

1 Introduction

Tarifit is an Amazigh language spoken in northern Morocco. Tarifit is also known as Tarifiyt or Riffian, and many Tarifit speakers refer to their language as /θarifaʃt/ or Tamazight, though the latter term is used to refer to other Amazigh varieties as well. The term /θarifaʃt/ (or Irifiyen for the people who speak it) can also refer to the specific group of people in the region (we will give more details in what follows).

Amazigh languages are indigenous to North Africa. The Amazigh language group (also known as Berber) is one branch of the Afro-Asiatic language phylum and consists of many extant languages spoken in a large, but discontinuous area ranging from the Atlantic coast to western Egypt, and from the Mediterranean to the Niger river (Mourigh & Kossmann, 2019). The history of the Amazigh languages dates back to at least the second millennium BCE (Camps, 1995). The word Berber derives from the Greek word *Barbaroi* (barbarian), a name that was used to refer to anyone who did not speak Greek. Because this term can be derogatory, Amazigh people prefer to be referred to as Amazigh (plural: Imazighen), meaning ‘free’ and ‘noble’ (Zouhir, 2013).

Amazigh languages share many basic grammatical structures, and much of their basic vocabulary, but there is also a huge amount of variation. In some ways, the Amazigh language family can be described as a dialect continuum, since there is gradient variation within regions over space. Lafkioui (2018) suggests three major subdivisions of Amazigh varieties, though classifications are often problematic (Mourigh & Kossmann, 2019). The first is Northern Amazigh, which consists of Tarifit (including Senhaja Berber; north, northeast, and northwest Morocco), Tamazight (spoken in the Middle Atlas / central Moroccan region), Figuig Berber (east Morocco), Kabyle Berber (north Algeria), Tashawit (Aures, northeast Algeria), Mزاب Berber (south Algeria), and Ouargla Berber (south Algeria). The second group is Southern Berber, which consists of languages such as Zenaga (spoken in Mauritania), Tashlhiyt (south Morocco), and Tetserret and Tuareg Berber (Sahara, Sahel). Eastern Berber is the third group, which includes languages such as Siwa (west Egypt), Sokna and El-Fogaha (Fezzan, central Libya), Yefren and Zuara (Tripolitania, north Libya), and Ghadames (east Libya), as well as all of the Amazigh languages of Tunisia (Jerba, Tamazret, and Sened).

Compared to other North African countries, Morocco contains the largest proportion of the population that speaks an Amazigh language as a mother tongue; the latest official census data (2024) reports that around 25% of the total population of about forty million Moroccans speak an Amazigh language. The true number is probably larger; for instance, Mourigh and Kossmann (2019)

suggest that a quarter to a third of the population speak Amazigh, Ethnologue (Eberhard et al., 2025) states that there were thirteen million speakers between 2016 and 2017, and Belhiah et al. (2020) say that the proportion is closer to 30%.

Tarifit is one of three largest Moroccan Amazigh languages, along with Tashlhiyt and Tamazight. There are approximately one million Tarifit speakers living in rural and urban regions in northeast Morocco (Census, 2024), while Tashlhiyt has the largest number of speakers (about five million), followed by Tamazight (about three million). Figure 1 shows the area of Morocco where Tarifit is spoken. Tarifit is spoken in a northern Moroccan region known as the “Rif,” which is bordered by the Mediterranean Sea to the north, the Atlantic Ocean to the west, Algeria to the east, and the Middle Atlas mountain range to the south. The Rif language area comprises two predominantly Amazigh-speaking areas: the small geolinguistic enclave of Ghomara and the larger territory bordered to the west by Ktama, to the east by the Iznasen (near the Algerian border), and to the south by Guercif, the last Riffian geographic point before the Taza corridor (Lafkioui, 2017). Tarifit can be subdivided into two major dialect groups: Western and Eastern varieties (Lafkioui, 2024). The Western dialects are spoken in and around El Hoceima. The Eastern dialects are spoken in and around Nador. The major Eastern subvariety known as Guelaiya is the focus of the current Element. In addition to being spoken in Morocco, a large Tarifit-speaking diaspora community lives in Belgium, the Netherlands, and other parts of Europe, and Lafkioui (2024) estimates that there are around six million Tarifit speakers in the diaspora.

