalk, porcupine spine, stick, nail,’ etc.). The Konyagi *u-* class can be related to GU phonologically, but Bedik *o-* cannot, since Bedik retains /g/ in prefixes. Thus this Tenda class is also probably not relatable to GU.

2.4 I — plural

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
dik?		i	i			i	i	i

Plural classes of the shape *i-* are found in Wolof, BKK, Bijogo, and the Manjak cluster within Bak. In Wolof and BKK, *i-* is the plural of the **bu-* class originally used for mostly round things (including many body parts). In Manjak, it is the indefinite plural of four common classes, including *pə-* (cognate with Wolof *b-* and BKK **bu-*, see BU). Bijogo does not have a cognate to singular BU, so here there is less of a convincing case for cognacy with I, but the phonological match is perfect. Plural *i-* is used with some singular *e-* nouns, including a number referring to long objects. De Wolf finds that BC *i-* can be paired with most singular classes, and as such a semantic generalization is essentially impossible. It is taken to be the ancestor of both Bantu class 4 and 10, though the development is certainly not without problems.

PFS **dik-* might be related, though not straightforwardly. This plural class marker (Fula *II- -di*, Sereer *Ø-II, k-*) does contain /i/, but more strikingly is segmentally identical to the PFS numeral **dik* ‘two.’ Since neither the initial nor the final consonant leaves any trace in other groups, I don’t think **dik-* is truly “cognate” with the other *i-* prefixes. However, it is possible that an original *i-* prefix was replaced by **dik-* (a sort of contamination from the numeral ‘two’). This story works a bit better for MAK (vs. PFS **dāk-*), but in both cases the connections are highly speculative.

2.5 DE — small and round

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
re					er		ne	di

This class is found convincingly in Fula-Sereer, Tenda, and Bijogo. In the first two groups, the class is rather large, and its semantic center is round (usually smallish) things. It is used for fruits, ‘stone, star, egg.’ The semantic profile also holds for Bijogo *ne-* (cf. ***g > ŋ* in Bijogo prefixes). This is a very good fit with “class 5” found throughout Benue-Congo. In Tenda its plural is *ma-*, and in Bijogo *m-*, cf. Bantu **di-/ma-*, Sua *r-/m-*, etc.

Based on semantics, Kobia-Kasanga **a^x-* is a very good fit, but phonologically the vowel discrepancy would be hard to explain. Nonetheless, since this is the only class reconstructed with “E” (cf. FS **rin-* vs. **re-*), a “regular” development to /a/ in BKK is possible (i.e. **er-* as in Tenda $> *ar- > *a^x-$), but I think unlikely.

It is possible that a single noun in Cangin can be connected to this class: **ti-ix* ‘name.’ All other nouns in the **tV-* class are plural or collective. ‘Name’ is usually in DE in languages that have the class. The phonological match is perfect for the Cangin prefix, as egressive voiced stops devoice in Cangin prefixes, but with only a single noun to suggest possible cognacy, the connection is extremely weak.

In Joola DE may survive in **ti-nak* ‘sun,’ being the only common noun to use this prefix, which is a phonological match in Central Joola (but note Kuwaataay *taa-*). In some NC languages, ‘sun’ is in DE, e.g. Bantu **di-júbà*. However DE is usually strongly associated with singularity/individuation, and the Joola class is not at all— in fact outside of ‘sun’ it is used (in Fonyi) for abstract nouns, and none of these nouns (including ‘sun’) has a plural. Thus I view the connection here as rather unlikely.

2.6 HA 2 — plural

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
xax?			ha					a

BKK has a plural class **ha-*, mainly used as the plural of **gu-*, as well as the paired body parts ‘eye, ear, arm, leg.’ This might be connected with the BC plural “class 6” nasal-less *a-*. Sereer also has a plural class **xax-* (not present in Fula), the plural of the **gol* class. All that these three classes share semantically is their use as a plural class, and it’s hard to say whether they are cognate.

2.7 MAN — liquid

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
F. -dam	mV	m	ma, muN	maN	maŋ	muN	m	ma

This is one of if not the best cognate classes both between Atlantic groups and with the rest of Niger-Congo. However there are a number of complications, especially regarding the phonological form of the marker. BKK has **ma-* with no final nasal, whereas Tenda and BP have **maN-*. Cangin shows evidence for **ma-*, **mi-*, and **mu-* without evidence for a final nasal, though this sort of evidence is very limited in Cangin. The class does not survive in Sereer, but may in Fula as *-dam*, enforcing grade III (nasal) mutation. The marker could be reconstructed as **man* for Fula-Sereer, but this would require a metathesis of the sequence /ma/ to /am/ (/d/ is analogically epenthesis in some Fula classes based on its occurrence in the plural classes *-di* and *-de*). The liquid class in Joola is *mu-*, and in the Manjak cluster was likely originally **mN-*. There is a class **muN-* in BKK, used as the main liquid class in Bainunk, and a rare class for ‘brain, marrow, kaldu (sauce)’ in Kobiana. This was probably borrowed from Bak, now existing alongside native BKK **ma-*. Bijogo has a homorganic nasal as the noun prefix, but syllabic *m̩-* as the agreement marker. Oddly, it has an allomorph *ɲV-* before vowel-initial noun roots.

I am not sympathetic to the argument put forward by Doneux (1975) that the final nasal of this class marker is simply due to the spreading of nasalization from the initial nasal. In Tenda, BKK, and BP, other nasal-initial markers do not have this effect. It seems more likely that the final nasal was etymologically present, and lost for some reason in BKK (perhaps contamination with MA, see below). A possible explanation for the Bak form is a development **maN-* > **mN-* which assumes the deletion of a vowel between two nasals at some point in the history of the subgroup (whether this is a “regular” development is a moot point, since this is the only NVN- prefix). The same change might have occurred in Bijogo.

This class is rather small in most languages, and used only with liquids (also usually ‘salt,’ and sometimes some other powders). Wolof *m-* is a large class containing all sorts of nouns, with the liquids being only a small sub-domain of the class. Wolof *m-* probably represents at least one other class that merged with the liquid class.

The possibility cannot be excluded that this prefix was originally borrowed between some groups. It has very clear semantics, and the phoneme /m/ is often associated with water/liquids cross-linguistically. In SW Amazonia, Van der Voort (2018) notes that a liquid class *-mu* or *-mi* has been borrowed across at least five unrelated language groups.

2.8 MA and MAK — plural

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
		m?		maa	ma	mu	m	ma
ɗak?				ma ^x	max	mu	m	ma

Both Tenda and Biafada-Pajade have two common plural classes of the shape **ma-* (Tenda **ma-*, BP **maa-*) and **max-* (Tenda **max-*, BP **ma^x-*; no evidence for the identity of the final consonant in BP). These are the most common non-human plural classes in Proto-Tenda and Proto-BP, with most other plural classes being innovated (co-opting originally collective classes, or stacking **bV-* in front of the class marker). In Bak, *mə-* is a plural prefix in Manjak (most notably for the *bə-* singular class), and *mu-* is the diminutive plural in Joola. Bijogo uses *m-* as the plural of singular *nɛ-*. It seems likely that at least one of the two Tenda and BP classes is cognate with Bantu class 6 *ma-*. Tenda **ma-* is used primarily as the plural of **er-* (see DE), strongly suggesting cognacy with Bantu 5/6 **di-/ma-* (cf. also Sua *r-/m-* among similar alternations in other Niger-Congo groups). The Bak and Bijogo prefixes are less easy to connect with the other groups, since the vowel /a/ is not present. However the Bijogo pairing *nɛ-/m-* (cognate with 5/6) is strong evidence in favor of cognacy. Bijogo has another plural class *mo-*, used with singular *ŋo-*, but in this case the argument for cognacy is less convincing.

In Pajade, prefix alternations are leveled for most nouns, and while the singular form was generally chosen, in some cases a plural with **maa-* or **ma^x-* was generalized. A similar process may account for the Wolof non-liquid nouns in the *m-* class. A notable example is *matt m-* ‘wood,’ perhaps a perfect cognate for Pajade *mat* ‘tree’ (Proto-BP **bu-re*, pl. **ma-tte*). However overall the Wolof *m-* class nouns are not the sort for which the plural form would have been more common than the singular (e.g. *segg* ‘leopard,’ *picc* ‘bird,’ *pax* ‘hole,’ etc.), so a connection with MA and/or MAK probably cannot explain most of the nouns in this class.

PFS plural **ɗak-* is a match for the vowel and final consonant, and furthermore this class is used as the plural of (among other classes) singular **re-*. As mentioned for **dik-* (see I), the prefix matches the PFS root for ‘two’ **dik~ɗak*. It is possible that an original prefix **mak-* was altered to **ɗak-* through contamination with the numeral. Perhaps it is relevant that liquid MAN appears as Fula III- *-ɗam*, hinting at an avoidance of marker-initial **m* in this group. One issue with this prefix is the vowel in Fula (II- *-dê*), which is not a regular correspondence with Sereer *a-II*, *ak-*.

There are a number of issues raised by these plural markers. The biggest is the status of the nasal in Benue-Congo, since it has often been said to be innovated. However I would side with Mieke (1991) and others that see it as original. It seems to me that we are dealing with two original BC plural classes, *ma-* and *a-* (see HA 2), which got conflated, and which in turn got conflated with the liquid class to varying degrees. Whatever the case, a DE/MA pairing is strongly attested across Niger-Congo, and there is no question that plural MA (with a nasal) existed in Proto-Niger-Congo.

The other big issue is the relation between these two classes MA and MAK, as well as their relation to the liquid class MAN. Regarding the first two, since only BP and Tenda show the distinction, there is not a strong case that they were distinct in PNC. However the existence of two classes in these groups is not explained otherwise. Regarding MAN, it would be a natural development to co-opt a liquid/mass class as a plural class, but the fact remains that the classes are phonologically distinct. In fact among the language groups considered here, only in Bijogo and BC are the liquid class and (one of) the plural class(es) homophonous.

