

## **An Overview of the Consonant Sounds in Poula**

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### **Abstract**

Poula belongs to the Tibeto-Burman language of Kuki-Chin sub branch, it is one of the three varieties of languages spoken by the Chakhesang tribe of Nagaland, with the majority of speakers residing in parts of Manipur. This research study is based on the variety of Poula spoken in Phek district of Nagaland. The other two languages spoken by the tribe are Chokri and Khezha. As such, linguistically, this language shares a contiguous border with Manipur. This paper is an attempt to phonologically unlock the consonantal sounds in the language and map their distribution. This study presents 29 consonant phonemes in Poula. The distinctions are made according to the place and manner of articulation. Place of articulation such as; bilabial, labio-dental, alveolar, post-alveolar, retroflex, palatal, velar and glottal. Manner of articulation such as; plosives, fricatives, affricates, nasals, lateral and approximant. Out of the 29 consonant phonemes, eight are plosives, four are nasals, nine fricative sounds, six affricate sounds and two approximants sounds. The present study will also bring into light the phonemic contrast based on the minimal pairs and its distribution in the environment. Interestingly, Poula permits both consonant clusters and consonant sequence and it is both open syllabic and closed syllabic allowing alveolar approximant in the coda position.

**Keywords:** Poula, Tibeto-Burman, Linguistics, Phonology, Consonants

### **1. Introduction**

The Chakhesangs are a Naga tribe who primarily inhabit the Phek district of Nagaland along with Pochury tribe who consider the district as their tribal headquarters. The name Chakhesang itself reflects three acronyms; 'Cha' which stands for Chokri, 'Khe' for Khezha and 'Sang' for Sangtam. Phek district is made up of three areas and two ranges, of which the present study uses the Razeba range as a point of departure for studying the Poula language. The range is a small one consisting of only three villages and a town who identify ethnically as Poumai. They are Zhavame (Zhamei), Zelome, Tsüpfüme (Chobama), and the town of Razeba with approximately only 6000-10,000 Poula speakers in Nagaland itself. The Poumais are classified as a sub-group of Chakhesang who in turn are further classified as a sub-group of the larger Tenyimia community. Poula language behaves differently from the slightly bigger languages of Chakhesangs- Khezha and Chokri in all aspects, phonologically, morphologically and syntactically.

## 2. Conceptual Framework

Till date, no linguistics work is found in this variety of Poula. It was only in 2021, a small booklet titled '*Poula Primer Dictionary*' was published by the Poula literature committee which is the first written literature in the language. Besides this, there is absolutely no literature available in this variety of Poula spoken by the Chakhesangs. A few linguistics works are available in the variety spoken in Manipur; Veikho (2014), Veikho & Khyriem (2015) and Veikho & Sarmah (2018), which provides a preliminary phonological description of Poula, Consonants and Vowels. Veikho (2021) builds upon previous works by expanding the findings through the recording of additional data and broadening the analysis.

The Poula Literature Board Committee was formed in the year 2013 with the primary intention to develop its orthography and provide reading materials in the language. One of their main focus lies on the development of Bible and hymnals in their own language. At present, the literature board is working on developing school textbooks for the primary sections.

## 3. Methodology

This study was based on qualitative research method which includes both primary and secondary sources for data collection and analysis. Primary data were collected from native speakers of the community varying in gender, age and occupation by applying methods such as observation method, structured and unstructured interviews, and collection of community and personal narratives. All the data incorporated in this paper are first-hand information collected by the researcher. Secondary sources were in the form of books, journals, articles, internet sources, official documents and related literature written on the tribe to obtain information on the language and the people.

## 4. Consonants

Consonants are nearly always movements at the beginning or end of a vowel (Ladefoged, 2005). All sounds during the production of which we hear friction are consonants, but not all consonants are produced with friction (Balasubramanian, 2000) Consonants are classified along three dimensions: voicing, place of articulation and manner of articulation. In the production of consonant sounds, the air from the lungs escapes through the oral passage with friction and the nasal passage is completely blocked.