Multilingualism is high among Tarifit speakers. Tarifit speakers in Morocco generally learn Tarifit as their first language and use it primarily in the home and with other Tarifit-speaking community members. Tarifit speakers usually learn Moroccan Arabic at a young age, when they interact with non-Amazigh-speaking community members and in school, where Classical/Standard Arabic is learned and used in formal settings. Spanish and/or French may also be acquired for various reasons. French is learned at a young age in schools

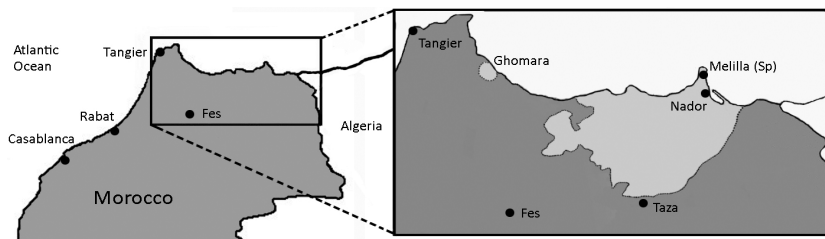


Figure 1 Map of northern Morocco, inset showing Tarifit speaking regions, including Nador.

across the country, while Spanish is learned due to the Spanish presence in this part of the country (1912–1956). Moreover, Spanish is the official language of the enclave of Melilla, about fourteen kilometers from Nador, and there are many Spanish loanwords in the language. Tarifit speakers outside of Morocco use other languages in community, educational, or professional settings, such as French, Spanish, Dutch, English, or German.

Amazigh has been in contact with various dialects of Arabic since the seventh century when the Arab conquest of North Africa spread to Morocco. Arab settlements in the country introduced Arabic, and Arabs in the region also utilized local varieties of Amazigh primarily for informal communication with Amazigh families (Zakhir, 2023). Yet, Arabic became the dominant language in the region and Amazigh languages were marginalized (El Guabli, 2025). French occupation in the nineteenth and twentieth centuries also led to the rise of Arabic-French bilingualism in the region, and there was debate on the use and status of Amazigh in schools. The French administration launched “the Berber decree of 1914” to encourage its teaching and established the first Amazigh School in Azrou in 1927 (Reino, 2007). After Moroccan independence from France in 1956, Amazigh languages continued to suffer marginalization due to the “Arabization” process in Morocco and throughout the Maghreb (North African countries, mainly Morocco, Algeria, and Tunisia).

Long term, sustained contact between Amazigh languages and dialectal Arabic has had an immense impact on language variation and change in the languages of Morocco (Chtatou, 1997), and Moroccan Arabic and Moroccan Amazigh languages show similarities in many linguistic features, particularly syllabic and prosodic features (Chtatou, 1997; Dell & Elmedloui, 2012). An interesting discussion in the literature is the direction of influence due to language contact. Some researchers have attributed the patterns of vowel reduction and complexification of syllable structure observed in Moroccan Arabic to be the result of language contact from Amazigh (Chtatou, 1997). Others have argued that some phonological features have been borrowed from Arabic into Amazigh, or that the similarities are the result of parallel phonological changes over time (Kossmann, 2013). There is also bidirectional lexical and structural borrowing: a huge proportion of the Tarifit lexicon contains Arabic loanwords, and Moroccan Arabic also contains lexical and morphological borrowings from Amazigh (Kossmann, 2009).

As a response to marginalization, the Amazigh Cultural Movement (ACM) sought to remedy the threat to the Amazigh language and culture by advocating educational, media, and cultural reforms that would rehabilitate Amazigh (El Guabli & Boum, 2022). Important cultural events for the Amazigh movement include a speech made by King Hassan II on August 20, 1994, saying that Amazigh is a fundamental component of the Moroccan identity and should be

taught for children exactly as the other existing languages. For many, this royal declaration marked the start of official recognition of the historical and cultural importance of Amazigh in Morocco (Zakhir, 2023). Another important event occurred in the 2001 official speech by King Mohamed VI when he emphasized the importance of Amazigh as a crucial cultural and linguistic part of the country and its identity. As a result, the Royal Institute of Amazigh Culture (IRCAM) was officially founded in the same year. The Moroccan government recognized Amazigh as an official language in 2011. This led to the presence of Amazigh in official government offices (such as parliament and public administrations to assist speakers), the use of Amazigh on public administrative websites, and the launch of official Amazigh TV channels. Figure 2, for instance, shows signage for the official administrative offices for the Nador municipality of Zeghanghane, written in Arabic, Tifinagh (the traditional Amazigh alphabet), and French. And, in 2023, the first day of the Amazigh new year became an official national holiday. However, Amazigh still remains marginalized relative to Arabic. For instance, Article 5 of the 2011 Moroccan Constitution stipulates that Arabic remains “the official language of the state, and the state works to protect and develop it, and promote its use.” In the same article, Amazigh is introduced as “also an official language because it is a shared heritage between all Moroccans with no exceptions.”