2.9 KI(X) — tree

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
hiX	ki?		ki					ki

The Bainunk tree class is **ki-*, and in Fula the tree class is *ki* with grade II mutation (reconstructable as **hiX* or **kiX*, lost in Sereer). In Cangin, the word **ki-rik* ‘tree’ has this prefix, but trees themselves are not in this class. In Benue-Congo (even in narrow Bantu), a number of languages use class 7 **ki-* for the word ‘tree’ and sometimes for trees in general. However class 3 (see GU) seems to be more common. I don’t have a great sense currently of the status of class 7 as a tree class in Benue-Congo, so for now I see this as a tentative connection. BC **ki-* is semantically very eclectic, in contrast with the Atlantic *ki* classes. One further parallel does exist with Cangin, in which **ki-* is the prefix for languages (like in Bantu). The phonological connection between Fula and Bainunk is probably not a problem. Unfortunately the class is not used in Kobiana-Kasanga, which would make clear whether the class marker had a final consonant as suggested by Fula. In Bainunk, evidence of earlier final oral consonants on class markers no longer exists for the most part.

The Wolof *g-* class used for all trees may in part carry on this **ki-* class, since a prefix *k-* is found on many *g-* class nouns, and some trees do begin with /k/ (not /nk/ in earlier sources, which is the nasal mutation of root-initial **h*), which in native vocabulary can only descend from a k-initial prefix (roots have **h*, but never initial /k/). However there are no etymologies for these few k-initial tree nouns, and they may have been innovated. In general the use of *g-* as the class for trees might simply be attributed to the class’s shape-based criterion (long and rigid).

2.10 GI/JI — animal (esp. ‘dog’)

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
ge	*i?	j	ji	ji	ji			ji

This is one of the best cognate classes between Atlantic groups, and with Benue-Congo. A class *ji-* for some animals is found in Tenda, BKK, Wolof, and BP. This includes ‘dog’ in all but Wolof, and most of the other animals are dog-sized (‘panther, hyena, baboon,’ etc.), though some are smaller (‘mouse’). ‘Cow’ is usually in this class, though in some groups it appears in WAN. The class is not particularly large in any language, but rather semantically strict. Wolof *j-* represents some other classes that have fallen together with **ji-*, so it is less semantically coherent. BKK also uses **ji(N)-* for adverbial terms referring to years (e.g. ‘this year,’ ‘next year’), though this is likely a different class originally, considering the presence of a prefix-final nasal in a number of the BKK words (note also some relevant Wolof *j-* nouns like *déwén j-* ‘next year’). Kobiana-Kasanga uses *ji-* for ‘hand,’ and it is not clear whether this is the same as the animal class historically (the ‘hand’ class takes *ji-* agreement in KK, whereas the animal class takes default *a-* agreement). Evidence for the Cangin prefix **i-* is limited to **i-noy* ‘cow’ (Noon-Laalaa *enoh*, Saafi *inoh* vs. Ndut-Paloor *fana*’ from **fa-noy*), cf. De Wolf’s **i-nak* ‘cow’ for Benue-Congo. It is conceivably related to GI/JI, but might be related to some other class, or be entirely independent. Since there is evidence for other groups’ prefix /g, j/ corresponding to Cangin prefix /k, c/, there is reason to strongly doubt cognacy in this case. Balanta has *jílâ* ‘cow,’ in which /l/ is the regular outcome of earlier **n*. If this word contains the widespread root **nag/nak*, it would show evidence for a prefix *ji-*. However even if this is a class prefix, it is impossible to connect with an original shape JI, since Proto-Bak **i* should be deleted in a

Balanta prefix, and the only regular source for Balanta /j/ is ****y** > Bak ***j**. Thus, the prefix could be Proto-Bak ***ja-**, cf. Joola ***ja-** used as an agumentative, and in Kuwaataay for personified animals.

The original shape of this prefix depends on the interpretation of the history of /j/ in the modern languages, and whether PFS ***ge** can be connected to it. There are no lexical roots which show an all-/j/ correspondence between Atlantic groups, and for Proto-NC I reconstruct ****y** as a glide in roots. The only widespread root which is j-initial in multiple modern languages is ‘sing,’ which can be shown to derive from an original /g/ through palatalization before a front vowel, based on the Fula-Sereer and Joola forms (note also Gbaya ***gimà** ‘song’ from elsewhere in Niger-Congo).

Bantu	BP	Tenda	Joola	FS
*jimb	*jim	*-yəm	*-kɨm	*gim

Thus it is quite possible that ****j** did not exist as a consonant in Proto-Niger-Congo, and that the shape of this prefix was in fact GI with a voiced velar. There is plentiful evidence for this palatalization change in BP and Tenda in all positions— it must have taken place already in each proto-language. In BKK, ***ki** in prefixes always palatalizes in the modern languages (it may be preserved as [ki] in the earliest Bainunk wordlist which writes <qui >), so a change from GI to BKK ***ji-** would be expected. For Bantu note ***-jico** ‘eye’ corresponding to ***gVt** in Atlantic groups, among many other roots in which PB ***j** can be traced to an earlier ***g**. However there is no independent evidence for this change in Wolof. Furthermore, the prefixes ***ja-** and ***jaN-** present in Wolof and BKK would not be explained— and both are likely connected with Cangin ***ca-**, which would certainly point to an initial palatal stop. It is also notable that no similar palatalization change affected KI(X) in Bantu. I assume that ****j** did exist in Proto-NC, but only as the word-initial allophone of ****y**; i.e. a single phoneme ****j~y**, in which the stop/affricate allophone would effectively only be found in prefixes. Thus this class prefix could in theory be either JI or GI, if palatalization can yield all of the modern forms. If the original form of the prefix was GI, a connection with FS ***ge-** used on ‘cow’ (Fula *nag-ge*) and a few other nouns might be warranted. The vowel of the prefix is likely not a problem, as my preliminary understanding is that from a system with an original split in the high vowels (degree 1, degree 2 as in Bantu, Cangin, Bak, Bainunk, etc.), the degree 2 vowels become /e, o/ in Fula-Sereer. This prefix may have simply contained degree 2 “i”.

This class should not be connected with Cangin diminutive ***njV-** or Joola diminutive ***jV-**, which match it in neither semantics nor phonological form (the Cangin class prefix is prenasalized, and Joola /j/ comes from ***y**, though the diminutive prefix is likely innovated in both groups). BC class 9 **ji-** exhibits allomorphy with N- (at least in Bantu), but nothing similar is seen in Atlantic.

2.11 DI — grains, slimes, viscous liquids

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
ri(n)	ti~tu	di~du	di	di~du	*də			du

In BKK, ***di-** is a collective class, used for grains and (in Bainunk) fruits. It also has ‘earth/soil’ and in Bainunk a number of “slimy” masses like ‘clay, snot, pus, fish intestines, saliva, boiled rice.’ BP ***di~du-** (Biafada *li~lu-*, Pajade *ti~tu~tə-*, with /u/ only before /u/ in the root) is used for ‘pus, honey, brain,’ and in Pajade a number of kinds of millet (seeds), ‘grain, néré fruit,

ground tobacco with ashes.’ Unexpectedly, this class prefix also appears on Pajade *taase~toose* ‘face’ < **du-(h)arä* (and also Bassari *dəxás* ‘face’). The semantic and phonological connection is very good between the BKK and BP classes, and cognacy is almost certain.

A connection with FS **rin* is less straightforward. This class (which remains distinct only in Fula) does contain mostly mass nouns, including ‘honey, dirt, ash, millet, brain,’ but also a number of dangerous animals like ‘snake, lion, bull.’ The FS class is much larger than either BKK or BP **di-*. Furthermore the presence of the final nasal in the FS marker is a phonological hurdle to establishing cognacy. This can be overcome by assuming the merger of two originally distinct classes **ri-* (for the mass/collective nouns) and **rin-* (for the animals, etc.) as **rin-* at some point before the breakup of PFS. In fact Fula *gaw-ri* ‘millet’ unexpectedly has grade I rather than III, which lends support to this idea.

Cangin **tV-* contains a number of mass nouns, including grains: **to-ɣo* ‘millet,’ Ndut-Paloor *tútab* ‘maize,’ Paloor *tihí* ‘sand,’ *tí’in* ‘souna millet.’ **tV-* is in general descended from a different class (see TI~TU), which accounts for its use as a count plural class. It is possible that TI~TU can also account for the mass nouns including ‘millet,’ but given the existence of DI, it seems quite likely that **tV-* represents the merger of TI~TU and DI. Cangin **t* is the regular outcome in this prefix, as original voiced stops devoice in Cangin class prefixes.

In Wolof there is no d-initial agreement class, but it is likely that a d-initial class prefix is preserved in some mass nouns, mostly in the *j-* agreement class. Most notable is *dugub j-* ‘millet,’ in which the root can be compared with PFS **ri-gaab* ‘millet,’ Cangin **to-ɣo* ‘millet,’ and Balanta *b-ɔ̄gɔ̄* (cf. also Joola Eegimaa *e-ggub* ‘corn,’ though this must be a borrowing of some sort). The remaining candidates are:

ditiñ j-	medium-sized millet species, white or reddish (Kobès)
deret j-	blood
dëtt j-	pus
digija j-	<i>Cyperus maculatus</i> (Cypéracées) utilisé comme encens ; souchet
dóom b-	ash
dugor/digor l-	wild cinnamon apple; bush whose roots are made into a medicinal infusion (Ko)
duluñ w-	constellation (Kobès)

‘Blood’ has a possible cognate in Kasanga: *bi-ler*, in which the root must descend from PBKK **deɾ* < **det* (cf. possible earlier Wolof **di-det*).

In Tenda the evidence for this class is even more scant than in Wolof, but a trace does seem to exist. Three Bassari words for millet are synchronically unprefixated, but begin with the sequence /də/. Cognates for two of these are found in other Tenda languages.

Bassari	Bedik	Konyagi	
dəfâx~dəxàf			‘millet’
dəlí		væ-ntəlí	‘sorghum’
dəbàc	dəbác		‘sprouted millet’

It is very likely that all non-borrowed Tenda nouns were originally prefixed, and given the existence of DI in other groups, it is probable that /də/ is the frozen prefix descended from this original class.

A connection with BC **du-* (class 11) is likely. The most notable semantic domain for this class is long things (whether rigid or not). However, the following nouns can also be confidently reconstructed in class 11 for Proto-Bantu: ‘millet, sand, dust, spark, dew,’ and a number of small insects. While no “slimes” can be confidently reconstructed for Proto-Bantu, some can be found in individual languages, e.g. Herero *oru-herē* ‘porridge,’ *oru-kutu* ‘sweat.’ The “long” nouns likely belong to a class that is not cognate with the Atlantic classes, but these other more semantically-compatible nouns may carry on a cognate DI class. This would assume a collapse in two classes, which may account for the vowel discrepancy. However given the /i~u/ alternation in Cangin, Wolof, and BP, the vowel /u/ in the BC prefix is not necessarily a problem.