This study presents 29 consonant phonemes in Poula. The distinctions are made according to the place and manner of articulation. Place of articulation such as; bilabial, labio-dental, alveolar, post-alveolar, palatal, velar and glottal. Manner of articulation such as; plosives, fricatives, affricates, nasals, lateral and approximant. Poula has eight plosives having three-way contrast; bilabial, dental-alveolar and velar, /p, b/ /t, d/ /k/ /p<sup>h</sup>, t<sup>h</sup>, k<sup>h</sup>/. The voiced velar plosive<sup>1</sup> /g/ is absent in Poula thus, there is no corresponding voiced sound to /k/.

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<sup>1</sup> The voiced velar plosive occurs only in borrowed words, eg: /gari/ 'vehicle' (source- Hindi)

There are five nasals in Poula, and the sounds are distinguished based on the following places of articulation; bilabial nasal /m/, alveolar nasal /n/, palatal nasal /ɲ/ and aspirated voiceless velar nasal /ŋ<sup>h</sup>/.

Fricatives are also distinguished based on the four places of articulation; labio-dental /f, v/; alveolar /s, z/; post-alveolar /ʃ, ʒ/; glottal /h/ and the voiceless retroflex fricative /ɣ/.

Affricates in Poula are alveolar affricates /ts, dz/, post-alveolar affricates /tʃ, dʒ/ and the voiceless aspirated counterpart /tʃ<sup>h</sup>/.

Approximants in Poula are of different types; voiced alveolar approximant /ɹ/. Voiced alveolar lateral approximant /l/ and voiced bilabial approximant /w/.

**Table 1. Poula Consonant Inventory**

	Bilabial	Labiodental	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Glottal
Voiced (+)	-v +v	-v +v	-v +v	-v +v		-v +v	-v +v	-v +v
Unvoiced (-)								
Plosive	p b		t d				k	
Aspirated plosive	p <sup>h</sup>		t <sup>h</sup>				k <sup>h</sup>	
Fricative		f v	s z	ʃ ʒ	ɣ			h
Affricate			ts dz	tʃ dʒ				
Aspirated affricate				tʃ <sup>h</sup>				
Nasal	m		n			ɲ	ŋ <sup>h</sup> ŋ	
Lateral Approximant			l					
Approximant	w		ɹ					

#### 4.1 Stops/Plosives

In a stop, the airflow through the mouth is momentarily closed off. This can be done by the two lips, forming [p] or [b]; by the tongue tip touching the alveolar ridge, forming [t] or [d]; by the tongue body touching the palate, forming [k] or [g]; and in other ways (Hayes, 2009)

Poula has eight phonemic stops /p/, p<sup>h</sup>/, /b/, /t/, /t<sup>h</sup>/, /d/, /k/ and /k<sup>h</sup>/. Phoneme aspirations normally occurs with voiceless stops in labial, alveolar and velar places of articulation. The voiceless aspirated stops /p<sup>h</sup>/, /t<sup>h</sup>/ and /k<sup>h</sup>/ occurs in word-initial and word-medial positions. Voiced stops do not have its aspirated counter parts and it also occurs word initially and word medially.

/p/: [p] is a voiceless bilabial plosive which is realized as [p], it occurs in word-initial and word-medial positions.

##### **Initial**

/paomodu/ ‘fault’  
/paomusi/ ‘criticism’  
/pek<sup>h</sup>o/ ‘sound’

##### **Medial**

/asadzəpa/ ‘happiness’  
/mepu/ ‘groom’  
/səpapitume/ ‘publisher’

/p<sup>h</sup>/: [p<sup>h</sup>] is a voiceless aspirated bilabial plosive, it is realized as [p<sup>h</sup>]. It occurs in word-initial and word-medial positions.