The Amazigh language was integrated into the Moroccan educational system in the 2003/2004 academic year, initially in a limited number of primary schools nationwide. The number of schools offering Amazigh language instruction gradually increased, reaching a total of 2,221 primary schools by the 2022/2023 academic year, catering to approximately 331,111 students. Meanwhile, the number of trained specialist teachers in Amazigh language instruction grew



Figure 2 Sign marking the administrative offices for Zeghanghane, in Nador, written in Arabic, Tifinagh, and French.

from 200 to 400 per year. In the future, the authorities aim to train a new generation of bilingual teachers in Arabic and Amazigh, with an annual target of between 1,500 and 2,000 teachers (Al-Turki & Bouhfad, 2023).

On the other hand, the status of the standardization of the Amazigh language in Morocco sparks debate. In 2003, the Moroccan government decided to codify Amazigh using an adapted form of the ancient Tifinagh script, one of the earliest known phonogrammatic writing systems (Boukous, 2014), dating from 200 BCE (Ishihara, 2016). Tifinagh was invented by the Tuaregs in the desert of North Africa and it is still in use today.

Tifinagh is mostly consonantal, written either from right to left or left to right. There are some limitations of Tifinagh for writing modern Amazigh. For example, it has no way of indicating initial or medial short vowels (though the point, called a tagherit, may be used to indicate final /a/, /i/ or /u/). Consequently, a modernized form of the Tifinagh alphabet called “Neo-Tifinagh” was officially recognized in Morocco in 2003. Neo-Tifinagh, a “reinvented form” of Tifinagh written from left to right, was initially proposed by the Berber Academy (“Académie Berbère”) and adopted by Algerian activists in the 1970s in order to document their language (mainly Kabylie). Neo-Tifinagh combines Tifinagh characters with characters from other sources, but its use to write Amazigh has stirred political and ideological debates (see Soulaïmani, 2023). Figure 3 provides the Neo-Tifinagh alphabet along with corresponding IPA symbols.

In practice, however, most Tarifit speakers use Latin script to write their language in everyday situations, such as when texting or posting to social media sites. Arabic script can also be used, though this may be less common. Figure 4 shows examples of Tarifit speakers texting using the Latin and Arabic scripts.

The language described in the Element is representative of the Tarifit variety known as Guelaiya, one of the varieties spoken in Nador, a city with about 565,987 inhabitants (Census, 2024) in northeastern Morocco, close to the border of Algeria, and home to a large Tarifit-speaking community. Figure 5 shows images of Nador, with a view overlooking the main residential area of the city and a walkway near a waterway.

The first documented study of Tarifit started in the nineteenth century with the work of René Basset (1897) who lays out a general dialectological overview of

ⵏ	ⵙ	ⵔ	ⵉ	ⵏ	ⵓ	ⵉ	ⵓ	ⵓ	ⵓ	ⵓ
a	b	g	d	dʰ	e	f	k	h	h	ʃ
ⵔ	ⵙ	ⵔ	ⵉ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ
x	q	i	ʒ	l	m	n	u	r	rʰ	ʎ
ⵓ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ	ⵓ		
s	sʰ	j	t	tʰ	w	j	z	zʰ		

Figure 3 (Neo-)Tifinagh alphabet with corresponding IPA symbols.



Figure 4 Texting in Tarifit using the Latin script (left) and the Arabic script (right).