2.12 TI~TU — (diminutive) plural

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
	ti~tu							tu/ti

There are two non-human plural classes in Cangin, one being **tV-* (the other is **ca-*). This is the only t-initial plural class in Northern Atlantic, and thus the most reasonable connection with Bantu class 13 *tu-* (De Wolf’s BC **ti-*). This often serves as the diminutive plural in Bantu, and in Cangin **tu-* is the plural of diminutive **ku-* and diminutive **njV-*. The Cangin class is used much more broadly than just as the diminutive plural; it is the plural of all nouns in the singular k-, p-, and nj- agreement classes. Thus the Cangin diminutive plural **tu-* only accounts for a small bit of the overall usage of plural **tV-*, and outside of its use as the diminutive plural it is unclear what the vowel of this prefix would have been in Cangin.

Joola plural **si/ti-* might be related, though it is not associated with diminutiveness. Until the initial consonant difference between Bayot (t) and the rest of Joola (s) is understood, this potential connection will be set aside.

A connection with Kobia-Kasanga diminutive singular **tu^x/ti^x-* is possible, but I think unlikely. The KK class is purely singular, and does not have the plural/collective usage of the Bantu and Cangin classes. However a shift from one usage to the other is perhaps possible. It is notable that the KK class has a likely grammaticalization source, being the lexical root ‘small’ of the form *tuut* or *tiiit* found throughout Atlantic (e.g. Wolof *tuut*, Biafada *-tiii*).

2.13 BΘ — abstract, mass, diminutive pl.

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
Ser. fo-		b?	bi	bo	o	pa	u	bu

	Sereer	BKK	BP	Tenda	Joola Fonyi	Bijogo	PB
blood	fo-’oy	KK *bi-ṛeer	*bo-gandã	Ba. o-ʃát	fa-sim	—	(3/5/14)-dòpà
night	—	—	*bo-jVnä	Ko. u-móɗ	fuk	u-naʃan	14-tɔ̀kù
war	—	Bai. bi-ñaam	P. pa-sɛ	Ko. u-ŵát	fu-tiik	—	14-táà ‘bow’ ⁶
smoke	fo-suun	Bai. bi-hoor	—	—	fa-koor	—	(3/5/14)-jɔ̀kɔ̀

BC class 14 **bu-* is used for abstract concepts (‘night, anger, humanity, poverty, madness, fear,’ etc.), masses of small particles or thick liquids (‘millet, beads, soil, blood, mush, pus, ashes, flour, smoke, brain’), and at least in Bantu as a diminutive plural class. This lines up perfectly

⁶ The same root is used for ‘war,’ but generally in class 8.

with the Biafada-Pajade class **bo-* (Biafada *bwa-I*, Pajade *po-I* or *pa-I*): abstract ‘night, thirst, rainy season,’ mass ‘blood, rice, fonio’ (and all other grains), and a plural class for insects and in Pajade ‘child’ (*nəse/poose*). A connection is also likely with Tenda **o-*, used for abstract concepts and (in Bassari) ‘blood,’ but also for expanses of land, long rigid objects, and as a plural for some animals. Note that no Tenda classes have an initial **b*, which would have regularly lenited to /*w*/ in a root, and likely deleted in the resulting hypothetical prefix **wo-*. A connection with BKK **bi-* is also quite good based on semantic grounds and the first consonant, but the vowel at first appears to be a hurdle to establishing cognacy. BKK **bi-* contains abstract concepts (‘death, war, day, week’) and things with an unbounded shape (‘smoke, road, blood’), and is used as the plural noun prefix and agreement class for ‘children’ in Kobiana (*wal/beeŋ*). Bak **pa-* (based on Joola *fā-*; the class has been lost in Manjak and Balanta) is also an excellent fit semantically, containing ‘blood, smoke’ and perhaps ‘night,’ and being used as a collective class, especially for insect swarms. Regarding the vowel, the same correspondence set is found across each group for the class used for paired body parts (see KƏ below), which suggests that the correspondence is in fact regular (Bijogo explained below).

	FS	BKK	BP	Tenda	Bak	Bij.	BC
‘blood, night,’ etc.	bo	bi	bo	o	pa	u	bu
‘arm, leg,’ etc.	ho?	ki	go	xo?	ka	ko	ku

The original vowel might have been some central vowel; regardless it was not /*i*, *u*, *a*/ as reconstructed in most other prefixes.

The Bijogo class *u-* represents the merger of two classes, BƏ and BU. In both cases, an initial labial consonant is expected, but is absent. In roots, ***b* and ***ɓ* become Bijogo /*β*/ and /*b*/ respectively, but consonants in prefixes are subject to a number of irregular developments. It seems that in these labial-stop-initial prefixes, the consonant first lenited to [w] before fusing with the vowel, resulting in an invariant high vowel /*u*/, rather than alternating /*ɔ*~*o*~*u*/. Regarding the semantics of the class, most singular nouns in *u-* are from BU (mostly trees), but at least *u-gbe* ‘road’ and in Orango *u-naβan* ‘night’ must be from BƏ. Otherwise there are very few singular nouns in the class. Bijogo *u-* is also used as a plural class, exclusively for small animals, especially insects. Thus the semantic profile of the class (when the BU nouns are removed) lines up very well with BƏ.

A connection with Wolof *b-* is also possible, and this class (by far the largest in Wolof) does contain a number of abstract nouns, but *b-* can be traced back to earlier **ba^x-* and **bu-*, which are probably sufficient to explain the membership of the class.

The Sereer liquid class prefix *fō-* could in theory come from a PFS form **bo-*, but here a semantic connection is somewhat tenuous. It is notable that ‘smoke’ and ‘blood’ are in the class, and it would not be an unusual development for one mass class (BƏ) to take over the role of another, namely liquid MAN, which is absent in Sereer. A connection with Sereer diminutive plural *fō-III* is also possible, but here the presence of the final nasal is not explained. It could be due to contamination from the diminutive singular (*o-III*), but this would not explain the dim. pl. determiner prefix *n-* (e.g. *fō-ngoore n-e* ‘the little men’), which suggests a PFS form **bon* or **fōn*. Nonetheless it is conceivable that the **n* was added through some irregular development.

2.14 BU — round (many body parts)

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
		b	bu	bu	o?	pu	u?	bu?
	Wolof	BKK	BP	Joola Fonyi				
head	bopp b-	*bu-gof	*bu-gafã	fu-kɔ				
sun	jant b-	*bu-nɛg	*bu-	(fu-nak ‘day’)				
liver	—	B. *bu-kiiñ	*bu-seeñ-	fu-uñ				
belly	biid b-	B. *bu-yɛd	—	f-ar				

The BKK and BP classes **bu-* are used for many round things (not particularly large or small), and contain many body parts, especially round ones: BKK ‘head, belly, face, back, breast, liver, waist, tail’ BP ‘head, liver, tongue, thigh, spleen, knee, tail.’ These are large classes with many other assorted nouns in both groups. A connection can almost certainly be drawn with Wolof *b-*, which has become the “default” class and thus is very semantically diverse. It does contain ‘head’ (*b-opp*, archaic plural *i gopp*, cf. Bainunk *bu-gof*, *i-gof*) and a number of other body parts, but since the class is so large, it is not particularly amenable to semantic analysis. Bak **pu-* (Joola *fũ-*, Manjak *pə-*, Balanta *f-*) also seems quite likely as a cognate; it is a large class in all languages, and contains many round things and body parts (cf. Joola **fũ-kow* ‘head,’ cognate with BKK **bu-gof*, BP **bu-gafã*). ‘Sun’ appears in this class in all four of the Atlantic groups (assuming Bak ‘sun’ > ‘day’).

Whether this should be connected with BC **bu-* (class 14) is much less clear. The connection with BΘ discussed above is very convincing, but for BU the connection is only tentative. Based on Bantu evidence, a connection cannot be supported, since the classes are semantically entirely distinct. However, the **bu-* class has a wider usage elsewhere in BC, and De Wolf reconstructs ‘bow, face, forehead, medicine, mushroom, palm tree, rock/stone, stick/whip, canoe/boat’ in this class (along with the expected BΘ-type nouns), which line up much better with BU than BΘ. However, these nouns might instead be connected with BU, for which see below.

Finally, Konyagi *u-* (from Proto-Tenda **o-*) might be connected with BU, as it is used for many fruits as well as ‘sun,’ ‘moon.’ Additionally it is used in borrowings from Biafada-Pajade **bu-* nouns⁷. However recall that **o-* is more clearly connected with BΘ, and these BU-like nouns are not found in Bassari-Bedik. It is interesting to note that there is complementarity between the groups that have DE and the groups that have BU in Northern Atlantic— both are mostly used for round things. If Konyagi *u-* can indeed be connected with BU, it would be the only language to contain reflexes of both classes.

2.15 BU — tree, plant

FS	Cangin	Wolof	BC	BKK	BP	Tenda	Bijogo	Bak
			bu ?		bu		u	bu

This is the class for trees and plants in BP (Biafada *bu-*, Pajade *bə-*) and Bak (Joola *bu-*, Manjak *bə-*). The BP class is used exclusively for plants, but in Bak it contains a good number of non-plants as well.

⁷ Ko. *u-ɲwæry* ‘bow’ <*(b)o-ɲad/, borrh. Paj. <pu-ɲade> in Johnston (1919), Biaf. <bu-ɲadu> (Proto-BP **bu-ɲadV*).

It is also the tree class in Bijogo (*u-*). For the phonological development of the Bijogo prefix, see BΘ. Bijogo *u-* is also the class for *bu* ‘head’ and *bene* ‘face,’ and the agreement prefix for the entire class is *b-*. Thus it is clear that the class prefix once contained a labial stop. ‘Head’ and ‘face’ fit very well with BU, and it may well be that they can be traced to this class. This scenario would require a development of ***b* to */b/* in word-initial position, versus */β/* in all other positions, but such a change (or lack thereof) is plausible. However these two nouns could just as easily be traced to BU given Manjak **bə-hen* and Balanta *b-gɔ* ‘head,’ and given that this association relies on an existing sound correspondence, it is much more likely.

