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Languages of the Bay: On the Proto-Coosan Hypothesis

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by

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ABSTRACT

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By

Jordan AG Douglas-Tavani

On the Southwestern Oregon Coast lies Coos Bay. Home to the Hanis and Miluk peoples, Coos Bay is a rich area of linguistic diversity. The languages of the Hanis and Miluk people, *hanis kuukwiis* (Hanis) and *miluk kuukwiis* (Miluk), have had their relationship described in a number of different ways. Early workers with Hanis described both languages as dialects of the 'Coosan' language, with Hanis being the principal dialect and Miluk being nearly mutually unintelligible. Others have described Hanis and Miluk as being mutually unintelligible and with Miluk having distinct dialects of its own. Still others have tried to link the languages to Oregon Coast Penutian and the Penutian Hypothesis and to the Salishan language family. The Hanis and Miluk people have long held that their languages and their peoples are related but distinct, though they are now confederated together by the United States government. This work seeks to tackle this issue of relatedness between Hanis and Miluk by utilizing the comparative method to provide evidence in support of Proto-Coosan and the Coosan language family.

1 INTRODUCTION

On the southwestern Oregon Coast lies Coos Bay. This bay is important to the economy of Oregon; functioning as its southernmost deepwater port (LPRO 2016: 1). It has also historically been a center of trade and commerce among the Indigenous American peoples of the southwestern Oregon Coast. It is home to the eponymous Hanis and Miluk Coos peoples, as well as the Siuslaw. It has also frequently hosted peoples of the Tututni, Alsea, Lower Umpqua, and Coquille tribes. It is the languages of these first two peoples, the Hanis and the Miluk, that is the focus of this paper: *hanis kuukwiis* (Hanis) and *miluk kuukwiis* (Miluk).[1]

According to oral history, the Miluk and Hanis people came to settle in what is now known as Coos Bay between 12,000 and 15,000 years ago, with archaeological evidence of permanent habitation at least 3,300 years ago (Whereat 2010: 4-5). As Whereat (2010) points out, it is unlikely that there will be significantly older archaeological evidence found due to the natural geography and the nature of the ebb tide in Coos Bay. Starting in 1850 with the Oregon Land Donation Act, the Hanis, Miluk, and Siuslaw peoples were forced to cede their lands to the United States. This was followed by forced internment, conquest, and occupation of their lands that continue until this day (Whereat 2010: 8-10).

Both languages are currently near-silent, with only a few community members that know some words, phrases, and stories, though there is not yet language fluency at this time. The Miluk and Hanis peoples were confederated by President Reagan into the Confederated Tribes of Coos, Lower Umpqua, & Siuslaw Indians (CLUSI). In recent years, there has been

[1] Both the Hanis and Miluk are considered to be Coos peoples. They are both part of the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, in which the Hanis and Miluk names are subsumed under the greater 'Coos' term. The community tends to refer to the language of the Hanis as 'Hanis' or 'Hanis Coos' while they refer to the language of the Miluk Coos as 'Miluk'. In this paper, they will be referred to as Hanis and Miluk so as to not give the impression that Miluk is not also a Coosan language.

a push towards language reclamation, led by tribal councilor Enna Helms and Patricia Whereat, Troy Anderson, and Dr. Lawrence Morgan. Revitalization efforts are ongoing and include, but are not limited to: digitizing transcribed language and stories, a phonological analysis of Miluk, the creation of pedagogical materials for language teaching, and partnership with the University of Oregon to make BA-satisfying language courses in both languages.

Another core issue presented by the community is that of linguistic relatedness. There is a sense within the community that Miluk and Hanis Coos are sister languages. Indeed, those who have worked on the languages, from Leo Frachtenburg to Melville Jacobs to John Peabody Harrington, have all noted that the languages are quite similar and that they are likely related. It is this question of genetic relatedness that this work seeks to answer. This is done by creating a cognate list and creating regular sound correspondences as evidence of linguistic relatedness. Having done so, it is the belief of this author that Hanis and Miluk are related and distinct languages and not dialects of the same language.

The remainder of this paper is structured as follows. Section 2 provides a brief overview of the Proto-Coosan Hypothesis and other historical views on Hanis and Miluk relatedness. Section 3 reviews the sources used in this work. Section 4 goes through the sound correspondences that we have for Hanis and Miluk. Section 5 goes over confounding reconstructions. Finally, section 6 provides a discussion of the findings and possible future work.

2 THE PROTO-COOSAN HYPOTHESIS: A BRIEF OVERVIEW

The Proto-Coosan hypothesis, quite simply, is that Hanis and Miluk make up the Coosan language family. It states that they are related, yet distinct languages. This is in opposition to an alternative hypothesis, the single Coosan language hypothesis, that has Hanis and Miluk as two dialects of the same language. Another explanation that has been posited is that they are completely unrelated to each other, and that any resemblance comes from prolonged contact. Yet another explanation puts them in the same family but within a larger Oregon Coast Penutian. Finally, the last alternative hypothesis posits that they both may or may not be related but that Miluk is part of a top-level branch of a family that includes Proto-Salishan.

Frachtenburg (1914:305) gives the first published discussion of Hanis and Miluk.[2] In this, he presents the dialect hypothesis, stating: 'Of the two principal dialects, Hanis and Miluk, the latter is now practically extinct; while the former is still spoken by about thirty individuals, whose number is steadily decreasing'. He also noted significant differences between the languages, saying of Miluk: 'this dialect exhibits only in a most general way the characteristic traits of the Kusan stock. Otherwise it is vastly different from Hanis in etymological and even lexicographical respects.' It should be noted that the exact meaning of the term 'dialect' as it is understood today had not been established at that time.

Jacobs would also go on to refer to Hanis and Miluk as dialects of the Coosan language (Jacobs 1940:3). However he makes two extremely important points regarding the two languages, both of which were made possible due to the outstanding aid of his consultant Mrs. Annie Miner Peterson. The first of these observations is that the languages were nearly

[2] Documentation of Hanis first came about by the collection of word lists by Milhau in 1856 (Grant 1996) and for Miluk by Dorsey in 1885 (Mithun 1999).

mutually unintelligible (Jacobs 1940:4). The second observation is that both Hanis and Miluk appeared to have distinct varieties themselves, with the Miluk specifically having a distinction between 'Lower Coquille' and 'South Slough' varieties (Jacobs 1940:4). While these observations themselves do not conclusively establish Hanis and Miluk as distinct languages they do serve as evidence towards that conclusion.

Others would take a different stance on the placement of the 'Coosan' language. Sapir (1921) would move to place the 'Coosan language' (by which he meant Hanis) as part of the Oregon Coast Penutian family. He said the following about the languages,

> 'it [was] perfectly obvious that Coos and Siuslaw, as Frachtenberg announces, are divergent representatives of a single linguistic stock. Meanwhile comparisons of Takelma, Coos, and Siuslaw with Dixon and Kroeber's Penutian group of California (Costanoan, Miwok, Yokuts, Wintun, and Maidu) disclosed an astonishing number of both lexical and morphological correspondences…' (Sapir, 1921:58)

There are some who agree with Sapir, namely, Delancey and Golla (1997:181). That said, these scholars believe that a significant amount of comparative work still needs to be done to fully realize this complex 'Oregon Coast Penutian' branch. Other scholars have disagreed with this, placing Coosan as a single family separate from other families grouped within the Penutian hypothesis (Mithun 1999:72).

Yet there are some who doubt the relatedness of Hanis and Miluk altogether. Namely, Pierce (1965) speculates that the languages are in fact unrelated. To this end, he discusses the lack of geographic barriers that would be expected in the creation of dialects and the fact that the best evidence we have of Miluk comes from Mrs. Annie Miner Peterson, who also spoke Hanis. He also notes that the languages do not share '74% of their vocabulary', which was based on Dorsey's word lists (Pierce 1965:324). He believes that these facts, together, point

to a situation of extensive language contact that allowed for 'convergent' evolution of the two languages (Pierce 1965:328).

More recent work by Doty (2012) takes a different approach. Doty focuses his efforts specifically on the classification of Miluk. In his dissertation, he lays out an argument for similarities between Miluk and the Salishan languages, which are located principally in modern day Washington, and whose southernmost member is Tillamook, of which the area of the same name is some 166 miles north of Coos Bay. Doty's argument is unpersuasive in showing genetic relatedness of Miluk with Salishan languages, which he acknowledges, saying in his presentation of words that appear to be similar between Miluk and Salishan languages that '[only]... appear to exhibit regular sound correspondences' (Doty 2012:124).[3] He does do a decent job, however, showing the influence and contact that must have existed between Miluk and Salishan languages. Doty does not incorporate Hanis significantly into this discussion, as it does not share the same similarities with Proto-Salishan (Doty 2012:135). Ultimately though, he does not take a stance one way or the other as to whether Hanis and Miluk are related, other than to say that he believes that they are not Penutian (Doty 2012:136).

In my work with the Hanis and Miluk peoples of both the CLUSI and Coquille Tribes, there does appear to be a consensus that Hanis and Miluk are distinct, yet related, languages. It is because of this belief that I was asked to reconstruct Proto-Coosan and

[3] Of these correspondences, there are only a few presented, with most reconstructions only having 5 or fewer correspondences. Even among these, many seem to be stretches, such as 'neck' and 'to swallow', recreated below:

(i)	(Doty 2012:118)	Miluk	*m*aa*q'*	'neck'
		Proto-Salishan	*k'əspan*	'neck
(ii)	(Doty 2012:120)	Miluk	*q'wən*	'to swallow'
		Proto-Salishan	*məq'*	'to swallow'

provide the evidence through regular sound correspondences that Hanis and Miluk are both related and distinctive enough to be considered different languages.

3 THE SOURCES FOR THIS WORK

The data used for this project comes from the fieldnotes of Harry Hull St. Clair (1903). St. Clair was an assistant to Frachtenberg, who wrote a grammatical sketch of Hanis. St. Clair is known and respected for having a good ear within the community and by the scholars who have worked with the languages. During his time in Coos Bay he was working primarily to document stories and words in Hanis for Frachtenberg. However, while doing so, he ended up collecting a comparative word list of 222 words in both languages. Jim Buchanan, who would also serve as a speaker for Harrington, acted as St. Clair's speaker for Hanis. George Barney served as St. Clair's speaker for Miluk.