##### **Initial**

/p<sup>h</sup>utsu/ ‘pride’  
/p<sup>h</sup>usi/ ‘apple’  
/p<sup>h</sup>imoja/ ‘sock’

##### **Medial**

/ap<sup>h</sup>u/ ‘spade’  
/kobipa/ ‘cauliflower’  
/k<sup>h</sup>ɪop<sup>h</sup>ao/ ‘graveyard’

/b/: [b] is a voiced bilabial plosive, it is realized as [b]. It occurs in word-initial and word-medial positions.

##### **Initial**

/balə/ ‘stay’  
/bamotsu/ ‘fold (arm)’  
/bako/ ‘hour’

##### **Medial**

/risutsubu/ ‘field’  
/t<sup>h</sup>ubuvə/ ‘grain sack’  
/trinaba/ ‘butterfly’

/t/: [t] is a voiceless alveolar plosive, it is realized as [t]. It occurs in word-initial and word-medial positions.

##### **Initial**

/tit<sup>h</sup>ɪə/ ‘air’  
/tihə/ ‘cloud’  
/tizə/ ‘dark’

##### **Medial**

/natə/ ‘little’  
/ŋatitu/ ‘mole’  
/k<sup>h</sup>atu/ ‘bread’

**/tʰ/:** [tʰ] is a voiceless aspirated alveolar plosive, it is realized as [tʰ]. It occurs in word-initial and word-medial positions.

**Initial**

/tʰaotə/ ‘younger sister’  
 /tʰubu/ ‘rice’  
 /tʰpatsu/ ‘print’

**Medial**

/məlɪtʰu/ ‘heart’  
 /tatʰu/ ‘pickle’  
 /datʰa/ ‘butcher’

**/d/:** [d] is a voiced alveolar plosive, it is realized as [d]. It occurs in word-initial and word-medial positions.

**Initial**

/daoruki/ ‘hospital’  
 /duraʃi/ ‘grape’  
 /daotsu/ ‘cutting’

**Medial**

/bedu/ ‘cheek’  
 /mode/ ‘greens’  
 /ɲiedu/ ‘orange’

**/k/:** [k] is a voiceless velar plosive, it is realized as [k]. It occurs in word-initial and word-medial positions.

**Initial**

/ki/ ‘house’  
 /kihupʰetsume/ ‘sweeper’  
 /ko/ ‘reason’

**Medial**

/zaoki/ ‘aeroplane’  
 /dzəpikinitsume/ ‘sailor’  
 /dzəpiki/ ‘boat’

**4.2 Fricatives**

In a fricative, a tight constriction is made, so that air passing through the constriction flows turbulently, making a hissing noise [f], [v] etc. In the production of sibilant fricatives like [s], [z], [ʃ] and [ʒ], the mechanism of production is more complex: a stream of air is directed at the upper teeth, creating noisy turbulent flow (ibid). Fricative sounds in Poula are relatively rich. There are eight fricative phonemes, out of which five are voiceless fricatives /f/, /s/, /ʃ/, /h/ and /ɣ/; three voiced fricatives /v/, /z/ and /ʒ/. All these fricatives occur word initially and word medially. Contrast of fricative sounds in Poula are given below:

**/f/:** [f] is a voiceless labiodental fricative, it is realized as [f]. It occurs in word-initial and word-medial positions.

**Initial**

/fomofɪ/ ‘essence’  
 /fokutsu/ ‘to hide’  
 /fəpə/ ‘parents’

**Medial**

/səfəro/ ‘body’  
 /səfətsu/ ‘breath’  
 /batʰ.ɪuafə/ ‘bat’

**/v/:** [v] is a voiceless labiodental fricative, it is realized as [v]. It occurs in word-initial and word-medial positions.

**Initial**

/vi/ ‘bull’  
 /ve/ ‘breakfast’  
 /vitsu/ ‘spine’

**Medial**

/levə/ ‘comb’  
 /dʒovə/ ‘arm-pit’  
 /k<sup>h</sup>avu/ ‘curry’

**/s/:** [s] is a voiceless alveolar sibilant fricative, it is realized as [s]. It occurs in word-initial and word-medial positions.