Recall that the following BC nouns can be reconstructed in **bu-* which do not fit the semantics of BΘ: ‘bow, face, forehead, medicine, mushroom, palm tree, rock/stone, stick/whip, canoe/boat.’ At least ‘palm tree’ would fit well with BU, as would ‘canoe’ which is often the same as ‘kapok tree’ (one is made from the other). However on the whole these nouns fit better with BU, and so the evidence for BU having any trace in Benue-Congo is extremely weak.

The Kobia-Kasanga tree class is *u-III*, with no cognate in Bainunk. The vowel and lack of an initial consonant (***b* > Ø in BKK) fits with BU, but the final nasal does not. BP in particular would clearly preserve an original final nasal. Lacking any explanation for the innovation of a nasal in this KK prefix, the class cannot be easily taken as descended from BU.

2.16 KΘ — paired body parts ‘leg, arm, ear, armpit,’ deverbil

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
ho?			ki	go	*xo	ka	kɔ	ku
	FS	BKK	BP	Tenda	Joola Fo.	Bijogo	PB	
arm/hand	S. o-ɓay	B. *ki-lax	*go-ɓəda	—	ka-ñen	kɔ-ɔkɔ	*ku-bókò	
leg/foot	S. o-jaf	B. *ki-dinx	B. gə-ranka	*xonəng	ka-jaam	kɔ-ɖake	*ku-gùdù	
ear	—	*ki-nuf	*go-nəfa	—	ka-wos	kɔ-nno	*ku-tùj	
armpit	*ho-naaf	—	P. ko-naawe	—	ka-supeet	kp-anjinkɔ	*ku-jápà	

Bantu class 15 **ku-* can be very reasonably connected with BP **go-*, containing the same paired body parts. In Bantu the only clear members are ‘arm, leg, ear, armpit,’ and all of these are in BP **go-* (‘leg’ only in Biafada, ‘armpit’ based only on Pajade evidence). The BP class is somewhat larger, but many of the other members are deverbil nouns, which can be compared with the use of **ku-* as the infinitive prefix in Bantu. The BKK class **ki-* (taken as separate from the Bainunk tree class **ki-*) is a small class containing only ‘ear’ and in Bainunk ‘hand/arm’ and ‘leg/foot.’ Recalling the vowel correspondence established for the BΘ class (see above), BKK **ki-* is a perfect match both semantically and phonologically for the BC and BP classes. In Tenda there is very tentative evidence for the earlier existence of a **ko-* > *xo-* class, being the noun **xonəng* ‘leg’ in which the first syllable might be a historical class prefix⁸. In Bak (both Joola and Manjak), all four nouns ‘arm/hand, leg/foot, ear, armpit’ are in the *ka-* class, again showing the same vowel correspondence as for **BΘ*. In Joola, *ka-* is one of the two most common infinitive prefixes, lining up with the common use of Bantu **ku-* as the infinitive marker. The class is not found in Balanta, so from Joola-Manjak internal evidence it is technically not possible to decide between **ka-* and **ga-* for the Proto-Bak form of the prefix. Note that the large Bak class **ga-* (see GAN) has merged with Joola-Manjak *ka-*. The Bijogo prefix matches phonologically (note **k* > */kp/* when fused with a round vowel), and contains

⁸ The resulting root **-nəng* ‘leg’ is surface-similar to BKK **-dinx*, Wolof *tank*, BP **-rankä*.

all four of the paired body part nouns just discussed. The class is larger in Bijogo, containing many other paired body parts: ‘knee, buttock, lip, side, lung, wing, thigh, hip, cheek, horn.’ There are also a few other nouns in the class, but these are in the minority.

The consonant *g in the BP prefix is potentially an issue. There are no Proto-BP class prefixes with *k, and indeed it is not clear that Proto-BP had a phoneme *k, as in roots original **k becomes *h in Proto-BP. We would thus expect that a Proto-BP cognate for KΘ would have *h, or else *k if this consonant was not lenited in word-initial position. Nonetheless, the semantic match between BP *go- and the other KΘ classes is extremely good, so cognacy seems likely. It is plausible that the word-initial stop in KΘ stayed a stop, and **k regularly voiced to *g in BP prefixes. However this development would require a somewhat unfounded assumption about a couple of other class prefixes. First, note that this voicing would only be necessary in Biafada, since BP egressive voiced stops devoice in Pajade (thus Pajade *ko-* could come from either *go- or hypothetical *ko-). A development from *k to /g/ in prefixes has taken place in a subgroup of Joola (including Eegimaa), so such a change is plausible. On the other hand, there are two possible prefix cognates between BKK and BP where BKK has *k, and BP *h (see KUX, KAX, though the second is highly speculative), which suggests that original **k did develop to BP *h, even in prefixes. The “voicing to g” hypothesis can be rescued by assuming that these two classes (KUX, KAX) were in fact **x-initial, with **x developing to BKK *k word-initially (note that root-initially, **x becomes BKK *h). While this scenario is plausible, it seems like a rather ad hoc solution to explain the form of one or two prefixes in a single subgroup, and thus is not particularly satisfying.

If we accept that Sereer *fə-* is descended from the BΘ class, then we would expect the reflex of KΘ to have the vowel /o/ in Sereer. The class prefix for ‘arm/hand,’ ‘leg/foot,’ and ‘armpit’ is *o-* in Sereer (*o-bay*, *o-jaf*, *o-naapaand*). Fula has *jun-ngo* ‘arm/hand’ and *naaf-ko* ‘armpit,’ though some dialects have *naaw-ki* (*kos-ngal* ‘leg/foot’ = Sereer *a-qoos* ‘shin’). For PFS, it is likely that ‘armpit’ was in the *ho class as in Fula (note that *h is lost in class markers in Sereer) and based on Fula ‘arm/hand’ was in *go, though based on Sereer alone it could also have been in *ho (as could ‘leg/foot,’ which does not survive in Fula). Since PFS distinguishes *g and *h in prefixes, *go cannot be reasonably connected with KΘ, but *ho could be. The issue is that there is only clear evidence for ‘armpit’ being in this class, and the other nouns in *ho (which remains distinct only in Fula) almost all refer to leaves and bark, which has nothing in common with KΘ. I view the connection between KΘ and PFS *ho as extremely tentative, and if it is valid some etymologically-distinct class must be the source of most of the nouns in PFS *ho.

2.17 PA — animals

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
	pa		fa	fa	fa			pi?

In each Atlantic group, *fə-* (Cangin *pa-) is a small class containing almost exclusively animals.

<u>Cangin</u>		<u>Bainunk</u>		<u>Pajade</u>		<u>Tenda</u>		
*paani	‘monkey’	BKK	*fa-jiin	‘water chev.’	fa-yaar	‘rat’	*fa-ʃin	‘donkey’
*pambi	‘chicken’		*fa-be	‘goat’	fa-ɲai	‘guinea fowl’	*fa-ʃo	‘porcupine’
*pa-loom	‘antelope sp.’		*fa-kid	‘monkey’	fadada	‘partridge’	*fa-ʃar	‘cane rat’
P. pakale	‘rat’		*fa-gux	‘spirit’	fanan	‘warthog’	*fa-yVmar	‘waterbuck’
P. pakaaf	‘wild dog’	KK	*fa-je	‘rat/mouse’	faatama	‘crocodile’	Koñ. fæ-rún	‘crocodile’
Nd. pajak	‘Senegal roller’	Guñ.	fa-tono	‘bird’	fa-wud	‘tortoise’	Ko. fæ-rəmp	‘tortoise’
Nd. paaka	‘Gambia rat’	Gub.	fa-xaat	‘fish’	faabae	‘snake sp.’	Ko. fæ-kænd	‘rooster’
L. panjaajaak	‘snake sp.’	Gub.	fa-roj	‘mullet’	fantan	‘fish sp.’	Ko. fæ-wəry	‘scorpion’

The class is very small in Kobiana, with only three known nouns (*fa-síi(n)* ‘water chevrotain,’ *fa-ɲáas* ‘goat,’ and historically *faazé* ‘rat’). In Biafada it seems to only survive fossilized in *fiyaal* ‘rat,’ cognate with the Pajade word. In Tenda it only remains an active agreement class in Konyagi. The frozen Cangin prefix **pa-* appears on a small number of reconstructable nouns, most being animals.

There are at least two areas outside of Atlantic in which connections to PA can be made. In Gur, a number of languages have a class *fV* containing (almost) exclusively animals. Sambiéni (2005) reconstructs this as **fá*. In a number of non-Bantu BC languages, a class *fV* contains all animals, e.g. Amo (*fə-*) and Kom (*f̃-*). De Wolf reconstructs this as **pí-*, and the cognate class appears to be *bi-* in a number of BC languages. For both the Gur and BC classes, a connection with the Bantu diminutive class 19 **pí-* is usually proposed. I’m not sure if this is warranted, based on their rather different semantics, but it’s certainly plausible. Either way, a connection with the Atlantic PA classes must be seriously considered.

It is important to distinguish these PA classes from the WAN classes explored below. Despite the similarities in the form of the prefix across some groups, they must be etymologically distinct. Within Atlantic, Cangin and Biafada-Pajade have both classes. Gur also contains likely cognates to both classes: in addition to **fá* mentioned above, Mieke et al. reconstruct a small animal class **wa* (they reconstruct **fi* for the other class).

2.18 WAN — ‘goat,’ large animals

FS ban?	Cangin fa	Wolof w	BKK	BP waN	Tenda	Bak	Bijogo	BC
‘goat’		Wolof	BP		FS		Cangin	
‘elephant’		béy w-	*wan-daaf(ä)		*ban-be		*pe’ f-	
‘cow’		ñay w-	*wan-yoogä		*ban-ñiig			
‘antelope (sp.)’		nag w-	B. nnagä (*wan-nagä)				*fa-noy (and *i-noy)	
‘buffalo’		jib w-			F. koob-a, S. fa-njaq		*fa-naay	
		?	B. wwal, P. wa-yre		F. mban-a, ed-a		?	

These classes containing ‘goat’ in Wolof, BP, and Cangin are very strong cognate candidates. Fula-Sereer **ban-* is an excellent fit semantically, but the initial consonant is an obstacle. In addition to ‘goat,’ a number of other large animals (often mammals) are found in this class in each language. BP preserves the prefix most clearly, and is the only group of the three that would show clear evidence for the final nasal. Nonetheless, Wolof should show initial nasal mutation if the prefix had an earlier nasal, and it does not. Thus there is a potential phonological issue in connecting the class between these two groups.