St. Clair's transcriptions were all done phonetically, and as such, they have more detail than would normally be used for a historical reconstruction. Both the Miluk and Hanis Coos transcriptions are adjusted here for the accepted phonological analyses of each language. For Hanis, Frachtenberg's analysis in his grammatical sketch is used, and for Miluk, Douglas-Tavani's phonological analysis.

From the wordlists transcribed by St. Clair, cognate sets were created by a University of Oregon undergraduate research assistant, Hana Wikum, under Enna Helms. Transcribed words were converted into IPA from St. Clair's orthography by Douglas-Tavani's research assistant, University of California, Santa Barbara undergraduate student Zoe Fang.

Also included as a source within this analysis are the 'Jacobs' slipfiles'. These are the word lists that Jacobs collected from Mrs. Annie Miner Peterson of both Hanis and Miluk.

Jacobs' slipfiles are far more extensive than any other collection of Hanis and Miluk, with thousands of entries. Due to the vast size of these lists not every cognate set was included. Instead, more basic terms were collected. The inclusion of these cognate sets was also done to capture certain sounds, namely uvular consonants, which while noted by everyone who has worked with the languages, were almost entirely absent from St. Clair's word list. This does not appear to be due to an inability on the part of St. Clair to hear these sounds, but rather, him simply not collecting words with these consonants.

The Jacobs' slipfiles were digitized and maintained by a number of individuals, including Patricia Whereat and Enna Helms. 141 of these cognate sets were taken and added to St. Clair's list to form the basis of this reconstruction. They were then converted to the IPA, with the following exceptions to better align with community orthography:

- IPA /ɢ/ is written as /G/.
- IPA /k^w/, /g^w/, /x^w/, /q^w/, /G^w/, and /h^w/ are written as /kw/, /gw/, /xw/, /qw/, /Gw/ and /hw/.
- IPA /j/ is written as /y/.

As both St. Clair and Jacobs transcribed phonetically rather than phonemically, reconstruction was somewhat more difficult. The data from both languages was compared to their respective phonological analyses and adjusted accordingly. This was minimal for the Hanis examples. The Miluk data underwent significantly more adjustments, namely, all instances of [ɑ] are treated as /a/ and all instances of [æ] are treated as /ɛ/, reflecting their free variation in the Miluk of Mrs. Annie Miner Peterson (Douglas-Tavani: n.d.). The only departures from Douglas-Tavani's phonological analysis of Miluk is the inclusion of geminate resonants (i.e. /m:/, /n:/, and /l:/) which were not observed in that analysis but

which do appear in the Jacobs' slipfiles as distinctive and the addition of /dl/. This addition was also made for Hanis, which is a departure from Frachtenberg but in line with Jacobs' observations and the areal commonality of this patterning with the other lateral affricates (Matthew Gordon personal communication). The phonological inventories of both languages are given in Figure 1.

	Miluk	Hanis
Stops	p; b; p' t; d; t' k; g; k' kw; gw; k'w q; G; q' qw; Gw; q'w ʔ	p; b; p' t; d; t' k; g; k' kw; gw; k'w q; G; q' qw; Gw; q'w ʔ
Affricates	ts; dz; ts' tɬ; dl; tɬ' tʃ; dʒ; tʃ'	ts; dz; ts' tɬ; dl; tɬ' tʃ; dʒ; tʃ'
Fricatives	s; ʃ ɬ x; xw; ɣ h; hw	s; ʃ ɬ x; xw; χ; ɣ h; hw
Resonants	m; m: n; n: l; l:	m; m: n; n: l; l:
Glides	y w	y w
Vowels	i; ɪ; ʊ; u ɛ; ə; o a ai; aʊ; oʊ; eɪ	i; ɪ; ʊ; u ɛ; ə; o æ; a; ɑ ai; aʊ; ɛʊ; eɪ; oʊ

Table 1: Miluk and Hanis Phoneme Inventories

Some of the changes seen in the correspondences are small and irregular. Many occur only one time. There are a number of possible causes of this: mistranscription, normal free variation yet undescribed, allophonic variations yet undescribed, and differences in transcriptions between transcribers and by the same transcriber over time. That said, this

work assumes, given lack of evidence to the contrary and the present inability to test these examples with natively fluent speakers, that the transcriptions of St. Clair and Jacobs are true and accurate transcriptions of the speakers they were working with. Additionally, where regular sound changes are presented with only one example, these are indeed believed to be regular. The single examples reflect the limited amount of data available. If more data is later added to these data, it is believed that these regular changes would hold. With that in mind, it could also be that some of these environments would not hold, relegating such changes as either irregular or confounding correspondences.

4 THE CORRESPONDENCES

Before going into the main correspondences, we must first look at two related phenomena that are pervasive in the Coosan languages: syllable reduction and debuccalization. Syllable reduction here involves complete erosion or reduction to a glottal stop or /h/. With debuccalization, there is often, but not always, an associated loss of the vowel in the syllable or reduction of the vowel to /ə/. When used here, this refers to the loss of place features of a consonant such that it is realized as /h/ or /ʔ/.

(1)

a. Complete reduction		b. Debuccalization		
PC	*tɬoʊwɪʃ	PC	*xáp	‘water’
Hanis	tɬoʊ́ʃ[4]	Hanis	xáp	‘water’
Miluk	tɬoʊwɪʃ	Miluk	háp’	‘water’

Syllable reduction is by no means unique to the Coosan languages. It is notably widespread in the Cariban language family of South America (Gildea 1995) and in Zapotecan languages

[4] Here, the acute accent represents a stressed vowel. Stress marking is preserved from the original transcriptions. The phonetic correlates of stress in Hanis and Miluk is unclear, as while stress was marked by everyone who worked with the languages, their descriptions of what a ‘stressed’ vowel meant were notably lacking.

(Campbell 2013). The exact cause of syllable reduction in the Coosan languages is still unclear, though it does tend to happen either word initially or word finally, with word-medial reduction seeming to happen in instances of dissimilation.

When there is a surviving correspondence that did not lose its distinctiveness it has been reconstructed to that proto-phoneme. Table 2 shows the instances where this is not possible and only a glottal stop remains, leaving us with reconstruction of *ʔ. Correspondences where Hanis has a glottal stop and Miluk lacks a correspondence are also reconstructed as *ʔ, as this is indicative of the completion of that reduction. The different reconstructions represent different diachronic environments. *ʔ can be found intervocalically and as the first consonant of a consonant cluster. This is exemplified by Hanis *kiɛ́'wæ* and Miluk *giɛ́'wɛ*, 'sea otter'. It is also lost, at times, in Miluk. The exact cause for this loss is not fully understood.

TABLE 2
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ʔ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ʔ	ʔ	ʔ	sea otter; carrot, wild; clam shell; horse; quail	021; 291; 364	V_C
			male friend	059; 301	V_V
	ʔ	Ø	woman; bone	164; 167	V_C
	ʔ	Ø	lip	175	V_V

The second phenomenon is debuccalization. This can be due to syllable reduction, as discussed above, or it can simply occur sporadically without the other telltale sign of syllable reduction, namely, the loss of a vowel. Table 3 shows all instances in which *h is reconstructed due to a lack of a non-debuccalized reflex in either Hanis or Miluk. This includes instances with an /h/ in both languages—which occurs word initially, when *h is the

first consonant of a consonant cluster, and when *h is the second consonant of a consonant cluster—and instances where the *h has fully eroded in one language. These later examples are due to syllable reduction. As with *ʔ, instances where there was a non-debuccalized reflex have been reconstructed as that reflex and not *h. The former h:h correspondences are exemplified by Hanis *hǽyæq* and Miluk *héyɛq*, 'chum, salmon'. It is lost intervocalically in Miluk, as seen in Hanis *wɛ́hɛl* and Miluk *wɛ́ʰ*, 'willow'. It is irregularly lost in Miluk with *tɬ'ᵘánas* 'ear' and in Hanis *Gáɪs*, 'day; guardian spirit'.

TABLE 3
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *h

PC	Hanis	Miluk	Examples	Correspondences	Environments
*h	h	h	chum, salmon; owl; road; limb; maple; fir tree; sister, older; brother, older; old woman; child; women; woman; belly; branch, large; large limb of tree; dentalium, large cherry bark wrapped incised money; baby's shaman; carrot, wild	006; 048; 084; 107; 111; 113; 149; 151; 156; 162; 163; 164; 188; 243; 268; 283; 291	#_
			cedar; goose; hole; intermediary; messenger	104; 312; 323; 329	_C
			ladder	334	C_
	h	Ø	willow; belly; abdomen	109; 188; 235	V_V
	h	Ø	ear	184	C_
	Ø	h	face; day; guardian spirit	179; 265	#_

Finally, there is the last debuccalized consonant, *hw. This is the same as *h but with rounding of the lips. Its correspondences are found in Table 4. *hw can be reconstructed word initially, intervocalically, and as the second consonant in a consonant cluster. This is exemplified by Hanis *kwílʊhwən* and Miluk *kwílʊhwən*, 'mussels'. In instances where we have a non-debuccalized correspondence (e.g. H. /xw/ & M. /hw/), they are exclusively labialized consonants that debuccalize into *hw.

TABLE 4
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *hw

PC	Hanis	Miluk	Examples	Correspondences	Environments
*hw	hw	hw	mussels; jellyfish; cattail; head of a fish, animal, or human	026; 030; 256; 321	#_; V_V; C_

With these special instances out of the way, the remainder of the correspondences are broken up by their manner of articulation. The discussion begins with stops (4.1), followed by affricates (4.2), then fricatives (4.3), resonants (4.4), and glides (4.5). Vowels are presented in the final subsection (4.6).

4.1 STOPS

Proto-Coosan differentiates plain, voiced, and ejective stops. These stops are found across six distinct places: bilabial, coronal, velar, labiovelar, uvular, and labiouvular. Generally speaking, the plain unaspirated stops are the most pervasive, with fewer correspondences of voiced and ejective stops.

First, we consider the correspondence in Table 5, which all reconstruct as *p. *p remained unchanged in both languages in all contexts: word-initially, intervocalically, and as the first consonant of a consonant cluster. This is exemplified by Hanis *pín* and Miluk *pń̥*, ‘mole (animal)’.