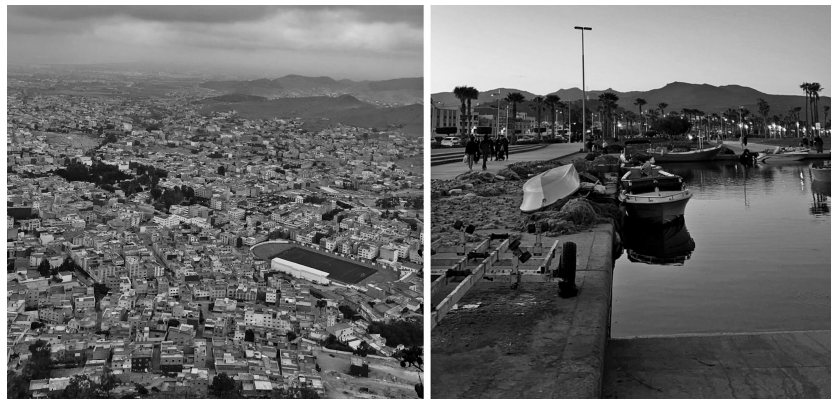


Figure 5 Pictures of Nador. Left: the main residential area; right: a marina with boats.

the Berber varieties. More recent grammatical descriptions of Tarifit can be found in Lafkioui (2007), which gives a detailed description of the phonological, phonetic, morphological, and syntactic properties, shedding light on the geolinguistic variation, and Kossmann and Mourigh (2019), which provides a comprehensive grammatical description of the variety spoken in Segangan, a main region in Nador. McClelland (2008) provides a phonological description of this variety, and there is a dictionary (McClelland, 2004). Descriptions of phonological features of this dialect are also found in other works (such as Tangi, 1991; Dell & Tangi, 1992; Kossmann, 1995; Lafkioui, 2007).

There is not much phonetic work on Tarifit (Bouarourou, 2014; Bouarourou et al., 2018; 2020). This Element describes the phonetics of this understudied and endangered language. Section 2 summarizes the phonological system, including the sound inventory, word structures, and major historical phonological processes. Section 3 outlines the speech materials used for the study, motivated by major theoretical issues in phonetic theory, sound change research, and work on the linguistics of Amazigh languages. Section 4 presents the acoustic analysis of words produced by native Tarifit speakers, covering the phonetic realization of the vowel phonemes – three “full” vowels /a, i, u/, and schwa – and variation in the realization of words across speakers. Stylistic variation is also explored by comparing speakers’ productions of clear and fast speech. Section 5 provides a perception study investigating Tarifit native speakers’ spoken word perception. Finally, in Section 6, we offer suggestions for future research.

2 Brief Phonological Sketch

This section provides some relevant facts about the phonology of Tarifit. Amazigh languages are described as “consonantal languages,” meaning that their phonological inventories have a high consonant-to-vowel ratio (Maddieson, 2013). The phoneme inventory of Tarifit reflects this, containing many consonants and few vowels. Thus, Tarifit words rely heavily on consonantal contrasts, and less on vowel contrasts, for making semantic distinctions.

2.1 Consonants

The consonant inventory of Tarifit is provided in Figure 6 and example words illustrating the different consonant contrasts are provided in (1) below.

	Labial	Coronal	Post-alveolar	Velar	Uvular	Pharyngeal	Glottal
Stop	b b: p p:	t d t ^h d ^h t: d: t ^h : d ^h :		k g g ^h k ^w g ^w k: g: k ^w : g ^w :	q q:		
Sonorant	m m ^h m: m ^h :	n n ^w n: n ^w :	j j ^w j:	w w:			
Fricative	β f f:	θ ð ð ^h s z s ^h z ^h s: z: s ^h : z ^h :	ʃ ʒ ʒ ^h ʃ: ʒ ^w : ʒ: ʒ ^h :		χ χ ^h ʁ ʁ ^h χ: χ ^h : ʁ:	ħ ʕ ħ: ʕ:	h h:
Affricate			tʃ dʒ dʒ:				
Tap/Trill		r r ^h r: r ^h :					

Figure 6 The consonants of Tarifit (Nador [Guelaiya] variety).