The full form of the earlier Wolof prefix cannot be determined, but there are some animal nouns in the *w-* agreement class that begin in /wa/:

waas	w-	‘tuna’
walas	w-	‘carp’
waraañ	w-	‘fish sp.’
waxandoor	w-	‘tuna’
wajan	w-	‘mare’
warax	w-	‘beast of burden’

The two Wolof nouns that show the clearest evidence for a prefix *wa-* do not refer to animals: *waxambaane w-* ‘young man’ (cf. Mandinka *kambaane*, Soninke *màxànbàané~yàxànbàané*) and *waxande w-* ‘trunk/suitcase’ (cf. Wolof *xàndi* ‘metal box,’ Soninke *kàndé* ‘basket’). Wolof *w-* is a large agreement class, and a number of nouns in this class appear in earlier sources with a prefix *u-*. Thus *w-* seems to represent the merger of multiple classes, and on the whole nouns in *w-* would not be descended from this WAN animal class.

The Cangin prefix is found on only two animal nouns, and only in Ndut-Paloor (‘cow, antelope’). Nonetheless, the *f-* agreement class is used in all Cangin languages for many animal nouns. Especially in Ndut-Paloor, *f-* has a very strong association with animals, and most animal nouns take this agreement pattern. The form of the prefix might at first suggest cognacy with the PA classes (see above), but this is almost certainly not the case. The only source for root-initial *f in Cangin is earlier **w, and the same is likely to be true in this class prefix. It is impossible to recover any evidence regarding an earlier final nasal in the Cangin prefix, since both attested roots used with the prefix are *n-initial.

Sereer *fà-III* might also be compared with the PA classes, but this connection is also spurious. It is a perfect cognate for Fula *III-* *-wa*, and must be reconstructed as **ban-*. The consonant correspondence is regular, and found in all positions: PFS *b > Sereer /f/, Fula /w/. While it is true that Fula /f/ is sometimes voiced to /w/ in some dialects (cf. *deftere~dewtere* ‘book’ from Arabic *daftar*), this never occurs in all dialects, but the class suffix always has /w/. The nasalized form of the Fula class marker is *mba*, which could never arise from an original voiceless consonant. Thus there is a phonological obstacle to cognacy with the other groups, since PFS had all of *f, *w, and *b. It is possible that that PFS **ban-* is entirely unrelated, or it may be related in some way that cannot be easily explained. PFS **ban-* is also used for a number of deverbal nouns (unrelated to animals), which finds no parallel in the other groups.

2.19 GAN — large, flat

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
gan		g (gaN)	kaN?	gaN	gaŋ	ga(N)		

Classes of a shape GAN are found in FS (augmentative), Tenda, and BP. The Tenda and BP classes are large classes with broad semantics, but contain a number of nouns referring to flat (often flexible) things: BP ‘leaf, broom, cushion, paper,’ Tenda ‘skin, wing, mat...’ However in both groups this is only a sub-domain of the class as a whole. In Tenda, this is the class for trees and most other plants, and is also used as the augmentative class. Fula-Sereer **gan-* is used exclusively as an augmentative class. In Wolof, a prefix *gan-* is attested in *gangóor g-* ‘crowd’ (*góor* ‘man’), *gàncax* ‘vegetation’ (*sax* ‘sprout’), *gàjar* ‘finery’ (*jar* ‘cost’) and *gànaar* ‘Mauritania’ (*naar* ‘Moor’). Semantically, the connection is not straightforward

between GAN in other languages and these few Wolof nouns with *gan-*, but it is possible to abstract an idea of “large amount or expanse” from the Wolof words which might accord with the augmentative usage in other groups. In BBK there is a class **kaN-*. Its semantics are not particularly well-defined, but it is used for a number of convex or concave shaped things. It is a very small class in all but Kobiana, where it contains mostly borrowings from the Manjak *ka-* class. Semantically, BKK **kaN-* is not a great fit with the other classes, and phonologically, the initial consonant is a serious problem, since BKK has many g-initial class prefixes (see discussion of KA(X) below). There is a single noun in Gujaher with a prefix *gan-*: deverbal *gan-jeb* ‘health,’ which in other Bainunk languages and Kasanga has *kaN-*. It is unclear if a separate BKK prefix **gan-* should be reconstructed based on this single noun, and even if it is the semantic connection is not good with GAN classes in other groups. A connection between GAN and Bak **ga-* (Joola *ka-*, Manjak *ka-*, Bak *gi-*) seems much better; Sagna describes the semantics of this Joola Eegimaa class as centered around “width, flatness, thinness.” In Balanta, the prefix is strongly associated with prenasalization, especially in deverbal nouns, which suggests a reconstruction of **gan-* for Proto-Bak.

The semantic connection between these classes is rather tenuous, since the “flat” criterion is only shared by a subset of nouns in the BP, Tenda, and Bak classes, but a connection seems quite reasonable especially when the phonological form of the prefix is taken into account. For the FS augmentative class, the augmentative use of the Tenda class provides a plausible (though not entirely convincing) connection. The connection with BKK seems unlikely, and there’s very little to say about the Wolof *gan-* prefix beyond its phonological form. It must be noted that /g/ is the most common initial consonant for FS, Tenda, and BP class markers, and /a/ is the most common vowel. Thus here there is an even greater than usual chance of accidental resemblance between class markers.

2.20 BAX — deverbal, misc.

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
		b (ba ^x)	ba ^x	ba ^x				

The BKK class **ba^x-* is one of the most common deverbal/infinitive classes, but also contains a number of miscellaneous nouns, including some animals. Wolof *b-* is in part descended from **ba^x-*, and the prefix can still be seen in at least *bànnex b-* ‘pleasure’ from *neex* ‘please,’ and *bakkan~bakken b-* ‘nose’ (the root /kin/ ‘nose’ or similar is found in a number of Atlantic groups). A subset of Wolof *b-* class nouns (many deverbal) exhibit a fortis mutation pattern (see Merrill 2021), which must be traced to this **ba^x-* prefix. In BP, **ba^x-* (Pajade *pa-II*) is also used for many deverbal nouns, though it is also a sizeable class containing an assortment of semantically disparate nouns. Based on form, it is a perfect match with the Wolof and BKK classes. Cangin **pa-* is most clearly connected with PA, but there are two deverbal nouns with this prefix, which might fit with BAX. However examples of Cangin deverbal nouns can be found with almost every noun prefix, so the connection with the BAX classes in other groups is not particularly convincing.

2.21 ÑA — slimes, fibers, plural, ‘nose’

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
		ñ	ñaN	ña	ña			

The Tenda class **ñā-* is used for slimes (‘snot, sauce, algae, jute,’ etc.) and masses of plant fibers and leaves. The BP class **ñā-* seems to have this same function, at least in Pajade (‘okra, sticky plant, powdered tobacco, swamp’). In BP it also contains **ñā-re* ‘meat,’ which may have been borrowed into Tenda as **ñar*. In BP it has two further functions: a plural class for nouns in different classes (most referring to broad, flat things, e.g. ‘mat, paper, skin, cloth’); and as the class for **ñā-siin* ‘nose.’ In BKK, **ñāN-* is a plural class, used as the plural for **saN-* (containing broad, flat things like leaves), **siN-* (containing string/rope-shaped things), and perhaps a few smaller classes. In Bainunk, it is also the main noun prefix for plural human nouns. In BKK **ñāN-* is also the class for **ñāN-kin(d)* ‘nose,’ probably cognate with the BP word. In Wolof, *ñ-* is the personal plural class, cf. the use of Bainunk **ñāN-* as the personal plural.

ÑA seems to have originally been a mass/collective class for certain kinds of plant material (masses of fibers/strings, masses of leaves), and perhaps also slimes and other mass nouns like ‘meat.’ It then was co-opted as a plural class in BP and BKK. The use of this class as a human plural class seems to be a particular development of Wolof and BKK, and is one of the strongest arguments for a Wolof-BKK subgroup. The final nasal in the BKK marker is unexplained.

Joola has class prefixes *ñu~ñi-* and *ñā-*, but these have nothing in common semantically with the ÑA classes of other groups.

2.22 GUN — powders, viscous liquids

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
		g?	guN	guN	gəŋ			

The BKK class **guN-* contains ‘honey’ and ‘palm wine,’ and in Kobiana ‘feces.’ There are also a few deverbal nouns in Kobiana. Biafada-Pajade **guN-* is a large class, mainly used for insects and some other animals, as well as a number of deverbal nouns. However, it is also the class for ‘clay, dirt, flour, ash,’ and Pajade ‘yeast, crumbs, vomit, diarrhea, millet flour for beer, debris, laundry detergent, sesame, fonio with sauce, dew, bran, couscous,’ which do not fit in with the rest of the class members. The Tenda class **gəŋ-* is small, and contains all words referring to beer, ‘powder, night,’ and in Bedik a couple other members. Wolof has *lem g-* ‘honey.’

This is a very strong cognate class between all three groups (the connection with Wolof is very tenuous). The BKK and Tenda classes are very small mass/collective classes used for alcohol, and in BKK viscous liquids more broadly. The BP class has fallen together with the animal GUN 2 class, but when these are set aside, BP **gun-* is a class for powders and viscous liquids.

The vowel correspondence is not an obstacle to cognacy, though as of now vowel correspondences between subgroups are not well understood on the whole. There are a number of words where Tenda **ə* corresponds to a degree 1/+ATR high vowel in other groups which distinguish two degrees of high vowels. A tentative hypothesis is that the same split existed in the history of Tenda, with the degree 1 vowels **i, **u centralizing to **ə*, while degree 2 **i, **u remained front and back high vowels respectively (or became **ə* in some cases). If true, this GUN class prefix would have been originally /*gʊn-*/. It may or may not have been homophonous with GUN 2 (see below), which is only convincingly found in Fula-Sereer and Biafada-Pajade.

2.23 GUN 2 — animals, incl. insects

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
gun				guN				

The Fula-Sereer class **gun* contains exclusively animals, including (almost) all insects. The BP class **guN-* seems to represent the merger of two original classes (see GUN above). Besides its use as a class for powders and viscous liquids, it contains all insects, as well as ‘bird, cow,’ and a number of other animals in each language.

I think it is unlikely that Tenda **goŋ-* is cognate with either of these classes. The semantics of **goŋ-* are for the most part completely different. It is used as the pejorative/augmentative class, and otherwise mainly for mass/collective/abstract nouns. Only in Bedik does it contain any animals; only ‘monkey, snake.’