TABLE 5
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *p

PC	Hanis	Miluk	Examples	Correspondences	Environments
*p	p	p	mole (mammal); gopher (mountain beaver); screech owl; wing; three; ashwood; expectoration (phlegm, mucus); blossom; gill; root	001; 016; 045; 062; 209; 229 277; 288; 309	#_; V_V, _C

Next, we look to the correspondences in Table 6, which all reconstruct as *b. *b remained unchanged in both languages in the two contexts observed: word initially and as the first consonant of a consonant cluster. This is exemplified by Hanis *baltímɛs* and Miluk *bałtímɛs*, ‘ocean’.

TABLE 6
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *b

PC	Hanis	Miluk	Examples	Correspondences	Environments
*b	b	b	ocean; bobcat; butterfly; arrow with hardwood point; cedar root, young; design; figure; mark	091; 240; 251; 282; 292; 294	#_; _C

The reflexes of the ejective bilabial stop *p’ are listed in Table 7. It readily reconstructs as the second consonant of a consonant cluster. This is exemplified by Hanis *tɬp'ə́l:*a and Miluk *tɬp'ə́l*a, ‘cap, woman’s fez shaped’. *p’ has deglottalized to /p/ in Hanis word finally in the word for water, *xáp*.

TABLE 7
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *p’

PC	Hanis	Miluk	Examples	Correspondences	Environments
*p’	p’	p’	cap, woman’s fez shaped	290	C_
	p	p’	water	094	_#

Moving on next to the coronal stops, the reflexes of the plain coronal stop *t are listed in Table 8. It readily reconstructs word initially, word finally, as the first or second consonant of a consonant cluster, and intervocalically. This is exemplified in Hanis *tɛlípi* and Miluk *tílıpi*, ‘gopher (mountain beaver)’. The other correspondences reconstruct with the following comments:

(a) *t changed to /ts/ in Hanis either due to affricatization from the preceding *ʊ or as a way to simplify the cluster of *tkw, the latter broken up by an epenthetic vowel in the Miluk reflex. This occurs in the word for 'yellowhammer (red shafted flicker)'. Compare Hanis *kwʊts kwínɛ* and Miluk *kwʊtokwínɛ*.

(b) *t was reduced to Ø in Miluk it was the second consonant of a consonant cluster word finally in *łkwə́l* 'red'.

(c) *t was reduced to Ø in Miluk irregularly in one example. Compare Hanis *ʃítʃtɪ* and Miluk *ʃítʃî*, 'river'.

(d) *t changed to /s/ in Miluk due to irregular lenition of *t, as the opposite reconstruction of *s > t is less justifiable. This is seen in the Miluk word for 'knee', *siyɛx*.

TABLE 8
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *t

PC	Hanis	Miluk	Examples	Correspondences	Environments
*t	t	t	gopher (mountain beaver); beaver; sealion; woodpecker; hazelnut; granddaughter; grandson; girl at menarche; old man; thumb; alms; food given to a beggar; bumblebee;dentalium, common small; fog; gift-food; luncheon; grave; dirt; dirty	016; 018; 022; 057; 105; 143; 144; 157; 160; 194; 221; 250; 267; 298; 308; 313	#_
			river otter; gold fish, red fish (red rock fish); screech owl; owl; panther; carrot, wild; to whittle	019; 042; 045; 048; 075; 291; 352;	_#
			belt; tied thing; bobcat; elbow;	236; 240; 276	_C
			village; dirt, ground; ocean; intermediary; messenger	077; 091; 329	C_
			eel; kingfisher; fern; brassiere	038; 052; 116; 289	V_V
	ts	t	yellowhammer (red shafted flicker)	058	ʊ_kw
	t	Ø	red	119	C_#
	t	Ø	river	093	C_V

t	s	knee	186	#_i

The reflexes of the voiced coronal stop *d are listed in Table 9. It readily reconstructs word initially, as the second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *dɛ́mɛɬ* and Miluk *dɛ́mɛɬ*, ‘man, husband’. The last correspondence reconstructs with the irregular word-initial loss of *d in Hanis, or aphaeresis. Compare Hanis *ɪníkɪn* and Miluk *dɪníkɪn*, ‘bush’. It should also be noted that while the *d reflexes that are in consonant clusters are found with voiced consonants, *t is also found with voiced consonants.[5] Due to this, assimilation of *t > d is dispreferred as an explanation.

TABLE 9
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *d

PC	Hanis	Miluk	Examples	Correspondences	Environments
*d	d	d	young man; quail; salmon, Chinook (spring or fall); man, husband; apart-soul; fringe; gambling stick	009; 059; 066 165; 244; 281; 302; 304	#_
			bead, clamshell; bailer, wooden	233; 285	C_
			dentalium, large cherry bark wrapped incised money; carrot, wild; marrow	268; 291; 339	V_V
	Ø	d	bush	212	#_

The reflexes of the ejective coronal stop *t’ are listed in Table 10. *t’ remains unchanged in both languages in all environments it is observed in: word initially, as the first consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *χant'áhɪ* and Miluk *xant'áh*a, ‘hole’.

TABLE 10
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *t’

PC	Hanis	Miluk	Examples	Correspondences	Environments

[5] For example,*GɛtGɛɪtɬ' ‘belt; tied thing’, *batgɪ ‘bobcat’, and *tGwə́nwəs ‘grave; dirt; dirty’.

*t’	t’	t’	half (in quantity of money, etc.); hole; to kick	317; 323; 357	#_; _C; V_V

The reflexes of the plain velar stop *k are listed in Table 11. It readily reconstructs word initially, word finally, intervocalically, and as the first consonant of a consonant cluster. This is exemplified by Hanis *kúxætɬ* and Miluk *koóxɛtɬ*, ‘trout, mountain’. The other correspondences also reconstruct to *k with the following comments:

(a) *k underwent irregular initial lenition to /g/ Miluk. This is seen in Miluk *giɛ́'wɛ*, ‘sea otter’.

(b) *k also changed to /g/ in Miluk due to consonant harmony with the preceding /g/ in *gɪsgátətəs*, ‘fish hawk’, that fortified word-initially.

(c) *k assimilated to /kw/ in Miluk when following *ʊ and *oʊ. This is seen in Miluk *gɛn**hɛ́nukw**ɛ*, ‘sister, older’ (compare with Hanis ***hænók**un-ætʃ*).[6]

(d) *k assimilated to /g/ in Hanis preceding *y. This is seen in Hanis *gyúw*a, ‘smelt’.

TABLE 11
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *k

PC	Hanis	Miluk	Examples	Correspondences	Environments
*k	k	k	trout, mountain; clam, quahog (butter clam); raven; young brush, grass; ankle; hand; buckskin; hide; to bend or lower the head down	005; 033; 050; 117; 170; 197; 247; 344	#_
			flounder; maple; leaf; old woman; bone	040; 107; 110; 156; 167;	_#
			root; raven; granddaughter; women; jawbone; one hundred; bush; headman: head person; person in charge; boss; female friend	011; 050; 143; 163; 173; 198; 212; 293; 300	V_V
			fine seaweed; oyster; codfish; shin; twins	028; 032; 043; 171; 341	_C
	k	g	sea otter; fish hawk	021; 047	#_

[6] Boldface added to highlight cognates.

k	g	fish hawk	047	gVC_
k	kw	sister, older	149	(o)ʊ_
g	k	smelt	044	_y

The reflexes of the voiced velar stop *g are listed in Table 12. *g remains unchanged in all environments in which it is observed: word initially and as the first consonant of a consonant cluster. This is exemplified by Hanis *bátgɪ* and Miluk *bátgɪ*, ‘bobcat’.

TABLE 12
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *g

PC	Hanis	Miluk	Examples	Correspondences	Environments
*g	g	g	bobcat; breast; gall	240; 245; 303	#_; _C

The reflexes of the ejective velar stop *k’ are listed in Table 13. *k’ remains unchanged in all environments which it is observed in: word initially, word finally, and as the first and second consonant of a consonant cluster. This is exemplified by Hanis *k’ɪm* and Miluk *k’ɪm*á, ‘bait’.

TABLE 13
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *k’

PC	Hanis	Miluk	Examples	Correspondences	Environments
*k’	k’	k’	bait; blue; green; cup; dipper, red cedar root basket; apart-soul; fine; payment already made; intermediary; messenger; clam shell, horse	230; 238; 263; 281; 280; 329; 364	#_; _#; _C; C_

The labiovelar series has been somewhat less stable than the other stop series. The reflexes of the plain labiovelar stop *kw are listed in Table 14. It readily reconstructs word initially, word finally, as the second consonant of a consonant cluster, and intervocalically.

This is exemplified by Hanis *tɬímækw* and Miluk *tɬimékw*, ‘wolf’. The other correspondences all reconstruct with the following comments:

(a) *kw underwent initial lenition to /gw/ in Miluk before a stressed diphthong /eɪ/. This is seen in Miluk *gweíska*, ‘young woman’.

(b) *kw glottalized to /k’w/ in Hanis after the loss of the preceding *tɬ. This could have been an fusion process, such as *tɬkw > *ʔkw > /k’w/ or a single change of *tɬkw > k’w. Compare Hanis *k'wéx* and Miluk *tɬkwéx*, ‘alder’.

(c) *kw changed to /q’w/ in Hanis. This change is explained in two parts. First, *kw > *qw in back assimilation from a preceding *u. Subsequently, *qw > q’w before *m (i.e. *ukw > *uqw & *qwm > q’wm). This is seen in Hanis *tuq’wmas*, ‘woodpecker’.

(d) *kw glottalized to /k’w/ in Hanis to harmonize with the *k’w in the coda of the syllable. This is seen in Hanis *k’wék'w*, ‘herring’.