**Initial**

/sali/ ‘frying pan’  
 /su/ ‘pain’  
 /saləɪe/ ‘adoption’

**Medial**

/rasədʒə/ ‘fruit juice’  
 /pisu/ ‘headache’  
 /asame/ ‘friend’

**/z/:** [z] is a voiced alveolar sibilant fricative, it is realized as [z]. It occurs in word-initial and word-medial positions.

**Initial**

/zəpi/ ‘to wrap’  
 /zi/ ‘name’

**Medial**

/zezi/ ‘surname’  
 /mozao/ ‘swallow’

**/ʃ/:** [ʃ] is a voiceless postalveolar sibilant fricative, it is realized as [ʃ]. It occurs in word-initial and word-medial positions.

**Initial**

/ʃi/ ‘bad’  
 /ʃo/ ‘to produce sweat’  
 /ʃa/ ‘pest found in rice’

**Medial**

/muʃa/ ‘greed’  
 /ɪaʃi/ ‘ghost’  
 /səumofɪ/ ‘spoil’

**/ʒ/:** [ʒ] is a voiced postalveolar sibilant fricative, it is realized as [ʒ]. It occurs in word-initial and word-medial positions.

**Initial**

/ʒi/ ‘to sleep’  
 /ʒofʃo/ ‘similar’

**Medial**

/baʒo/ ‘palm’  
 /ʃaʒa/ ‘salary’

**/ʂ/:** [ʂ] is a voiceless retroflex fricative, it is realized a [ʂ]. It occurs in word-initial and word-medial positions.

**Initial**

/ʂu/ ‘perspiration’  
 /ʂə/ ‘plan’

**Medial**

/nameʂə/ ‘pregnant’  
 /meʂə/ ‘population’

**/h/:** [h] is a voiceless glottal fricative, it is realized as [h]. It occurs in word-initial and word-medial positions.

**Initial**

/hutsu/ ‘to blow’  
 /huk<sup>h</sup>aki/ ‘jail’  
 /hat<sup>h</sup>ə/ ‘to fast’

**Medial**

/monaha/ ‘birthday’  
 /nuha/ ‘reputation’  
 /zoha/ ‘busy’

**4.3 Affricates**

An affricate is a stop followed by a fricative, made at the same location in the mouth in rapid succession so that the result has the typical duration of a single speech sound. (ibid). There are five affricate sounds in Poula. /ts/ is a voiceless alveolar affricate; /dz/ is a voiced alveolar affricate; /tʃ/ is a post-alveolar affricate; /dʒ/ is a voiced post-alveolar affricate and /tʃ<sup>h</sup>/ is a voiceless aspirated post-alveolar fricative. /tʃ<sup>h</sup>/ do not have its voiced aspirated counterpart. All the affricate sounds occur in word-initial and word-medial positions.

/ts/: [ts] is a voiceless alveolar affricate, it is realized as [ts]. It occurs in word-initial and word-medial positions.

**Initial**

/tsa/ ‘to tease’  
 /tsisa/ ‘to obey’  
 /tsamutsi/ ‘to harvest’

**Medial**

/vutsu/ ‘to bury’  
 /patsu/ ‘to bloom’  
 /zitsu/ ‘to divide’

/dz/: [dz] is a voiced alveolar affricate, it is realized as [dz]. It occurs in word-initial and word-medial positions.

**Initial**

/dzəp<sup>h</sup>i/ ‘sorrow’  
 /dzədəu/ ‘stable’  
 /dzəap<sup>h</sup>ɪa/ ‘sprinkle’

**Medial**

/mudzə/ ‘urinate’  
 /hidzə/ ‘tear’  
 /judzə/ ‘abroad’

/tʃ/: [tʃ] is a voiceless post-alveolar affricate, it is realized as [tʃ]. It occurs in word-initial and word-medial positions.