2.24 KUX — ‘fire, smoke’

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
			kuN	hu ^x	xoX			

In Tenda, a small class **xoX-* can be reconstructed for **xoX-dox* ‘fire’ and **xoX-fən* ‘smoke.’ Konyagi is the only language in which this class is still active, and here it contains also ‘dream’ and ‘cold.’ Biafada has a class *fu-II* used only for ‘fire’ and ‘smoke.’ This very likely comes from earlier **hu^x-* based on the Pajade cognates *ku-ci* ‘smoke,’ *nu-kus* ‘fire.’

Proto-BP	Biafada	Pajade
<i>*hu-ur_gV</i>	fuuru > fu-fuuru	hu-s > nən-hus > nu-kus (diminutive prefix added)
<i>*hu-ccV</i>	fu-cu	hu-ci > ku-ci (hardening prefix stacked and then lost?)

Thus the Biafada prefix underwent a straightforward [h^w] > [f] change. The hardening of **h* to Pajade /k/ is the regular behavior of the consonant when prenasalized (and nasals are always deleted before originally voiceless consonants). Alternately, it is possible the prefix ***k* never lenited in Pajade, only Biafada. The BP and Tenda classes then line up perfectly phonologically (note that Tenda does not have a **u* vs. **o* contrast in prefixes).

A connection with BKK **kuN-* used as the agreement marker for perhaps only **ku-ur_g* ‘fire’ (looks like a perfect cognate with BP) seems quite likely, but the shape of the prefix is a challenge. First, the final consonant is nasal in the BKK prefix, and oral for BP and Tenda. However note that the form of the noun ‘fire’ does not have the nasal (nasals in prefixes are always lost before a vowel-initial root), so there is not really evidence that the prefix was originally nasal-final. It is possible that the agreement prefix was altered from its original form to become nasal-final, though the reason for this change would be unclear. Note however that this is a common process in Kobia, where many agreement prefixes enforce grade III (nasal) mutation where the noun prefix enforces no mutation or grade II (fortis) mutation. The other potential problem is with the initial consonant. Each of the three groups does show the regular reflex of ***k* (as found in some lexical roots, like ‘liver’)— however recall that BP has **go-* for KƏ. Within BKK, Kasanga has *hu-II* for *hoor* ‘fire,’ which might suggest that the BKK consonant in the prefix was something other than **k* (BKK **k* becomes Kasanga /k/ in all other word-initial environments, and there are Kasanga k-initial class prefixes). Thus it may be that this class marker was ***x*-initial, which would require a development ***x* > **k* in BKK

prefixes, except perhaps in Kasanga. As discussed in KΘ, this solution is not particularly satisfying.

2.25 JA — collective

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
	ca	j	ja			e?	e?	

The collective class **ja-* is used for mainly vegetable material in BKK, and Wolof uses *j-* as the collective class for fruit; also *jiwu j-* ‘seeds,’ *deret j-* ‘blood’ *dugub j-* ‘millet,’ *su j-* ‘cabbage’ (from French *chou*), among other collectives. BKK **ja-* is used as an uncommon personal plural prefix in Bainunk, and the regular personal plural prefix in Kobia-Kasanga. Wolof uses *j-* as a collective class for ‘woman, girl,’ which Babou and Loporcaro (2016) argue should really be treated as a plural class. There are furthermore a good number of personal nouns prefixed with *ja-* in Wolof, which may ultimately represent this personal plural/collective prefix. Overall cognacy seems extremely likely between these two classes.

These might in turn be connected with Cangin **ca-*, used as the largest plural class, as well as for a number of collectives. Accepting that original voiced stops devoiced in Cangin prefixes, the phonological match is perfect, and while there is no particular association with a vegetable collective, the general plural/collective meaning lines up well with the BKK and Wolof classes.

2.26 JA(N) — animals

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
	ca	j	ja(N)			e?	e?	

BKK **jaN-* contains dangerous animals like ‘crocodile’ and ‘snake,’ and in Kobia-Kasanga is used for all insects (perhaps because they bite/sting). The final nasal is consistent in KK, but often absent on Bainunk nouns. Wolof animals in *j-* can be attributed to the earlier JI class (BKK **ji-*), but a number have an apparent *ja-* prefix: *jasig* ‘crocodile’ (cognate root ***tVg* in a number of groups), *jaan* ‘snake,’ *janaab* ‘cat,’ *jaxaay* ‘eagle.’

In Cangin, a large number of animals are prefixed with **ca-*, though the prefix is no longer segmentable in the modern languages, and agreement is with the *f-* class used for most nouns containing a frozen prefix. The best examples are:

<i>*caa-fú</i>	‘fly’ (bug)
<i>*ca-ngín</i>	‘worm’ (grub)
<i>*ca-oy</i>	‘elephant’
<i>*caa-ngínV</i>	‘large bird sp.’
<i>*ca-ngayo ?</i>	‘large bird sp.’
<i>*caal</i>	‘antelope’
<i>*ca-bol</i>	‘pelican’
<i>*ca-bíndo~ca-ngíndo</i>	‘panther’

It is unlikely that these are originally plural forms (see JA), since many of them are rather large animals that would not have a conspicuously common plural. Some show evidence for a marker-final nasal, perhaps preserved only before egressive stops (in all of these examples ***g*). Here the phonological and semantic match is very good with the BKK and Wolof prefixes.

For the possible connection with Joola and Bijogo *e-*, see §2.31.

2.27 KAC — ‘wound, hole’ + KA?

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
han	ka?	*ka?	kaN	gaN?	xaX	ka?	ka?	
hole	FS *han-gas	Cangin	Wolof kàmb g-	BKK KK *kan-tig Guñ. ka-giḷ *kan-juṃ	BP	Tenda *xa-ttəx	Bak M. ka-wiəṛ Kw. kaa-yen	Bijogo ka-putu, ka-wɔ
wound mortar		*ka-ndíḏ	(gënn g-)	Bai. *kV-hünd KK *kan-ro	P. ka-cine	*xa-yʔəṇ	M. ka-jin	ka-tɔ

So far no cognate candidates have been identified for Bantu class 12 **ka-*. This is in part because the semantics of the Bantu class are very difficult to pin down. Denny and Creider (1986) don’t even attempt to address its semantics. It is used in some languages as an augmentative/pejorative, and in others as a diminutive. The only reconstructions in the BLR in this class are ‘inside, knife, bird.’ De Wolf reconstructs only ‘tree, dust/earth, god/spirit’ for the BC class **ka-*.

There are a number of classes of a shape *ka-* in various Atlantic groups. In BKK, **ka-* is the class for ‘fish’ and perhaps ‘meat,’ and **kaN-* is used for a variety of nouns, many of which have a concave/convex shape, including ‘hole, mortar,’ and in Kasanga *ha-njum* ‘wound’ (with /h/ just as in KUX). In Bainunk **ka-juṃ* ‘wound,’ and ‘hole,’ Bainunk languages do not have the marker-final nasal. Tenda **xaX-* is a small class, the only reconstructable nouns being ‘wound’ and ‘hole.’ Joola-Manjak has a *ka-* class, but it is not found in Balanta. This class is descended from KƏ and GAN, but could in theory also carry on an original KA class. Some Cangin nouns in the *k-* agreement class have a *ka-* prefix (‘bracelet, calabash, pipe/mortar, sword, debt’), and **ka-* is an infinitive prefix. Notably, **ka-ndíḏ* ‘mortar’ and **ka-mbot* ‘debt’ have prenasalized-stop-initial roots, hinting at an earlier marker shape **kaN-*. FS has a small class **han*, and the only noun that can be reconstructed in it is **han-gas* ‘hole/well.’ Bijogo *ka-* is a large singular class containing many nouns referring to large and/or long and rigid things, as well as languages, fruits, and age groups. None of these classes can be connected with the Bantu class on a semantic basis, though the phonological form is a potential match for all of them. For now nothing conclusive can be said regarding connections with BC **ka-*.

Within Atlantic, a connection is likely between some of these classes. Most notably, Tenda **xaX-* with only ‘wound, hole (in ground)’ as reconstructable members might be connected with the small BKK class(es) **ka(N)-*, containing ‘wound’ and ‘hole,’ and FS **han* containing ‘hole.’ Pajade *ka-cine* ‘wound’ (Konyagi or Bak borrowing?) may be in a cognate class historically, though the prefix is the same as for the **gaN-* class (see GAN); recall the discussion in KƏ regarding BP prefix **g-*. Manjak has *ka-jin* ‘wound,’ cognate with the Tenda word. Bijogo has *ka-putu* and *ka-wɔ* ‘hole.’ There is no clear evidence for this ‘hole’ class in Wolof, but *kàmb g-* ‘hole (in ground)’ could conceivably contain a frozen prefix *ka-⁹*. In

⁹ The Wolof *g-* agreement class is used with nouns which contain a prefix *k(V)-*, which was likely *ka-* in all cases; e.g. *kanam g-* ‘face,’ *kawar g-* ‘hair.’ In *kàmb g-* ‘hole,’ the earlier form may have been **ka-hamb* (the development to *kàmb* is completely regular). Evidence for this reconstruction is found in Sereer *ngamb n-* with the same meaning. It is likely a Wolof borrowing, but cannot straightforwardly derive from *kàmb*, since in Sereer /k/ does not alternate with /ng/ (grade III of /k/ is /k/). However the form would derive regularly from a root **hamb* in the *n-* class (grade III of /h/ is /ng/).

summary, there is decent evidence for a small class containing at least ‘wound’ and ‘hole,’ but disagreement about the identity of the final consonant.

2.28 KAX — ‘sea’

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
			*ka ^x ?	ha ^x				

The connection here is rather tenuous. Biafada has a class *ha-II* used only for *ha-bbə* ‘sea.’ This class is not found in Pajade. In Kobiana, the word for ‘sea’ is *á-hakka(n)*, in the *a-II* agreement class. The *a-* prefix in Kobiana must be an innovation, as an original *a-II* prefix would harden the initial consonant. The earlier form was likely unprefixated **kakkan* or **takkan*. Based on purely language-internal evidence, it is likely that this word contains a frozen prefix **ka-II/III* or **ta-II/III* (only these two consonants can yield Kobiana /h/). It is even possible that the earlier form was **kaN-kan*, in which the prefix is a grammaticalization of the very root to which it is affixed (if so, the final consonant of the BKK prefix and BP prefix cannot be easily reconciled). Bainunk Gubëeher *gu-xan* ‘river’ contains this same root with a different prefix, which confirms the presence of the prefix in the Kobiana word. Thus the form and semantics of the frozen Kobiana prefix and the Biafada prefix are potentially a perfect match. However, it is entirely possible that the Kobiana prefix is simply the common *ka-III* prefix, or even the rarer *ta-II*.