TABLE 14
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *kw

PC	Hanis	Miluk	Examples	Correspondences	Environments
*kw	kw	kw	skunk; mussels; yellowhammer (red shafted flicker); mountain; stone; daughter; branch; sprout from branch; small branch; elbow; sweat house	002; 026; 058; 083; 095; 152; 242; 276; 326	#_
			rock oyster; wolf; limb; it lightens; lightning; branch, large; large limb of tree	034; 072; 111; 124; 128; 243	_#
			gold fish, red fish (red rock fish); yellowhammer (red shafted flicker); steelhead; willow; fir tree bark (Miluk); old growth fir (Hanis); fern; red; elbow; bucket, wooden red cedar root; hoof	042; 058; 065; 109; 114; 116; 119; 192; 248; 324	C_
			eel; it lightens; hoof	038; 124; 324	V_V
	kw	gw	young woman	158	#_éɪ
	k’w	kw	alder	108	tɬ_
	q’w	kw	woodpecker	057	u_m

k’w	kw	herring	322	_Vk’w

The reflexes of the voiced labiovelar *gw are listed in Table 15. It readily reconstructs word initially, as the first consonant in a consonant cluster, and intervocalically. This is exemplified by the Hanis *gwɪtsímɛ* and Miluk *gwɪtsímɛ*, ‘starfish’. *gw also debuccalized to /hw/ in Hanis as part of syllable reduction and loss of the vowel between *gw and *kw, which adds dissimilation as another motivation for this change. This is seen in Hanis *hwkwə́nætʃ*, ‘aunt’.

TABLE 15
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *gw

PC	Hanis	Miluk	Examples	Correspondences	Environments
*gw	gw	gw	starfish; adopted child; orphan; nephew; elbow	031; 220; 276	#_
			elbow	276	_C
			ghost; soul of a deceased person	306	V_V
	hw	gw	aunt	146	#_Vkw

The reflexes of the ejective labiovelar stop *k’w are listed in Table 16. *k’w remains unchanged in both languages in all environments it is observed in: word initially and word finally. This is exemplified by Hanis *k'wχéɪ* and Miluk *k'wxéɪ*, ‘dentalia strung on a woman’s head’.

TABLE 16
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *k’w

PC	Hanis	Miluk	Examples	Correspondences	Environments
*k’w	k’w	k’w	dentalia strung on a woman's head; ball; shiny ball; herring	269; 286; 322	#_; _#

The uvular series is also somewhat less stable than some of the other stop series. That said, the reflexes of the plain uvular stop *q are listed in Table 17. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *qálaqas* and Miluk *qaláqas*, 'kelp'. The other correspondences all reconstruct with the following comments:

(a) *q changed to /x/ in Miluk in irregular final lenition of *q > *χ, followed by the subsequent collapse of *χ > x .[7] This is seen in Miluk *démsíwəx*, 'salmon, Chinook (spring or fall)'.

(b) *q is in free variation between /k ~ q/ in Hanis when *q is followed by /ə/. While a /ə/ is not directly seen in this example, it is seen in the 'grey hair' correspondence, which differs from 'foot' in that the Miluk reflex is /g/ (discussed below). Further, St. Clair notated an epenthetic ə after the /q/ variant of this word. The forms for this cognate set are Hanis *yálaq^{a} ~ yálak* and Miluk *yálaq*, 'grey hair'.

(c) In one example, *q is in free variation between /k ~ q/ in Hanis when *q is followed by /ə/ (as discussed in (b) above). *q also changed to /g/ in Miluk through irregular initial voicing of *q > *G and then a subsequent change of *G > g when followed by /ə/, which is a regular change in the *Gw correspondences, and while not seen in the *G reflexes, this change likely affected all voiced uvular stops and not just the voiced labiouvular stop. Compare Hanis *kəɬá ~ qəɬá* and Miluk *g^{ə}ɬá*, 'foot'.

TABLE 17
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *q

PC	Hanis	Miluk	Examples	Correspondences	Environments

[7] [χ] and [x] are in free variation in Miluk (Douglas-Tavani 2020). This is discussed further in the *χ section below.

*q	q	q	kelp; sky; cheek; chisel (of stone); goose; knife, not small; heel	003; 136; 174; 257; 312; 333; 348	#_
			chum, salmon; crab (dungeness); fir tree; arrow shaft; bread, acorn; expectoration (phlegm, mucus); flying squirrel; gambling stick; ladder	006; 037; 113; 227; 244; 277; 297; 304; 334	_#
			ladder; shed	334; 355	C_
			chisel (of stone)	257	_C
			kelp; crow; bead, clamshell; dead person	003; 060; 233; 266	V_V
	q	x	salmon, Chinook (spring or fall)	066	_#
	k ~ q	q	grey hair	177	_ə
	k ~ q	g	foot	196	#_ə

The reflexes of the voiced uvular stop *G are listed in Table 18. It readily reconstructs word initially, as the first consonant in a consonant cluster, and intervocalically. This is exemplified by Hanis *Gémɛ* and Miluk *Gém*, ‘camas’. It also reconstructs as *G in the remaining correspondences with the following comments:

(a) *G assimilated to /g/ in Hanis due to consonant harmony with the /gw/ of the following syllable. This is seen in Hanis *gógwəs*, ‘south, south side, coast’.

(b) *G changed to /g/ in Miluk due to assimilatory fronting when it is the second consonant of a consonant cluster with *p. This is seen in Miluk *pgis*, ‘blossom’.

TABLE 18
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *G

PC	Hanis	Miluk	Examples	Correspondences	Environments
*G	G	G	belt; tied thing; camas; cold; day; guardian spirit; bailer, wooden; flying squirrel; half (in quantity of money, etc.)	236; 254; 260; 265; 285; 297; 317	#_
			belt; tied thing	236	_C
			worked and softened buckskin; baby's shaman; baby	249; 283	V_V

		specialist		
g	G	south, south side, coast	345	_Vgw
G	g	blossom	288	p_

The reflexes of the ejective uvular stop are listed in Table 19. It readily reconstructs word initially, word finally, as the second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *q'álats* and Miluk *q'álats*, 'hook, fish'. In the last correspondence, *q' sees a Hanis reflex of /q/. This final correspondence could be assigned to either *q or *q', as there is no clear directional change of *q > q' or *q' > q (and in either case it would be an irregular change). However, as [q'] is a more complex sound than [q], irregular deglottalization is the preferred explanation. This is exemplified by Hanis *qáaɪx-* and Miluk *q'áɪx*.

TABLE 19
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *q'

PC	Hanis	Miluk	Examples	Correspondences	Environments
*q'	q'	q'	baby; bar; channel; blueberry; hook, fish	161; 231; 239; 325	#_
			hawk, small bird	320	_#
			dentalium, common small; marked; a type of baby ailment	267; 338	C_
			dagger; marrow	264; 339	V_V
	q	q'	acorn barnacle; perch (fish); huckleberry	029; 041; 102	#_

The reflexes of the plain labiouvular stop *qw are listed in Table 20. It only readily reconstructs in one instance as the first consonant in a consonant cluster. This is exemplified

by Hanis *máqwɬaɪ* and Miluk *máqwɬ*a, ‘egg, bird’. The other correspondences also reconstruct with the following comments:

(a) *qw changed to /kw/ in Hanis in several circumstances. It changed to /kw/ when before an /s/ in a consonant cluster (Hanis *yʊkwsɪl*, ‘berries-fruits’), word initially before /ɬ/ (Hanis *kwɬíyɛ*, ‘camp’), and before /ə/ (Hanis *kwə́l:ɛʊ*, ‘ice, snow’).

(b) *qw changed to /k/ in Hanis word finally. This is seen in Hanis *bʊk*, ‘design, figure, mark’.

TABLE 20
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *qw

PC	Hanis	Miluk	Examples	Correspondences	Environments
*qw	qw	qw	egg, bird	275	V_ɬ
	kw	qw	berries-fruits	237	_s
	kw	qw	camp	255	#_ɬ
	kw	qw	ice; snow	328	_ə
	k	qw	design, figure, mark	294	_#

The reflexes of the voiced labiouvular stop *Gw are listed in Table 21. It readily reconstructs word initially and word finally. This is exemplified by Hanis *Gwə́lɣəs* and Miluk *Gwə́lyəs*, ‘intestines’. The other correspondences also reconstruct with the following comments:

(a) *Gw assimilated to /gw/ in Hanis it is the second consonant in a consonant cluster following a coronal consonant. This is seen in Hanis *tsgwadlɪs*, ‘bark, thick, fir’.

(b) *Gw harmonized to /gw/ in Hanis to the following /gw/ discussed above in (a). This is seen in Hanis *gwátsgwɪ*, ‘drum, rafter pole’.

(c) *Gw changed to /gw/ in Hanis when followed by /ə/. This is seen in Hanis *gógwəs*, 'south, south side, coast'.

TABLE 21
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *Gw

PC	Hanis	Miluk	Examples	Correspondences	Environments
*Gw	Gw	Gw	intestines	330	#_
			to kick	357	_#
	gw	Gw	bark, thick; fir; drum, rafter pole; grave; dirt; dirty	232; 271; 313	$C_{+coronal}$_
	gw	Gw	drum, rafter pole	271	_(V)gw
	gw	Gw	grave; dirt; dirty; south, south side, coast	313; 345	_ə

The reflexes of the ejective labiouvular stop *q'w are listed in Table 22. They reconstruct to *q'w with the following comments:

(a) *q'w assimilated to /k'w/ in Hanis it is the second consonant in a consonant cluster following a coronal consonant. Compare Hanis *tk'wís* and Miluk *tq'wáɪs*, 'fog'.

(b) *q'w changed to /k'w/ in Hanis when followed by /ə/. Compare Hanis *k'wányaʊ* and Miluk *q'wány*a, 'fish and meat foods'.

(c) *q'w deglottalized to /qw/ in Miluk word initially before /s/. This is seen in Miluk *qwsʊláwás*, 'sprout'.

TABLE 22
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *q'w

PC	Hanis	Miluk	Examples	Correspondences	Environments
*q'w	k'w	q'w	fern root; fog	279; 298	$C_{+coronal}$_
	k'w	q'w	fish and meat foods	299	_ə
	q'w	qw	sprout	347	#_s

4.2 AFFRICATES

Like the stops , the affricates of Proto-Coosan are quite extensive. They are found across three places of articulation: alveolar, postalveolar, and alveolateral. All of the affricates can be plain, voiced, and ejective. There are overall fewer affricates than there are stops; though the affricate series is still quite extensive.

The reflexes of the plain alveolar affricate *ts are listed in Table 23. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified in Hanis *tsɪxí*a and Miluk *tsɪxí*a, 'shark'. *ts also changed to /tʃ'/in Hanis. This appears to have come about from glottalization of *ts > *ts' with the loss of the following *m word-finally. Then, *ts' palatalized to /tʃ'/ from the following /u/. Compare Hanis *tʃ'u-* and Miluk *tsum-*, 'go to bed'.