(1) Example words

/β/	βaβa	‘father’
/b/	batata	‘potato’
/b:/	qub:u	item of clothing
/m/	asrəm	‘fish’
/m ^ɛ /	azəm ^ɛ	‘open’
/m:/	asəm:ið ^ɛ	‘cold/wind’
/m ^ɛ :/	zəm ^ɛ :	‘squeeze’
/f/	afrað ^ɛ	‘trash’
/f:/	if:ar	‘he hid’
/w/	awar	‘talk’ (noun)
/w:/	ðuw:əχ	‘faint’
/t/	tak	‘leave it’
/t:/	itmət:a	‘he dies’
/t ^ɛ /	amut ^ɛ a	‘motorcycle’
/t ^ɛ :/	imət ^ɛ :awən	‘tears’
/d/	akida	horse
/d:/	d:am	‘get off’
/d ^ɛ /	d ^ɛ ar	‘get down’
/d ^ɛ :/	d ^ɛ :aθ	‘you get off/down’
/n/	ʕini	‘maybe’
/n:/	aʒən:a	‘sky’
/n ^w /	jən ^w a	‘he cooked’
/n ^w :/	ən ^w :ar ^ɛ	‘light’
/θ/	θam:aθ	‘earth/floor’
/ð/	ða	‘here’
/ð ^ɛ /	ð ^ɛ að ^ɛ	‘finger’
/s/	ərki:sa:n	‘cups’
/s:/	aməs:as	‘sour’
/s ^ɛ /	s ^ɛ əf:a	‘filter’
/s ^ɛ :/	θaməs ^ɛ :at	‘thigh’
/z/	izi	‘fly’
/z:/	agəz:a	‘butcher’
/z ^ɛ /	az ^ɛ ru	‘rock’
/z ^ɛ :/	z ^ɛ :u	‘to plant’
/r/	sara	‘wander!’ (simple imperative)
/r:/	ɣar:	‘only’
/r ^ɛ /	ifur ^ɛ að ^ɛ	‘trash’
/r ^ɛ :/	jiqar ^ɛ : əβ	‘he approached’
/j/	uja	‘walk!’ (simple imperative)
/j:/	ʒij:əf	‘choke’
/j ^w /	j ^w a	‘moon’
/ʃ/	aʃəw:af	‘hair’
/ʃ:/	jitiʃ:	‘he gives’
/ʃ: ^{ɪw} /	əʃ: ^{ɪw} ar ^ɛ	‘be filled’
/ʒ/	aʒəd:if	‘head’

The Phonetics of Tarifit

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/ʒ:/	jəsʕiʒ:əd	‘he hunted’
/ʒʕ:/	uʒʕar	‘walk’
/ʒʕ:/	əʒʕ:af	‘cliff’
/tʃ/	χatʃi	‘maternal aunt’
/dʒ/	dʒuz	‘almonds’
/dʒ:/	amədʒ:ukər	‘friend’
/k/	amədʒ:ukər	‘friend’
/k:/	k:ar	‘get up’
/kʷ/	jəkʷa	‘he insults’
/kʷ:/	jətakʷ:aðʕ	‘he is arriving’
/g/	jətagi	‘he refuses’
/g:/	jənəg:əz	‘he is jumping’
/gʷ/	jəgʷa	‘he walks’
/gʷ:/	aðəgʷ:ar	‘father-in-law’
/gʕ:/	fiɡʕa	‘snake’
/q/	aqəm:um	‘mouth’
/q:/	jəq:as	‘he tasted’
/χ/	ərfaxa	‘charcoal’
/χ:/	wax:a	‘OK’
/χʕ:/	χʕawəð	‘mess up’
/χʕ:/	rəχʕ:u	‘now’
/ɤ/	ɤar:	‘only’
/ɤ:/	məɤ:a	‘grow old’ (imperfective)
/ɤʕ:/	ɤʕana	‘appetite’
/h/	abuhari	‘fool’
/h:/	fəh:əm	‘understand!’ (intensive imperative)
/h/	muħar	‘improbable’
/h:/	rəh:əm	‘move back!’ (intensive imperative)
/ʕ/	ərʕaʕa	‘juniper’
/ʕ:/	buʕ:u	‘monster’

Tarifit is a “spirantizing” language, where historical bilabial and dental stops are produced as fricatives in all word environments, yet they are produced as stops when geminated. In contrast, velar and uvular singleton stops are usually produced as stops. So, for words where there is a singleton~geminate alternation, this is realized primarily as a fricative~stop contrast for bilabial and dental plosives (e.g. /ʒbð/ ‘to pull out’, simple imperative: [ʒβəð] vs. intensive imperative: [ʒəb:əð]; /χðm/ ‘to work’, simple imperative: [χðəm] vs. intensive imperative [χəd:əm]), but as a singleton~geminate contrast for velar and uvular plosives (e.g. /skf/ ‘to suck up’, simple imperative: [skəf] vs. intensive imperative: [sək:əf]; /nqβ/ ‘to pick’, simple imperative: [nqəβ] vs. intensive imperative: [nəq:əβ]). There are some contexts in which singleton stops occur, such as in a small number of lexical items (e.g. /tak/