2.29 TAX — ‘foot’

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
			ta ^x		*raX?			

Kobiana-Kasanga uses *ta-II* for the noun ‘foot’ (Kobiana *tá-ppe(r)*, Kasanga *te-ped*) and a few other nouns. In Bassari-Bedik (Tenda), the word ‘foot’ is **rappar* (Bassari *sàpàr*, Bedik *i-tápár*), and it is quite likely that the initial syllable was a class prefix **taX-*. The roots for ‘foot’ may be cognate between the two groups¹⁰, and with Bantu **pàdǎ*. Outside of its use with ‘foot,’ it does not seem that the BKK class (used for at least ‘cloth’ and ‘dawn’ throughout the family) has any external connections.

2.30 N — animal ?

FS	Cangin	Wolof	BKK	BP	Tenda	Bak	Bijogo	BC
	n							N

This refers to the form N- of Bantu class 9. It may be that **ji-* and **N-* were originally separate classes that got conflated in Bantu, though this is far from clear. Proto-Cangin has a class marked by a prefix **n-*, and most reconstructable nouns in this class refer to animals. Of course an etymological connection is particularly speculative here, since we are dealing with only a single consonant, and its place of articulation cannot even be determined in Bantu. Beyond this Cangin class, I suppose it would be possible to make connections with certain nasal-final classes in other groups (like Fula-Sereer **gun* used exclusively for animals), but I really doubt any such connection. For all other classes, it’s the initial consonant of the Atlantic marker that

¹⁰ However the final consonant correspondence is not regular: BKK **r* comes from ***d*, while Bassari-Bedik **r* comes from ***d*— however note that a Tenda root **-fad* does exist in Konyagi *i-fàry* ‘foot.’

corresponds with the consonant of the BC prefix, and so I would be surprised if in just this one case, the first consonant and vowel were eroded, leaving only the final consonant. Given that *N- may be a Bantu innovation, cognacy with the Cangin prefix seems unlikely.

2.31 E- classes in Joola and Bijogo

Joola and Bijogo both make use of classes of the shape *e-*. In both languages, *e-* is the “default” singular class, used for many borrowings, but also notably used for almost all animals. It is furthermore a mass class, and in Joola a human plural class. These do not have obvious cognates in other groups, though the V- shape of the marker makes comparison difficult. It is possible that these are cognate with the JA(N) animal class and JA collective/plural class. The regular outcome of **j is /y/ in Joola and Bijogo, and as such these class markers could have conceivably developed as **ja > **ya > e. Semantically, singular *e-* lines up well with JA(N) due to its use with animals, but the established JA(N) classes in Cangin, Wolof, and BKK do not have the “default” usage of Joola and Bijogo *e-*. Mass/collective + (Joola) human plural *e-* lines up perfectly with BKK mass/collective + human plural *ja-* semantically. However as this hypothesis requires assuming a phonological change that lacks independent support, it is not particularly convincing. More convincing is the cognacy between Joola *e-* and Bijogo *e-*, though even this connection could be spurious.

2.32 Classes specific to BKK and Wolof

A Wolof-BKK subgroup was proposed by Doneux (1991). Two BKK classes have potential cognates in Wolof and no other group (also recall GU, convincingly found only in these two groups within Northern Atlantic, and the personal plural use of ÑA).

BKK	Wolof	
<i>ci^x</i>	s (<i>si^x</i>)	Wo. diminutive, powder, BKK ‘eye’
<i>ku</i>	k	‘thing’

The first **ci^x*- is used only for ‘eye’ in BKK, and is the diminutive class in Wolof. The phonological match is perfect, and developments from a diminutive class to the ‘eye’ class are seen in Cangin and Joola (see Merrill 2021 for more discussion). BKK **ku-* is only used for ‘thing.’ Wolof *k-* is only used for *nit* ‘person’ and *këf* ‘thing.’ See also JA and JA(N) which are used in much the same way in BKK and Wolof. Overall the class-based evidence for a Wolof-BKK subgroup is rather weak, but perhaps better than for other potential high-level subgroups.

3 Classes without convincing external cognates

3.1 G-initial plural classes

Four groups make use of a g-initial plural class: Kobia-Kasanga *ga-*, Bak **gu-* (Joola *ku-*, Manjak *kə-*, Balanta *g-*), Biafada *gə-*, and Bijogo *ŋa-* (**g > /ŋ/ is regular in Bijogo prefixes). There is not good evidence that any of these classes are related.

The KK class *ga-* is the plural of the large *a-II* singular class used especially for small, round objects. It has been extended as somewhat of a general plural marker in KK, but its original role must be as the plural of *a-II*. As Bainunk has lost **a^x*-, it also lacks the corresponding plural **ga-*, but there is no reason to suspect that either class is a KK innovation.

Bak **gu-* (Joola **ku-*, Manjak *kə-*, Balanta *g-*) is the plural of **pu-* (see BU). The semantic domain of KK *a-II* is essentially subsumed by Bak **pu-*, so semantically these plural

markers are a good fit. However it is not possible to easily reconcile the vowel difference; /a/ in class markers remains unchanged in Bak, and /u/ would never become /a/ in KK.

Biafada *gə-* is used as the plural of some animals, almost all in the BP **wan* singular class. As such, it does not line up semantically with the above g-initial plural classes.

Bijogo *ŋa-* is the plural of *ko-*, *ka-*, and *u-*. There is nothing that ties these singular classes together semantically, and as such no generalizations can be made about the plural class. It is notably not used for singular *nɛ-*, the closest semantic equivalent to KK *a-II* and Bak **pu-*, and as such cannot be connected semantically to any of the other g-initial plural classes.

3.2 B-initial collective classes

Bak, Biafada-Pajade, and Tenda all show evidence for **ʃ*-initial collective classes, though there is no strong evidence that they should be connected. Bak **ba-* (Joola, Manjak *ba-*) is used as a general collective class in Joola, and is very productive. Manjak *ba-* is a non-paired class containing abstract or collective nouns (e.g. ‘hairdo, poison, dye, eczema, fishing, coins/change’), though it is not used as a productive collective class. BP **ʃee-* (e.g. Biafada *bee-jo* ‘cooked rice,’ Pajade *beeñe* ‘entrails’) is a very small collective class; there is only one collected noun in Biafada, and in Pajade ‘entrails, clothes, tools, mead.’ Bassari has some nouns prefixed with *ʃə-* which are not plural. Most of these refer to vines, but there are some other mass nouns like ‘boiled rice, peanut sauce.’ Bedik also has a number of nouns prefixed with *ʃə-*, but these are completely different from the Bassari nouns (‘river, mouth, song, tail, heat,’ etc.), and most are count nouns. Based on their semantics, these two classes do not seem related between Bassari and Bedik. Finally, note that BKK collective **ba-* cannot be cognate to any of these classes, as the regular outcome of earlier ***ʃ* is *Ø* in BKK. It is very possible that Bak **ʃa-* and BKK **ba-* are borrowed between each other. If so, an origin in Bak is more likely, as there are clear cases of borrowing classes from Bak into BKK, but not the other way around.

3.3 Diminutive and augmentative classes

Diminutive and augmentative classes differ greatly between languages, even those in the same low-level group. Cross-linguistically, diminutive morphology is subject to deformation and rapid innovation and replacement. The following classes are used primarily or entirely as diminutive or augmentative classes. Other classes could be listed which also serve as classes for non-derived nouns (including the few shown in parentheses in this table).

	<u>dim sg.</u>	<u>dim. pl</u>	<u>aug. sg.</u>	<u>aug pl.</u>
Sereer	o-III onq-	fo-III fon/fun/fin-	gi/ga-III al-	gi/ga-III ak-, fi-
Fula	kel, kal, kun, ngum	koñ/kon/koy	ngii, nga	ko
Cangin	ku-, njV-	tu-	—	—
Wolof	s-	—	—	—
BKK	ko-, ti/tu ^x -	ño/ñi/ni-	da-, faN-	diN-
Biaf.-Paj.	nəN~niN-	—	(B. gu-III)	(B. bu-I)
Tenda	ñəŋ-, faŋ-	ʃəŋ-	(gaŋ-,) bə-	(ʃəŋ-)
Joola	ji~ju-	mi~mu-	(ka-, fu-, bu-, ja-)	(u-), ñV-
Manjak	ndə-	—	(ka-)	—
Bijogo	(nɛ-)	(m-)	ba-	ba-
Bantu	ka-, pɿ-	(bu-)	ka-, go-, gi-	ga-

Bantu classes 19-22 have no clear cognates in Northern Atlantic, unless augmentative **gi-* is connected with Fula-Sereer augmentative **gin*. Again, I doubt that class 19 **pj-* is connected with the PA animal classes, but it is possible.

The only diminutive or augmentative class which seems to have wide distribution is BØ, used as the diminutive plural in a number of languages, though this is not its primary function. Its semantic focus includes collections of small grains/particles, which makes it well suited to being a diminutive plural.

3.4 Fula-Sereer: remaining classes

Many Fula-Sereer classes (including quite a few large ones) do not have clear outside cognates.