**Initial**

/tʃaʃəu/ ‘swear’  
 /tʃifə/ ‘rumor’

**Medial**

/zeʃi/ ‘strict’  
 /tuʃome/ ‘runner’

/tʃ<sup>h</sup>/: [tʃ<sup>h</sup>] is an aspirated voiceless post-alveolar affricate, it is realized as [tʃ<sup>h</sup>]. It occurs in word-initial and word-medial positions.

**Initial**

/tʃ<sup>h</sup>i/ ‘shiver’  
 /tʃ<sup>h</sup>əna/ ‘third’

**Medial**

/monatʃ<sup>h</sup>i/ ‘rebirth’  
 /motsəʃ<sup>h</sup>i/ ‘rethink’

/dʒ/: [dʒ] is a voiced post-alveolar affricate, it is realized as [dʒ]. It occurs in word-initial and word-medial positions.

**Initial**

/dʒoli/ ‘to tickle’  
/dʒosu/ ‘sake’

**Medial**

/budʒə/ ‘trunk of a wood’  
/ʃidʒo/ ‘tomorrow’

**4.4 Nasals**

In a nasal consonant, the velum is lowered, allowing air to escape through the nose. Most nasal consonants have a complete blockage within the mouth at the same time. The place of articulation for nasals are mostly the same as those for stops (ibid). Poula has four nasals /m/, /n/, /ŋ/ and /ɲ/. /m/ which is realized as [m] is a voiced bilabial nasal which occurs in word-initial and word-medial positions. /n/ which is realized as [n] is a voiced alveolar nasal which occurs in word-initial and word-medial positions. /ŋ/ which is realized as [ŋ] is a voiced velar nasal which occur in word-initial and word-medial positions. /ɲ/ which is realized as [ɲ] is a voiced palatal nasal which occur in word-medial and word-final positions.

**/m/:** [m] is a voiced bilabial nasal, it is realized as [m]. It occurs in word-initial and word-medial positions.

**Initial**

/mote/ ‘salt’/  
/modʒə/ ‘urine’  
/moha/ ‘yawn’

**Medial**

/k<sup>h</sup>amotsu/ ‘spoon’  
/same/ ‘blanket’  
/sabamuni/ ‘cloth’

**/n/:** [n] is a voiced alveolar nasal, it is realized as [n]. It occurs in word-initial and word-medial positions.

**Initial**

/ni/ ‘press’  
/nitsu/ ‘laughter’  
/nituɪə/ ‘smile’

**Medial**

/tsini/ ‘sugar’  
/belani/ ‘tomato’  
/musuna / ‘public’

**/ŋ/:** [ŋ] is a voiced velar nasal, it is realized as [ŋ]. It occurs in word-initial and word-medial positions.

**Initial**

/ŋu/ ‘village’  
/ŋumet<sup>h</sup>.io/ ‘villagers’  
/ŋaobame/ ‘enemy’

**Medial**

/paomuŋao/ ‘recommendation’  
/remuŋu/ ‘fifty’  
/kemeŋu/ ‘fifteen’

**/ɲ/:** [ɲ] is a voiced palatal nasal, it is realized as [ɲ]. It occurs in word-initial and word-medial positions.

**Initial**

/ɲali/ ‘earthen-pot’  
/ɲa/ ‘soil’

**Medial**

/haji/ ‘rich’  
/duɲa/ ‘coriander’

### 4.5 Approximants

Approximants are consonants in which the constriction is fairly wide, so that air passes through without creating turbulence or trilling. In lateral approximants, the air passes around the sides of the tongue (ibid). Poula has three approximants, /w/, and /ɹ/ are the central approximants and /l/ is the liquid approximant. The occurrence of the bilabial approximant /w/ is very limited and it is found in word initial only. The only word with this sound is the response word /we/. /l/ is a voiced alveolar lateral approximant and /ɹ/ is a voiced alveolar approximant both occurring in word-initial and word-medial positions.