TABLE 23
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ts

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ts	ts	ts	fur seal; shark; steelhead; thunder; arrow point, large; bark, thick; fir; handle, braided basket	020; 023; 065; 129; 228; 232; 318	#_
			goose; hook, fish	312; 325	_#
			deer; drum, rafter pole	070; 271	_C
			skunk; perch (fish)	002; 041	C_
			starfish; rock oyster	031; 034	V_V
	tʃ'	ts	go to bed	343	_um

The voiced alveolar affricate *dz is the most tenuous of the reconstructions of Proto-Coosan, having only one correspondence, which are listed in Table 24. This lack of correspondences could be due to a number of different factors, including: lack of cognates

that had *dz or *dz being a relatively rare phoneme in Proto-Coosan. As it stands now, it is unclear which of these factors is the most compelling explanation. This sound is seen in Hanis *dzɛn* and Miluk *dzən*, ‘muskrat’.

TABLE 24
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *dz

PC	Hanis	Miluk	Examples	Correspondences	Environments
*dz	dz	dz	muskrat	340	#_

The reflexes of the ejective alveolar affricate *ts’ are listed in Table 25. It readily reconstructs word initially, word finally, and as the second consonant in a consonant cluster. This is exemplified in Hanis *Gέχdɪts'* and Miluk *Gέxdɪts'*, ‘bailer, wooden’. In one instance, *ts’ erodes to Ø in irregular apocope. This occurs in Hanis *ga*, ‘breast’.

TABLE 25
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ts’

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ts’	ts’	ts’	bead, clamshell; feces; twins	233; 278; 341	#_
			camas, small; clitoris; bailer, wooden	253; 258; 285	_#
			button; gill	252; 309	C_
	Ø	ts’	breast	245	_#

The reflexes of the plain postalveolar affricate *tʃ are listed in Table 26. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *mítʃɨɬ* and Miluk *mítʃɬ*, ‘louse, head’. *tʃ also underwent initial lenition to /dʒ/ in Miluk when followed by a stressed vowel. This is seen in Miluk *dʒílɛ*, ‘thigh’.

TABLE 26
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *tʃ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*tʃ	tʃ	tʃ	rabbit; spruce	017; 112	#_
			uncle; gift-food; luncheon	147; 308	_#
			screech owl; river	045; 093	_C
			rabbit; beaver; river otter; kingfisher; trout; girl at menarche	017; 018; 019; 052; 064; 157	C_
			panther; shin; louse, head	075; 171; 337	V_V
	tʃ	dʒ	thigh	187	#_V́

The reflexes of the voiced postalveolar affricate *dʒ are listed in Table 27. It readily reconstructs word initially and intervocalically. This is exemplified in Hanis *dʒə́m:*a and Miluk *dʒə́m*a, ‘harpoon; spear, salmon’. It devoiced to /tʃ/ in Hanis after *ɬ in *ɬtʃæ ɪs*, ‘beach’.

TABLE 27
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *dʒ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*dʒ	dʒ	dʒ	button; grease; tallow, deer or elk; harpoon; spear, salmon; hawk, small bird	252; 314; 319; 320	#_
			go-help-yourself, the; public fish distribution	311	V_V
	tʃ	dʒ	beach	089	ɬ_

The reflexes of the ejective postalveolar affricate *tʃ’ are listed in Table 28. *tʃ’ remains unchanged in both languages in all of the environments it is observed in: word initially, word finally, and as the first consonant in a consonant cluster. This is exemplified by Hanis *mitʃ'lə́wəs* and Miluk *mitʃ'lə́wəs*, ‘crabapple, ripe’.

TABLE 28
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *tʃ’

PC	Hanis	Miluk	Examples	Correspondences	Environments
*tʃ’	tʃ’	tʃ’	alms; food given to a begger; crabapple, ripe; dress, dance; bag, buckskin; female friend; hoof	221; 261; 270; 284; 300; 324	#_; _#; _C

The reflexes of the alveolateral affricate *tɬ are listed in Table 29. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *tɬkínɪx* and Miluk *tɬkínɪx*, ‘fine seaweed’. The following correspondences also reconstruct with the following comments:

(a) *tɬ was lost word initially before *kw in Hanis (Hanis ‘k'wéx’, ‘alder’)[8] and after *n (compare Hanis *yípsən* and Miluk ***psn̓tɬ***, ‘three’).

(b) *tɬ glottalized to /tɬ’/ in Miluk with the loss of the following *m which could be explained by *m > *ʔ and *tɬʔ > /tɬ’/. Compare Hanis *məxœ**tɬmə**x* and Miluk ***tɬ'é**xɪn*, ‘arm’.

TABLE 29
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *tɬ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*tɬ$_1$	tɬ	tɬ	cormorant; fine seaweed; oyster; clam; wing; wolf; huckleberry, red; cedar; noon; ashwood; bag, buckskin; cap, woman’s fez shaped; fish trap foundation hoop	004; 028; 032; 036; 062; 072; 101; 104; 131; 229; 284; 290; 296	#_
			trout, mountain; crow; noon; brother, older; old man; grease; tallow (deer or elk)	005; 060; 131; 151; 160; 314	_#
			chisel (of stone)	257	_C
			cormorant; jellyfish; huckleberry, red; snow	004; 030; 101; 127	C_

[8] This appears to be an inherited cluster though it is also possible that it arose due to syncope from Pre-Proto-Coosan to Proto-Coosan.

		crab (dungeness); flounder; fir tree bark (Miluk); old growth fir (Hanis); thumb	037; 040; 113; 194	V_V
Ø	tɬ	alder; willow	108; 109	#_kw
tɬ	tɬ'	arm	191	_m
Ø	tɬ	three	209	n_

The reflexes of the voiced alveolateral affricate *dl are listed in Table 30. *dl remains unchanged in all environments it is observed in: word initial and intervocalic. This is exemplified by Hanis *dlílɛq* and Miluk *dlílq*, ‘bread, acorn’.

TABLE 30
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *dl

PC	Hanis	Miluk	Examples	Correspondences	Environments
*dl	dl	dl	bark, thick; fir; bread, acorn	232; 244	#_; V_V

The reflexes of the ejective alveolateral affricate *tɬ’ are listed in Table 31. It readily reconstructs word initial and word finally. This is exemplified by Hanis *χatɬ’* and Miluk *xatɬ’*, ‘broth’. It reconstructs in the remaining correspondences with the following comments:

(a) *tɬ’ changed to /k’/ in Hanis word initially before *t, *w, and *h. It is unclear if the new sequence created by the change of *tɬ’w > k’w was reanalyzed as being /k’w/. This is seen, respectively, in: Hanis *k’ʼtáyas* and Miluk *tɬ’ťáyas*, ‘village’; Hanis *k’wɛ́sɛs* and Miluk *tɬ’wésɛs*, ‘wind’; and Hanis *k’ťá* and Miluk *tɬ’ťáy*a, ‘dirt, ground’.

(b) *tɬ’ further changed from *k’ to /kw/ in Hanis when *h is followed by *ɑ. Compare Hanis *kwhán*as and Miluk *tɬ’ʷán*as, ‘ear’.

(c) *tɬ’ eroded to /ʔ/ in Miluk from syllable reduction in *gwinéweʔ*, ‘adopted child; orphan; nephew’.

TABLE 31
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *tɬ’

PC	Hanis	Miluk	Examples	Correspondences	Environments
*tɬ'	tɬ'	tɬ'	trout	064	#_
			belt; tied thing; broth; sweat house	236; 246; 326	_#
	k’	tɬ’	village; wind; dirt, ground	077; 080; 085	#_t; #_w; #_h
	kw	tɬ’	ear	184	#_hɑ
	tɬ’	ʔ	adopted child; orphan; nephew	220	_#

4.3 FRICATIVES

Seven fricatives can be reconstructed to Proto-Coosan. Unlike with the stops and affricates, there does not appear to be a voicing distinction among Proto-Coosan fricatives, with the exception of *x and *ɣ. They have six distinct articulations: alveolar, postalveolar, lateral, velar, labiovelar, and uvular.

The reflexes of the alveolar fricative *s are listed in Table 32. *s is the most common fricative found in Proto-Coosan. It readily reconstructs word initially, word finally, as the first and second consonant in a consonant cluster, and intervocalically. This is exemplified by Hanis *sawáɬˡ* and Miluk *sawáɬɪ*, ‘pelican’. The other correspondences also reconstruct with the following comments:

(a) *s changed to /ts/ in Hanis with metathesis of the sequence of *ɪisa > *ɪsia and then subsequent affricatization of *sia > tsa. The metathesis was likely caused by the difficulty of the hiatus of *ɪi. Compare Hanis *tíkɪtsínœtʃ* and Miluk *tᵊkɬisan*, ‘granddaughter’.

(b) *s changed to /ts/ in Hanis before *kw. Miluk also changed the cluster by inserting an epenthetic vowel to break it up. Compare Hanis *tsᵊkwátɬɪs* and Miluk *sᵊkwátɬɪs*, ‘fir tree bark (Miluk), old growth fir (Hanis)’.