'ox	human sg.; perhaps grammaticalized from <i>*xoox</i> 'head'?
dik, dāk	plural classes; likely grammaticalized from <i>*dik~dāk</i> 'two', but see I, MAK
gal	large class; long and rigid, non-passeriform birds
gol	large class; long and flexible, misc.
rin	dangerous animals, misc. (mass nouns likely originally separate <i>*ri</i> , see DI)
ru	large class; misc., a number of round things and body parts
ho	leaves, grasses (see KØ for the use with some paired body parts)
go	small class; incl. 'sea/river'

3.5 Cangin: remaining classes

About half of the Cangin class prefixes have no clear connection with outside classes.

y-	'person,' 'thing'; agreement only (though perhaps present on <i>*(y-)in</i> 'thing')
w-	"default" singular; agreement only
n-	animals, trees, misc. (see §2.30)
ka-	misc., infinitive/deverbal
ki-	misc., infinitive/deverbal
ku-	misc., diminutive
pi-	long and flexible, deverbal
fi-	some body parts, directional nouns, misc.
*a-	only <i>*a-roy</i> 'rock' (cf. KK <i>a^x-</i> ?)
*sa-	only <i>*sa-pus</i> 'flower' and Laalaa <i>sa-laak</i> 'possessions' (cf. KK <i>taN-</i> or <i>saN-</i> ?)
*su-	only <i>*su-pi</i> 'ring'

The k-initial classes might be connected with various k-initial or g-initial classes in other groups (see KI for **ki-rik* 'tree' and KAC for **ka-nd̥id̥* 'mortar') but overall no specific connections are clear. The "default" w- prefix might be connected to various b-initial classes, but this is entirely speculative. Again, the tV- plural class may be connected with BC class 13 **ti/tu-*, but is much more widely used. The fV- class prefixes (there's evidence for both *fā-* and *fī-*) are found on many non-animal nouns, and must represent more than just original WAN. In root-initial position, Cangin *f corresponds only to *w in other groups, but in prefixes Cangin consonants often develop differently than elsewhere.

3.6 Wolof: remaining classes

Wolof l- (earlier IVN-) has no clear cognate in other groups. There may in fact be two original l-initial prefixes, one on l-oxo l- 'hand' (pl. y-oxo), and IVN- on all other nouns. Wolof m- and

w- can in part be connected with liquid MAN and animal WAN, but most *m-* nouns are not liquid, and most *w-* nouns seem to come from an earlier *u-* class (cf. *u-yoon* ‘road/law,’ *u-heer* ‘moon’ found in early wordlists for modern *yoon w-*, *weer w-*). A prefix †*san-* is found on a number of mass nouns in the *s-* agreement class, most notably *sandal s-* ‘tree resin’ (cf. Noon *dāl*), *sàlleñ s-* ‘sea sand’ (cf. Sereer *o-leeñ*), and *saxaad s-* ‘smoke’ (cf. Bainunk **bi-hood*). This is etymologically distinct from diminutive †*si^x-*. A prefix *k-* appears on a number of nouns in the *g-* class, and in at least the noun *kawar g-* the full CV- prefix can be identified (cf. Joola **ka-wal*). Like *ka-* in other groups, this has no convincing cognate based on semantic criteria.

3.7 Bainunk-Kobiana-Kasanga: remaining classes

A large number of BKK classes lack reasonable cognates in other groups. Beyond those listed here (and plural *ga-*), a number of other classes exist in the modern languages, but can be shown to be innovated (by borrowing, resegmentation, etc.). There are also two infinitive prefixes (**si/ci-*, **ka^x-*) which are not found on any noun.

a-	a few animals, misc. nouns, Bainunk insects
ka-	‘fish’ and perhaps ‘meat’
ta ^x -	‘dawn, cloth, foot,’ (see TAX), and a few more in Kobiana (incl. ‘flower’)
i(N)-	personal plural (possibly BV, but unlikely)
saN-	eight-legged animals (spider, scorpion, crabs), ‘rooster,’ ‘sitting mat,’ misc. In KK: flat and flexible, incl. all leaves
ciN-	rope/string-like
tiN-	viscous liquids, including saps; (Guñaamolo) insect swarms
ba-	collective, mainly for fruits and vegetables; borr. Bak? See §3.2
ka(N)-	‘place’ and nouns referring to places
jiN-	year terms, ‘noise,’ noises
da-	Bainunk ‘day, smoke, heat, dust,’ as well as BKK augmentative
ta-	Bainunk only; birds
a ^x -	KK only (but with some Bainunk evidence); small and round
ji ¹¹	KK only; only ‘arm/hand’ (distinct agreement from animal JI)
uN-	KK only; trees (possibly BU, but unlikely)
daN-	KK only; tree pl.
nuN-	KK only; ‘place’ and nouns referring to places
sa/ca-	KK only; ‘heat, cold’
baN-	Kobiana only; misc. mass nouns (perhaps innovated)
paN-	Kobiana only; singulative grain/bead/strand (likely innovated; borr Bak?)

Regarding *paN-*, given the prefix **fā-* found throughout BKK (see PA), the existence of any p-initial prefix is unexpected. The semantics of Kobiana *pa-III* are consistent with a subdomain of Bak **pu-*, and Kobiana does borrow some classes from Manjak. However, Bak prefix **u* (= Manjak prefix /ə/) is always borrowed as Kobiana /u/, including in the borrowed prefix *pu-*. It would be very difficult to explain the borrowing of the same Bak/Manjak prefix as two distinct Kobiana classes, especially given the vowel discrepancy. Nonetheless *pa-III* probably cannot be traced to Proto-BKK, as it is not even found in Kasanga. Konyagi does have a singulative prefix *fæ-I*, used for mass nouns in *yæ-I*, but the resemblance is probably coincidental.

¹¹ Cf. Konyagi *i-I*, used with some animal nouns (see JI) but also *i-vàkə* ‘hand,’ *i-fèry* ‘foot’

3.8 Biafada-Pajade: remaining classes

Of the remaining BP classes, only one is found in both languages.

faa- ¹²	‘path’
sa ^x -	Biafada only; ‘house’
si-	Biafada only; ‘article of clothing’
ya-	Biafada only; derived location nouns
saa-	Biafada only; plural of <i>bu-</i> trees/plants, and collective of ‘grass’ and ‘millet sp.’
gə-	Biafada only; plural of some animals, almost all in * <i>wan-</i> singular
gaa-	Biafada only; appears only as an agreement prefix for unprefixing borrowings
ŋaN-	Pajade only; small class, includes ‘animal’
(cen/sen)	Pajade only; determiner with unprefixing borrowings

Biafada stacks *ba-* in front of the singular noun (class marker included) to form the plural of most classes. Pajade uses *be-* in the same way for the plural of almost all non-human nouns. Note that these are both different from the human plural class marker *bə-* (from **bə-*), though they are quite possibly related. Regarding the Biafada prefix *gaa-*, it is possible that this was once a prefix on some nouns. Original **pa^x-* and **waN-* are lost in Biafada, leaving only mutation and *w-* agreement as a trace—it is possible that *gaa-* corresponds to another lost prefix. However since it is used (almost?) exclusively for borrowings, I suspect it was innovated, though how it arose is unclear. The situation is similar for Pajade *cen/sen* used for borrowings.

3.9 Tenda: remaining classes

Of the remaining Tenda classes, three or four are specific to Konyagi, which has the most conservative class system. Two are sizeable classes across the family: **geŋ-* and **goŋ-*.

geŋ-	large class, no clear semantics
goŋ-	pejorative/augmentative, mass nouns ‘grass, thatch, clay-rich soil,’ etc.
ʃaŋ-	small class; ‘hedgehog, frog,’ some other animals, a few non-animals
ʃeŋ-	Konyagi only, small class; misc. nouns
xoŋ-	Konyagi only, small class; misc. deverbal nouns
(C)i-	common in Konyagi, no clear semantics; Bassari agreement prefix for unprefixing nouns
(C)e-	(or *(C)i-) Konyagi only: tools (different agreement pattern from above)
bə-	non-plural, found in Bassari and Bedik (see §3.2); likely not cognate between the two

**goŋ-* might be connected with the GUN classes, but Tenda **gəŋ-* seems a better cognate candidate. However it is notable that both **goŋ-* and BP **gun-* contain ‘flower.’ A few other classes exist in Konyagi, but these seem to be grammaticalized from prepositions. Proto-Tenda formed the plural of most g-initial singular classes by substituting *6 for *g. Unlike in BP, this can simply be treated as stacking the personal plural prefix **bə-* on the noun.

¹² **faaŋ(e)* ‘path’ (B. *faar*, P. *faase*) seems to be **faa-* on the default root **-re*; however it is quite possible that the prefix was missegmented in this word, and that it did not originally contain the default root; it may be connected with BKK **bi-(r)aaŋ*, Cangin **waaq* ‘road/path,’ in which case the prefix could have been **fa-* or **fV-* with some other vowel. Regardless, there are no other **f-* initial classes, so this must represent a unique Proto-BP class.

3.10 Bak: remaining classes

Manjak + Balanta class:

*(w)u- large sg. class; misc., borrowings

Joola + Manjak classes:

*wu- Joola plural, Manjak (*u-*) collective
*ba- collective, see §3.2
*mu- plural; perhaps related to MAK/MA
*ti- location nouns (Manjak *tɔ̄-*, Joola *ti-*); Manjak ‘older sibling’
*di- location nouns

Joola classes:

si/ti- plural
ñi~ñu- abstract, Fonyi aug. pl., Kuwaataay more general pl.
ña- misc.
ma- abstract nouns; perhaps related to MAN or MAK/MA
si- ‘fire’
ti/taa- ‘sun,’ a few abstract nouns in Fonyi; *taa-* only in Western Joola
di- a few Kuwaataay, Bayot nouns; perhaps originally diminutive
wa- (Fonyi) a few nouns: ‘wild animals, thing, just before dawn’
ni~nu- (Kuwaataay) trees; could be **IV-* or **nV-* if in Proto-Joola
a- (Kuwaataay) diminutive
bi~bu-, (Kuwaataay) pl. prefixes for some *a-* singular (person, animal) nouns
fa-, ñim-

Manjak class:

ngə- plural

3.11 Bijogo: remaining classes

It is notable that of the classes with cognates in outside groups, all are potentially found in BC. However Bijogo does have some classes which cannot be easily connected to any other group.

ya- human pl.
ka- large sg. class: large (augmentative?) things, long + rigid, languages, fruits, age groups
kə- pl. of *ε-* (“default” and “animal” class)
mə- pl. of *ɲɔ-*
wə- ‘place’

3.12 Benue-Congo: remaining classes

Only one BC class does not seem to have any reasonable cognates at all in Northern Atlantic: class 8 **bj-*. Notably, class 8 has no cognate in Gur, and so may be a BC innovation. There is also class 11 **du-* and 12 **ka-* discussed in DI and §2.27, which are at best partially cognate with classes found in Atlantic groups. While a possible connection between class 7 **ki-* and some Atlantic tree classes (see KI(X)) was considered, there are no similarly-shaped classes in Atlantic with a similar semantic profile to BC **ki-* as a whole.

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See also the references in "Cognates between Northern Atlantic Groups and Bantu"