**/ɹ/:** [ɹ] is a voiced alveolar lateral approximant, it is realized as [ɹ]. It occurs in word-initial, medial and final positions. /

<b>Initial</b>	<b>Medial</b>	<b>Final</b>
/ɹə/ ‘stitch’	/ɹaɹa/ ‘rash’	/k <sup>h</sup> ɹɹ/ ‘sepulchre’
/ɹi/ ‘horse’	/bek <sup>h</sup> a.ɹaɹo/ ‘jaw’	/məɹ/ ‘mouth’

**/l/:** [l] is a voiced alveolar lateral approximant, it is realized as [l]. It occurs in word-initial and word-medial positions.

<b>Initial</b>	<b>Medial</b>
/laɹəvə/ ‘book’	/hilatə/ ‘eyeball’
/laɹo/ ‘diarrhea’	/məliθoə/ ‘heart’

### 4.6 Phonemic Distribution of Consonants

**Table 2.2** illustrates the distribution of the consonant phonemes in the word-initial, medial and final positions.

**Table 2.2 Distribution of Consonant Phonemes at the Syllable Level**

<b>Consonant</b>	<b>Initial</b>	<b>Medial</b>	<b>Final</b>
/p/	+	+	-
/p <sup>h</sup> /	+	+	-
/b/	+	+	-
/t/	+	+	-
/t <sup>h</sup> /	+	+	-
/d/	+	+	-
/d <sup>h</sup> /	+	-	-
/k	+	+	-
/k <sup>h</sup> /	+	+	-
/f/	+	+	-

/v/	+	+	-
/s/	+	+	-
/z/	+	+	-
/ʃ/	+	+	-
/ʒ/	+	+	-
/ʂ/	+	+	-
/h/	+	+	-
/tʂ/	+	+	-
/dʒ/	+	+	-
/tʃ/	+	+	-
/tʃʰ/	+	+	-
/dʒ/	+	+	-
/m/	+	+	-
/n/	+	+	-
/ŋ/	+	+	-
/ŋʰ/	+	+	-
/p/	+	+	-
/l/	+	+	-
/w/	+	-	-
/ɹ/	+	+	+

## 4.7 Phonemic Contrast of Consonants

A contrastive pair is a pair of word that differ only in one phoneme. Such phonemes are environmentally contrastive as their difference lies within the specific environment. By substituting one sound with another sound in the same environment, the semantic meaning of the word completely changes. Given below are some examples of consonant contrastive/ minimal pairs in Poula.

### 4.7.1 Contrast of Stops/Plosives

#### a. Bilabial plosives /p, p<sup>h</sup>, b/

/pe/ ‘grandmother’

/p<sup>h</sup>e/ ‘to wash (hair)’

/be/ ‘to leave (the work)’

/pu/ 'forehead'                      /p<sup>h</sup>u/ 'to bind'                      /bu/ 'gun'

**b. Alveolar plosives /t, t<sup>h</sup>, d/**

/ta/ 'go'                      /t<sup>h</sup>a/ 'fast'                      /da/ 'to beat an object with a stick'  
 /tu/ 'reach'                      /t<sup>h</sup>u/ 'thousand'                      /du/ 'big'

**c. Velar plosives /k, k<sup>h</sup>/**

/ka/ 'broad'                      /k<sup>h</sup>a/ 'a type of leaf'  
 /ki/ 'house'                      /k<sup>h</sup>i/ 'not straight/ curve'

**4.7.2 Contrast of Fricatives**

**a. Labiodental fricatives /f, v/**

/fo/ 'to pick'                      /vo/ 'to trap or surround'  
 /fo/ 'wrestling'                      /vo/ 'pig'

**b. Alveolar fricative /s, z/**

/su/ 'deer'                      /zu/ 'to look'  
 /si/ 'dog'                      /zi/ 'to sleep'

**c. Postalveolar affricates /ʃ, ʒ/**

/ʃo/ 'ladder'                      /ʒo/ 'wages'  
 /ʃa/ 'to announce'                      /ʒa/ 'one's share'