TABLE 32
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *s

PC	Hanis	Miluk	Examples	Correspondences	Environments
*s	s	s	eel; flounder; pelican; snow; shin; finger; arrow point; crabapple, green; fine; payment already made; headman: head person; person in charge; boss; male friend; marrow	038; 040; 051; 127; 171; 195; 226; 262; 280; 293; 301; 339	#_
			kelp; cormorant; root; jellyfish; kingfisher; seagull; woodpecker; snake; coyote; village; wind; mountain; breakers; beach; ocean; huckleberry, red; huckleberry; hazelnut; fir tree bark (Miluk); old growth fir (Hanis); green; white; snow; sky; girl at menarche; young woman; woman; ankle; mouth; lip; ear; thumb; we 2 inclusive; anus; arrow point; bar; channel; bark, thick; fir; blue; green; crabapple, ripe; day; guardian spirit; dentalium, large cherry bark wrapped incised money; ear pendant; elbow; feces; ball; shiny ball; blossom; cedar root, young; fog; game; grave; dirt; dirty; half (in quantity of money, etc.); intermediary; messenger; intestines; south, south side, coast; sprout; strawberry; plural suffix (more than 3 or 4);	003; 004; 011; 030; 052; 056; 057; 068; 071; 077; 080; 083; 088; 089; 091; 101; 102; 105; 114; 120; 122; 127; 136; 157; 158; 164; 170; 175; 184; 194; 213; 224; 226; 231; 232; 238; 261; 265; 268; 272; 276; 278; 286; 288; 292; 298; 305; 313; 317; 329; 330; 345; 347; 351; 354	_#
			commorant; fish hawk; arrow with hardwood point; gall	004; 047; 282; 303	_C
			sealion; salmon, Chinook (spring or fall); three; berries-fruit; blue; green; branch; sprout from branch; small branch; gambling stick; sprout;	022; 066; 209; 237; 238; 242; 304; 347	C_
			wind; green; crabapple, green; cup; dipper, red cedar root basket; ball; shiny ball;	080; 120; 262; 263; 286	V_V
	ts	s	granddaughter	143	see comments
	ts	s	fir tree bark (Miluk); old growth fir (Hanis)	114	_kw

The reflexes of the postalveolar fricative *ʃ are listed in Table 33. It readily reconstructs word initially, word finally, as the first consonant in a consonant cluster, and intervocalically. This is exemplified by Hanis *ʃílıʃ* and Miluk *ʃílıʃ*, ‘razor clam’. *ʃ also glottalized to /ʃ ’/ in Miluk irregularly when before *tʃ word initially. Compare Hanis *ʃtʃćélt* and Miluk *ʃ'tʃél̈t*, ‘river otter’. It should be noted that *ʃ is found almost entirely with a tense high vowel adjacent to it (usually *ı). That said, there are enough instances of that not being the case and of *t and *s having the same environment that it cannot be determined whether these reconstructions of *ʃ are in fact actually *t or *s. For this reason, , *ʃ is reconstructed.

TABLE 33
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ʃ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ʃ	ʃ	ʃ	razor clam; kingfisher; river	035; 052; 093	#_
			razor clam; clam; buckskin, hide	035; 036; 247	_#
			codfish	043	_C
			spruce; grandmother; jawbone; being, forest; game	112; 141; 173; 234; 305	V_V
	ʃ	ʃ ’	river otter	019	#_tʃ

The reflexes of the lateral fricative *ɬ are listed in Table 34. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *ɬítʃɛt* and Miluk *ɬítʃɛt*, ‘panther’. The other correspondences also reconstruct with the following comments:

(a) *ɬ was lost in Hanis due to dissimilation with the *ɬ in the onset of the next syllable in *kúmənéɪɬ*, ‘young brush, grass’.

(b) *ɬ delaterized to /s/ in Miluk when there is a *ɬ in the preceding syllable in *kumnéɬıs*, ‘young brush, grass’.

(c) *ɬ changed to /l/ in Miluk before *m (Miluk *lmɪlɛtʃ'*, 'dress, dance') and in Hanis before *t (Hanis *baltímɛs*, 'ocean').

TABLE 34
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ɬ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ɬ	ɬ	ɬ	gold fish, red fish (red rock fish); panther; beach; leaf; fern; red; we 3 inclusive; cattail; dagger; fern root; marked; a type of baby ailment	042; 075; 089; 110; 116; 119; 214; 256; 264; 279; 338	#_
			young man; pelican; cedar; spruce; fern; man, husband; finger; they 3+; bumblebee; knife, not small; louse, head	009; 051; 104; 112; 116; 165; 195; 217; 250; 333; 337	_#
			bag, buckskin	284	_C
			stone; arrow point, large; camp; egg, bird; heel	095; 228; 255; 275; 348	C_
			foot	196	V_V
	Ø	ɬ	young brush, grass	117	_Vɬ
	ɬ	s	young brush, grass	117	ɬV_
	ɬ	l	dress, dance	270	_m
	l	ɬ	ocean	091	_t

The reflexes of the voiceless velar fricative *x are listed in Table 35. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *xᵊxás* and Miluk *xᵊxás*, 'white'. The following correspondences also reconstruct with the following comments:

(a) In some cases, syllable reduction has resulted in the loss of *x in Miluk. Compare Hanis *kwɬíyɛx* and Miluk *kwᵊɬaí*, 'stone'. *x has also been lost in Miluk due to dissimilatory deletion when before *k and when before *tɬ. Compare Hanis *tɬáuxkaɪ*

and Miluk *tɬáwk*a*ɪ*, ‘oyster’; and Hanis *tɬatɬáux*a*s* and Miluk *tɬəxtɬáux*a*s*, ‘huckleberry, red’ for each of these environments, respectively.

(b) *x debuccalized initially to /h/ in Miluk irregularly in *háp'*, ‘water’.

(c) *x assimilated to /xw/ in Hanis when *w in the onset of the following syllable. Compare Hanis *xwɛʔénɪs* and Miluk *x*a*wénɛɬ*, ‘ribs’.

(d) *x changed to /kw/ in Hanis by first changing to *k before *s. Then, *k > kw when following *oʊ, as discussed above with *k. See Hanis *toʊ́kwsɪ*, ‘sealion’.

(e) *x assimilated to /xw/ in Miluk before *uw in *xwwáya*s, ‘snake’.[9]

TABLE 35
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *x

PC	Hanis	Miluk	Examples	Correspondences	Environments
*x	x	x	salmon, dog (old Chinook or silverside salmon); eel; snake; white; salt water eel	007; 038; 068; 122; 273	#_
			rabbit; fine seaweed; acorn barnacle; alder; knee; arm	017; 028; 029; 108; 186; 191	_#
			rabbit	017	_C
			deer; white	070; 122	C_
			trout, mountain; shark; buzzard; eagle; huckleberry, red; uncle; ankle	005; 023; 049; 067; 101; 147; 170	V_V
	x	Ø	oyster	032	_k
	x	Ø	stone	095	_#
	x	Ø	huckleberry	102	V_V
	x	h	water	094	#_
	Ø	x	huckleberry, red	101	_tɬ
	xw	x	ribs	168	#_Vw

[9] Originally transcribed as *x^{u}wáya*s*, the St. Clair wrote labiovelar and labiouvular consonants as <K^{u}> before consonants and word finally (where ‘K’ represents dorsal consonants). Before vowels the digraph <Kw> was used.

x	kw	sealion	022	oʊ_s
x	xw	snake	068	_uw

The reflexes of the labiovelar fricative *xw are listed in Table 36. It readily reconstructs word initially and word finally. This is exemplified by Hanis *xwítsxʊxt* and Miluk *xwítsxʊ*, ‘deer’. The other correspondences also reconstruct with the following comments:

(a) *xw irregularly debuccalized to /hw/ in Hanis. Compare Hanis *hwálhwal* and Miluk *xwáʷxwal*, ‘eye’.

(b) *xw changed to /hw/ in Hanis differently depending on how you view the word ‘eye’ (seen in (a) above). It could be reduplication of the debuccalized *xw seen above or consonantal harmony, wherein *xw debuccalized to be in harmony with /hw/.

(c) *xw underwent initial fortition to /kw/ in Haanis before /ə/ in *kwəns*, ‘neck’.

TABLE 36
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *xw

PC	Hanis	Miluk	Examples	Correspondences	Environments
*xw	xw	xw	deer; bucket, wooden red cedar root	070; 248	#_
			crabapple, green	262	_#
	hw	xw	eye; head of fish, animal, or human	183; 321	#_
	hw	xw	eye	183	hwVC_
	kw	xw	neck	178	_ə

The reflexes of the voiced velar fricative *ɣ are listed in Table 37. *ɣ remains unchanged in all environments in which it is observed: word initially, as the second consonant in a consonant cluster, and intervocalically. This is exemplified by Hanis *ɣayćéna* and Miluk *ɣayéna*, ‘bluejay’.

TABLE 37
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ɣ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ɣ	ɣ	ɣ	bluejay; clitoris; ear pendant; feces; fish trap foundation hoop; handle, braided basket; intestines; language; talk; way of talking	061; 258; 272; 278; 296; 318; 330; 335	#_; C_; V_V

The reflexes of the uvular fricative *χ are listed in Table 38. In Miluk, [χ] and [x] are found in free variation and treated as /x/ (Douglas-Tavani n.d.). *χ readily reconstructs word initially, finally, and as the first and second consonant in a consonant cluster. This is exemplified in Hanis *tíχmɪɬ* and Miluk *tíxmɪɬ*, 'bumblebee'. It was also lost after *n in Miluk in *síkínɛn*, 'headman; head person; person in charge; boss'.

TABLE 38
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *χ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*χ	χ	x	broth; hole; to whittle; be sick	246; 323; 352; 363	#_
			butterfly; marked; a type of baby ailment	251; 338	_#
			bumblebee; bailer, wooden	250; 285	_C
			dentalia strung on a woman's head	269	C_
	χ	Ø	headman: head person; person in charge; boss	293	n_

4.4 RESONANTS

As expected, when compared to the stops, affricates, and fricatives; the resonant inventory of Proto-Coosan is relatively small. There are six resonants in Proto-Coosan across two places of articulation: bilabial and alveolar. Additionally, they have a length distinction.

The reflexes of the bilabial nasal *m are listed in Table 39. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *mayáw*a and Miluk *mayá^{w}*, ‘salmon, silverside’. The remaining correspondences reconstruct with the following comments:

(a) *m was lost in Miluk after *tɬ in *tɬ'éxɪn*, ‘arm’.

(b) *m assimilated to /n/ in Miluk due to consonantal harmony with a preceding *n after the intervening consonant, *χ, was lost to syncope following the *n. Compare Hanis *sɪkínχɛm* and Miluk *síkínɛn*, ‘headman; head person; person in charge; boss’.

(c) *m was lost to irregular apocope in Hanis, such as in *míl*a, ‘liver’.