**d. Glottal fricative /h/ and retroflex fricative /ʂ/**

/ha/ 'fresh'                      /ʂa/ 'to slice (meat)'  
 /ha/ 'veins'                      /ʂa/ 'to bless'  
 /ha/ 'bufflo'                      /ʂa/ 'blessing'

**4.7.3 Contrast of Affricates**

**a. Alveolar Affricate /ts, dz/**

/tsə/ 'thought'                      /dzə/ 'to cook'  
 /tsə/ 'a type of traditional instrument used by female'                      /dzə/ 'to cut a bamboo'  
 /tsə/ 'support'                      /dzə/ 'water'

**4.7.4 Contrast of Nasals**

Near-minimal segmental pairs for Poula nasals /m/, /n/, /ŋ/ and /ɲ/ are given below:

**a. Bilabial nasal /m/ and alveolar nasal /n/**

/ma/ 'swell'                      /na/ 'low'

/ma/ ‘fault’                      /na/ ‘child’  
 /ma/ ‘pumpkin’                  /na/ ‘sacrifice (to ghost)’

**b. Velar Nasal /ŋ/ vs Palatal Nasal /ɲ/**

/ŋa/ ‘mole’                        /ɲa/ ‘to apply (powder)’  
 /ŋe/ ‘thatch’                    /ɲa/ ‘to dirty oneself in mud’  
 /ŋe/ ‘wither (flower)’        /ɲa/ ‘soil’

**4.7.5 Contrast of Approximants**

The minimal pairs for voiced alveolar lateral approximant /l/ and the voiced alveolar approximant /ɭ/ are illustrated below:

**a. /l/ vs /ɭ/**

/la/ ‘language’                  /ɭa/ ‘a traditional basket placed above the hearth’  
 /la/ ‘to stand’                    /ɭa/ ‘stripes/design’  
 /la/ ‘to pass’                      /ɭa/ ‘dog’s bark’

**4.8 Consonant Clusters**

By consonant clusters we mean a sequence of two or more consonants at the beginning or end of a syllable. In other words, a sequence of two consonants will have to form part of the same syllable if it has to be considered a consonant cluster (Balasubramanian, 2000). The consonant clusters in Poula are onset cluster and it exclusively occur with stops and approximants. Given below are the formation of onset clusters between stops and the alveolar approximant [ɭ].

**4.8.1 Voiceless Bilabial Plosive [p] + Alveolar Approximant [ɭ]**

The voiceless bilabial plosive form clusters with the voiced alveolar approximant as shown below:

<b>Initial</b>	<b>Medial</b>
/pro.le/ ‘too much’	/ki.pri/ ‘garden’
/pri/ ‘needle’	/ki.pɪaɔ/ ‘tent’
/pɪe/ ‘cup’	/k <sup>h</sup> ao.pɪi.tao/ ‘terror’

**4.8.2 Voiceless Bilabial aspirated plosive [p<sup>h</sup>] + Alveolar Approximant [ɭ]**

The voiceless bilabial aspirated plosive form clusters with the voiced alveolar approximant as shown below:

<b>Initial</b>	<b>Medial</b>
/p <sup>h</sup> ɪa/ ‘talk’	/me.p <sup>h</sup> ɪi.me/ ‘spectator’
/p <sup>h</sup> ɪa/ ‘generous’	/la.ɪə.p <sup>h</sup> ɪə.me/ ‘student’

### 4.8.3 Voiceless Alveolar Plosive [t] + Alveolar Approximant [ɹ]

The voiceless alveolar plosive form clusters with the voiced alveolar approximant as shown below:

<b>Initial</b>	<b>Medial</b>
/tro.to/ ‘maize’	/mu.tɹu/ ‘worship’
/tru.si/ ‘peach’	/pe.tɹio/ ‘talkative’
/tro/ ‘game’	/p <sup>h</sup> u.tɹəu/ ‘tight’

### 4.8.4 Voiceless Alveolar Aspirated Plosive [t<sup>h</sup>] + Alveolar Approximant [ɹ]

The voiceless alveolar aspirated plosive form clusters with the voiced alveolar approximant as shown below:

<b>Initial</b>	<b>Medial</b>
/t <sup>h</sup> .ɹe/ ‘sour’	/it <sup>h</sup> .ɹume/ ‘we’
/t <sup>h</sup> .ɹo.lu/ ‘victory’	/li.t <sup>h</sup> .ɹi/ ‘only’
/t <sup>h</sup> .ɹu/ ‘shed’	/a.t <sup>h</sup> .ɹau/ ‘strength’

Consonant clusters in Poula also occurs in onomatopoeic words. Given below are some examples of sounds produced by animals and inanimate objects.

b.ɹe~b.ɹe ‘of cows’

f.ɹi~f.ɹi ‘of whistling’

In Poula, consonant clusters are permitted, but with certain restrictions. The language allows initial and medial consonant clusters, with a minimum requirement of two consonants. Vowel-initial clusters, where the clusters are preceded by a vowel, are also observed. However, the number of consonants in a cluster does not exceed two, and the syllable structure is analyzed as CCV, CCVV, CVCCV, VCCV, or VCCVCV.

While clusters involving plosives with the alveolar approximant are common in Poula, clusters with nasals and approximants, as well as fricatives and alveolar approximants, are limited and primarily found in onomatopoeic word constructions. Additionally, Tibeto-Burman consonant clusters are only found in root-initial position (Benedict, 1972).

**Table 3 Consonant Clusters in Monosyllabic words**

Onset Cluster	Gloss
p.ɹe (CCV)	‘cup’
p <sup>h</sup> .ɹa (CCV)	‘talk’
t.ɹo (CCV)	‘game’
t <sup>h</sup> .ɹu (CCV)	‘shed’

#### 4.9 Consonant Sequence

The occurrence of consonant sequences is very rare in Poula and it is found only in a limited number of words. Consonants which occur in sequence across the syllable boundaries and have no intervening vowel are termed as consonant sequence. The following data shows consonant sequence between an alveolar approximant followed by a consonant cluster; an aspirated alveolar plosive and an alveolar approximant (a) and, an alveolar approximant and an alveolar fricative (b).

a) Approximant + Aspirated stop

/kaɪ.tʰ.i/      ‘how’

b) Approximant + Fricative

/məɪ.su.ʃi/      ‘chilly’

c) Approximant + Fricative

/mə.həɪ.həɪ/      ‘brown’

#### 5. Conclusion

Poula exhibits 29 consonant phonemes, the distinctions are made according to the place and manner of articulation. The presence of the voiceless retroflex fricative [ʂ] in Poula, marks an interesting phonetic difference. This sound, which is not found in any of the Angami-Pochuri languages, adds to the unique phonetic inventory of Poula. The voiceless retroflex fricative sound is produced by constricting the airflow with the tongue tip curled back and raised toward the hard palate, creating a turbulent noise. In Poula, this sound may play a distinctive role in the language's phonological system, potentially contrasting with other sounds to differentiate meaning.

Unlike other Angami-Pochuri languages, Poula has an aspirated voiceless velar nasal [ŋʰ], but no voiceless nasal at any other place of articulation Veikho (2021). Dantsuji (1986); Bhaskara Rao & Ladefoged (1991) stated that many languages in South East Asia have voiceless nasal consonants that contrast with their voiced counterparts. In Angami, three voiceless nasals (bilabial, alveolar, and palatal) have been identified in Khonoma Angami (Bhaskara Rao & Ladefoged, 1991). However, there are no reported occurrences of a voiceless velar nasal in any Angami-Pochuri languages. Therefore, the presence of the voiceless velar nasal in Poula, is an intriguing linguistic feature that distinguishes Poula from its Angami-Pochuri counterparts.

Poula permits both consonant sequence and consonant cluster and the number of consonants does not exceed more than two. This study does not claim to be a complete work on consonants. Further research may be conducted using phonological tools.

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