TABLE 39
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *m

PC	Hanis	Miluk	Examples	Correspondences	Environments
*m	m	m	salmon, silverside; crow; eagle; anus; arrow shaft; crabapple, ripe; egg, bird; brassiere; liver; louse, head; shed	008; 060; 067; 224; 227; 261; 275; 289; 336; 337; 355	#_
			buzzard; raven; acorn; button	049; 050; 219; 252	_#
			salmon, Chinook; button; marked; a type of baby ailment	066; 252; 338	_C
			woodpecker; woman; bone; bumblebee; dress, dance; to bend or lower the head down; shed	057; 164; 167; 250; 270; 344; 355	C_
			starfish; clam, quahog (butter clam); wolf; ocean; cedar; hazelnut; spruce; fern; young brush; grass; star; grandmother; grandson; old woman; old man; child; women; man, husband; chin; thumb; ants, flying; bait; bar; channel; camas; dagger; dentalium, large cherry bark wrapped incised money; apart-soul; flying squirrel; knife, not small	031; 033; 072; 091; 104; 105; 112; 116; 117; 137; 141; 144; 156; 160; 162; 163; 165; 172; 194; 225; 230; 231; 254; 264; 268; 281; 297; 333	V_V
	m	Ø	arm	191	tɬ_

m	n	headman: head person; person in charge; boss	293	nV_
Ø	m	liver; go to bed	336; 343	_#

Reflexes of the geminate bilabial nasal *m: are listed in Table 40. As with the other geminates of Proto-Coosan, *m: appears only intervocalically. This is exemplified by Hanis *qɬím:ɛn* and Miluk *qɬím:ɛn*, 'heel'. It is degeminated in Miluk before *a in *dʒə́m*a, 'harpoon; spear, salmon'.

TABLE 40
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *m:

PC	Hanis	Miluk	Examples	Correspondences	Environments
*m:	m:	m:	heel; plural suffix, two-to-four	348; 353	V_V
	m:	m	harpoon; spear, salmon	319	_a

The reflexes of the alveolar nasal *n are listed in Table 41. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *ɬɪnɛk* and Miluk *ɬínɪk*, 'leaf'. The remaining correspondences reconstruct with the following comments:

(a) *n devoiced to /n̥/ in both Miluk and Hanis when following a voiceless obstruent, such as with Hanis *tsń̥na*^{h} and Miluk *tsń̥n*a, 'thunder'. With 'mole (animal)', Hanis does not have this occur due to the lack of syncope of the intermediate vowel (compare Hanis *pín* and Miluk *pń̥*).

(b) The second *n is noticeable in 'thunder' as it sees the expected reflexes of /n/ for both languages but it is following the devoiced /n̥/'s from (a). There are several possible explanations for this correspondence. One is that this was originally *n: that split when in a cluster with another consonant and part of it devoiced. This would lend to

the idea that originally Proto-Coosan geminates were born from homorganic clusters that had both sides subject to change. Another possibility, which is the view of this paper, is that that was an intermediate vowel between these two *n's that was lost due to syllable reduction after the first *n had already devoiced, thus allowing both to be next to each other without triggering gemination.

(c) *n underwent compensatory lengthening to /n:/ in Hanis following the loss of the preceding *ɛ in *n:ɛ*, '1.SG (independent, contrastive)'. This is an irregular change that occurred in a high frequency morpheme.

(d) *n was lost word finally in Miluk due to irregular apocope in *-ɬi*, 'we 3 inclusive'.

TABLE 41
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *n

PC	Hanis	Miluk	Examples	Correspondences	Environments
*n	n	n	codfish; one hundred; with; instrumental; locative;	043; 198; 358; 359; 360	#_
			mussels; granddaughter; grandson; neck; one hundred; bush; being, forest; gall; handle, braided basket; intermediary; messenger; muskrat; twins; to bend or lower the head down; heel; with; instrumental; locative; to see	026; 143; 144; 178; 198; 212; 234; 303; 318; 329; 340; 341; 344; 348; 360; 362	_#
			jellyfish; alms; food given to a beggar; bead, clamshell; headman: head person; person in charge; boss; fish and meat foods; gift-food; luncheon; grave; dirt; dirty; hole; be sick	030; 221; 233; 293; 299; 308; 313; 323; 363	_C
			goose	312	C_
			salmon, dog; beaver; fine seaweed; eel; codfish; yellowhammer (red shafted flicker); bluejay; leaf; young brush, grass; noon; sister, older; baby; adopted child; orphan; nephew; ribs; ear; three; bush; blueberry; clover like plant; cold; game	007; 018; 028; 038; 043; 058; 061; 110; 117; 131; 149; 161; 168; 184; 209; 212; 220; 239; 259; 260; 305	V_V
	n	n̥	mole (mammal)	001	$C_{=voice,+obsturent\_\_}$

n̥	n̥	thunder	129	$C_{=voice,+obsturent}\_$
n	n	thunder	129	n̥_
n:	n	1.SG (independent, contrastive)	218	ɛ_
n	Ø	we 3 inclusive	214	_#

The reflexes of the geminate alveolar nasal *n: are listed in Table 42. In the one cognate we do have, it degeminated in Hanis either because it was before an *a, as was the case with *m:, or because it was after a glottal stop that came about via syllable reduction. Alternatively, both factors could have together given rise to degemination. This sound is seen only in Hanis *kiʔnak'* and Miluk *kiʔn:ak'*, 'clam shell, horse'.

TABLE 42
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *n:

PC	Hanis	Miluk	Examples	Correspondences	Environment
*n:	n	n:	clam shell, horse	364	ʔ_a

The reflexes of the lateral resonant *l are listed in Table 43. It readily reconstructs word initially, word finally, as the first and second consonant of a consonant cluster, and intervocalically. This is exemplified by Hanis *lɛpíkəs* and Miluk *lɛpíkəs*, 'root'. The other correspondences reconstruct with the following comments:

(a) *l was lost to irregular apocope in Hanis and in Miluk. See Hanis *xwkwé*, 'bucket, wooden red cedar root' and Miluk *-ɪ*, 'indeed yes'. *l was also lost in Miluk after *xw in *xwáʷxwal*, 'eye', and with syllable reduction in *wéh* 'belly; abdomen'.

(b) *l irregularly debuccalized to /h/ in Miluk word initially in 'ladder' (compare Hanis *léqhɛlq* and Miluk *hɛqhélq*).[10]

[10] It has also been suggested that this could be an instance of consonant harmony with the following *h (Matthew Gordon, personal communication). While this is plausible, given the other instances of consonant

(c) *l assimilated to /G/ in Miluk via complex consonantal harmony, in which *l assimilates to the following G when the same vowel is found immediately to the left and right of both *l and *G (i.e., *l > G /V_i_V_iGV_i). This occurred in *h*á*GaG*a*yáw*a, ‘baby’s shaman; baby specialist’.

TABLE 43
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *l

PC	Hanis	Miluk	Examples	Correspondences	Environments
*l	l	l	root; buzzard; it lightens; lightning; bone; heart; ants, flying; worked and softened buckskin; clitoris; go-help-yourself, the; public fish distribution; strawberry	011; 049; 124; 128; 166; 169; 225; 249; 258; 311; 351	#_
			steelhead; road; eye; berries-fruit; fish trap foundation hoop	065; 084; 183; 237; 296	_#
			skunk; river otter; perch (fish); gold fish, red fish (red rock fish); fir tree; red; intestines; ladder; twins	002; 019; 041; 042; 113; 119; 330; 334; 341	_C
			bark, thick; fir; bread, acorn; crabapple, ripe; salt water eel; male friend; marrow	232; 244; 261; 273; 301; 339	C_
			kelp; young man; gopher (mountain beaver); fur seal; mussels; razor clam; quail; coyote; hazelnut; maple; green; it lightens; snow; ankle; grey hair; thigh; arrow shaft; blue, green; bread, acorn; buckskin; hide; button; dress, dance; ear pendant; brassiere; flying squirrel; game; hawk, small bird; head of a fish, animal, or human; hook, fish; sweat house; intestines; knife, not small; liver; sprout; strawberry	003; 009; 016; 020; 026; 035; 059; 071; 105; 107; 120; 124; 127; 170; 177; 187; 227; 238; 244; 247; 252; 252; 270; 272; 289; 297; 305; 320; 321; 325; 326; 330; 333; 336; 347; 351	V_V
	Ø	l	face; bucket, wooden red cedar root	179; 248	_#
	l	Ø	eye	183	xw_
	l	h	ladder	334	#_
	l	Ø	belly; abdomen	235	_#

harmony seen herein, this explanation is not adopted here due to the higher frequency of initial debuccalization seen in these languages.

l	Ø	indeed yes	361	_#
l	G	baby's shaman; baby specialist	283	Vi_ViGVi

The reflexes of the geminate lateral resonant *l: are listed in Table 44. As with the other geminates it is found only intervocalically. This is exemplified by Hanis *bɛ́l:ɛχ* and Miluk *bɛ́l:ɛχ*, 'butterfly'. The other correspondences reconstruct with the following comments:

(a) *l: degeminated in Miluk before a low vowel, as expected, given the same degemination environment for *m: and *n:. This is seen in words such as *ɣál*a, 'language, talk; way of talking'. It also irregularly degeminated with no clear environment in Miluk in *wʊlɛ́ts'*, 'camas, small'.

(b) *l: also degeminated to /l/ in Hanis in *k*a*lá*ʃ́, 'buckskin; hide'. Notably, there is a glottal stop notated before the /l/, indicating the possible explanations of:*l: had split into two parts, one of which was reduced; *l: simply having begun syllable reduction; or an artifact of transcription that is functionally the same as *l:. It is unclear which of these is the most plausible answer but the last option seems the least likely.

TABLE 44
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *l:

PC	Hanis	Miluk	Examples	Correspondences	Environments
*l:	l:	l:	butterfly; clover like plant; ice; snow	251; 259; 328	V_V
	l:	l	limb; branch, large; large limb of tree; cap, woman's fez shaped; language; talk; way of talking	111; 243; 290; 335	$\_V_{+low}$
	l:	l	camas, small	253	V_V
	l	l:	buckskin, hide	247	Unclear

4.5 GLIDES

Two glides can be reconstructed to Proto-Coosan. They are the palatal and the labiovelar glides: *y and *w.

The reflexes of the palatal glide *y are listed in Table 45. It readily reconstructs word initially, as the second consonant in a consonant cluster, and intervocalically. This is exemplified by Hanis *yɛ́lɪs* and Miluk *yɛ́lɪs*, ‘coyote’. The other correspondences reconstruct with the following comments:

(a) *y was in variation with /i/ in Miluk following *a word-finally in *kwᵊɬaí*, ‘stone’.

(b) *y debuccalized to /h/ in Miluk due to medial syllable reduction in *qahálɪs*, ‘sky’.

(c) *y was reanalyzed as /ɪ/ in Hanis after a change of stress in the sequence of *ayá > *áya which seemingly triggered reanalysis of *y > ɪ in a diphthongization of *a > *aɪ. Compare Hanis ***kwaɪátʃ-***ɪtʃˊ and Miluk *kwáy*a, ‘daughter’.

(d) *y was lost in Miluk before *oʊ (Miluk *koʊw*a, ‘smelt’) and between *a and *ɪ (Miluk *hadáɪmɪs*, ‘dentalium, large cherry bark wrapped incised money’).

TABLE 45
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *y

PC	Hanis	Miluk	Examples	Correspondences	Environments
*y	y	y	coyote; star; lip; mouth; grey hair; berries-fruit; ghost; soul of a deceased person	071; 137; 175; 177; 237; 306	#_
			fish and meat foods	299	C_
			dog (old Chinook or silverside salmon) salmon; salmon, silverside; quail; eagle; snake; village; mountain; rainbow; jawbone; knee; anus; camp; dentalium, common small; arrow with hardwood point; baby's shaman; baby specialist; fish trap foundation hoop; plural suffix (more than 3 or 4)	007; 008; 059; 067; 068; 077; 083; 123; 173; 186; 224; 255; 267; 282; 283; 296; 354	V_V
	y	i	stone	095	a_#

y	h	sky	136	V_V
ɪ	y	daughter	152	a_á
y	Ø	smelt	044	oʊ_
y	Ø	dentalium, large cherry bark wrapped incised money	268	a_ɪ

The reflexes of the labiovelar glide *w are listed in Table 46. It readily reconstructs word initially, as the second consonant in a consonant cluster, and intervocalically. This is exemplified by Hanis *qáw*a and Miluk *qáw*a, ‘cheek’. The other correspondences reconstruct with the following comments:

(a) In some cases it was lost to syllable reduction in Miluk and in Hanis. Compare Hanis *mayáw*a and Miluk *may*a^{w} and Hanis *tłoóʃ* and Miluk *tłoʊwɪʃ*, ‘clam’. It was also lost to irregular aphaeresis in Miluk *uʃɪkáy*a, ‘jawbone’, and word finally in Hanis following *n with *χεn*, ‘be sick’.

(b) *w reduced to /ʔ/ in Hanis to dissimilate from the preceding /xw/ in *xwɛʔénɪs*, ‘ribs’. Alternatively, this change was due to syllable reduction.

(c) *w was reanalyzed as /u/ in Hanis following the loss of the following *a, leaving *w between *ʔ and *d in *h*aʔ*udɪt*, ‘carrot, wild’.

TABLE 46
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *w

PC	Hanis	Miluk	Examples	Correspondences	Environments
*w	w	w	girl, young; seagull; belly; abdomen; camas, small; arrow with hardwood point;	010; 056; 235; 253; 282	#_
			sea otter; snake; wind; grave; dirt; dirty	021; 068; 080; 313	C_
			girl, young; smelt; pelican; salmon, Chinook (spring or fall); road; breakers; lightning; girl at menarche; heart; cheek; finger; adopted child; orphan; nephew; crabapple, ripe; baby's shaman;	010; 044; 051; 066; 084; 088; 128; 157; 169; 174; 195; 220;	V_V

		baby specialist; cedar root, young; game; intermediary; messenger; sprout	261; 283; 292; 305; 329; 347	
w	Ø	salmon, silverside; grease; tallow, deer or elk	008; 314	V_V
Ø	w	clam; maple; rainbow	036; 107; 123	V_V
ʔ	w	ribs	168	xw_
u	w	carrot, wild	291	ʔ_d
w	Ø	jawbone	173	#_
Ø	w	be sick	363	n_#

4.6 VOWELS

The vowels of Proto-Coosan are numerous and much harder to reconstruct than the consonants. There are 14 vowels that reconstruct: *a, *ɑ, *æ, *ɛ, *ə, *i, *ɪ, *o, *u, *ʊ, *aɪ, *aʊ, *eɪ ~ ɛɪ, and *oʊ.

In addition to the diphthongs, there are also instances of vowel hiatus, or sequences of adjacent vowels that are considered separate units. Due to the way in which such sequences of vowels were notated, it is unclear whether some of these sequences may be in fact diphthongs or a diphthong and an adjacent monophthong. The diphthongs reconstructed here show regular sound changes that made them appear to act as one unit.

Stress does not seem to be a major factor in reconstructing these vowels, though it is mentioned in instances where it was relevant.[11] There are also a few instances of what have been transcribed as 'aspirated vowels'. These are reportedly realized as a vowel with a bit of aspiration following it. There are surprisingly few instances of these vowels. They are not mentioned by Frachtenburg in his sketch grammar and they occur only in others'

[11] Determining stress is still a big issue with Hanis and Miluk. Stress does not appear to be predictable for words in isolation or within utterances. For many words, stress was marked on every single syllable. Because of this, stress is discussed only insofar as it was marked as being different between Hanis and Miluk and when this difference accompanied a sound change that could be better accounted for with the inclusion of stress shifting as part of the conditioning environment for that change.

transcriptions of Hanis.[12] As they are also found near the remnants of syllable reduction, these are treated as irregular or sporadic instances of aspiration that occurred after syllable reduction but that are treated as corresponding to their respective quality.

The reflexes of the low front unrounded vowel *a are listed in Table 47. It readily reconstructs word initially, finally, and as the second vowel in a sequence of vowels, and between two consonants. This is exemplified by Hanis *qálaqas* and Miluk *qaláqas*, 'kelp'. The other correspondences reconstruct with the following comments:

(a) In some instances, *a was lost in Miluk and in Hanis from syllable reduction. Compare Hanis *tsᵊkwáʔal* and Miluk *tsᵊkwál*, 'steelhead', and Hanis *haʔudɪt* and Miluk *haʔwadɪt*, 'carrot, wild'. It was also lost in Hanis via irregular apocope in *k'ɪm*, 'bait'.

(b) In other cases, *a irregularly centralized to /ə/ in both Miluk and Hanis. For the former, compare Hanis *kwən* and Miluk *k'wan*, 'to see'. For the latter, compare Hanis *dɛmsíwaq* and Miluk *démsíwəx*, 'salmon, Chinook'.

(c) *a also changed to /ɪ/ in Hanis as a result of a complex change that had metathesis of *isa > *sia, palatalization of *sia > *tsia, and then the change of these two vowels in hiatus from *ia > ɪ. Compare Hanis ***tíkɪtsín**-*ætʃ* and Miluk *tᵊkíisan*, 'granddaughter'.

TABLE 47
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *a

PC	Hanis	Miluk	Examples	Correspondences	Environments
*a	a	a	acorn; game	219; 305	#_
			beaver; codfish; smelt; quail; bluejay; uncle; daughter; women; cheek; foot; dagger; salt water eel; arrow with	018; 043; 044; 059; 061; 147;	_#

[12] With the exception of Miluk *k'aʰ* 'person', which Jacobs always recorded with aspiration (and which is not cognate with Hanis).

		hardwood point; baby's shaman; cap, woman's fez shaped; harpoon; spear, salmon; language, talk;	152; 163; 174; 196; 264; 273; 282; 283; 290; 319; 335	
		shark; uncle	023; 147	V_
		kelp; cormorant; rabbit; jellyfish; perch (fish); codfish; pelican; woodpecker; quail; bluejay; snake; village; breakers; ocean; huckleberry, red; huckleberry; cedar; noon; uncle; daughter; ankle; jawbone; cheek; eye; ear; hand; acorn; arrow shaft; bark, thick; fur; blueberry; bobcat; buckskin; hide; dagger; dentalium, large cherry bark wrapped incised money; ear pendant; arrow with hardwood point; baby's shaman; carrot, wild; cedar root, young; flying squirrel; male friend; gall; gambling stick; game; goose; hole; hook, fish; intermediary; messenger; language; liver; marked; a type of baby ailment; marrow; sprout; plural suffix (more than 3 or 4);clam shell, horse;	003; 004; 017; 030; 041; 043; 051; 057; 059; 061; 068; 077; 088; 09; 101; 102; 104; 131; 147; 152; 170; 173; 174; 183; 184; 197; 219; 227; 232; 239; 240; 247; 264; 268; 272; 282; 283; 291; 292; 297; 301; 303; 304; 305; 312; 323; 325; 329; 335; 336; 338; 339; 347; 354; 364	C_C
a	Ø	salmon, silverside; steelhead; huckleberry	008; 065; 102	_#
Ø	a	grandson; carrot, wild	144; 291	C_C
a	ə	salmon, Chinook (spring or fall); intermediary; messenger	066; 329	C_C
ə	a	to see	362	C_C
ɪ	a	granddaughter	143	C_C
Ø	a	bait	230	_#

The reflexes of the low front unrounded vowel *æ are listed in Table 48. This quality is in free variation with [ɛ] in Miluk and instances of *æ in Miluk are treated as /ɛ/ (Douglas-Tavani n.d.). With that said, *æ readily reconstructs word finally, as the first or second vowel in a sequence of vowels, and between two consonants. This is exemplified by Hanis *mɛxɛ́yɛ* and Miluk *mɛxɛyɛ*, 'eagle'. The remaining correspondences reconstruct with the following comments:

(a) It was lost in Miluk due to irregular apocope in *tɬkwí*, ‘willow’.

(b) It irregularly centralized to /ə/ in Hanis following the shift of stress away from *æ to the preceding syllable with reduplication that occurred with the Hanis cognate *məxcætɬməx*, ‘arm’.

(c) *æ assimilated to /a/ in Miluk in regressive vowel harmony with *a across an intervening *y in *uʃikáy*a, ‘jawbone’ (i.e. *æ > a/ay_).

TABLE 48
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *æ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*æ	æ	ɛ	sea otter; eagle; thigh	021; 067; 187	_#
			mountain; beach	083; 089	_V
			sea otter; bluejay	021; 061	V_
			trout, mountain; chum salmon; dog salmon; eagle; river otter; screech owl; wolf; wind; mountain; road; limb; sister, older; brother, older; girl at menarche; man; husband; face; belly	005; 006; 007; 019; 045; 072; 080; 083; 084; 111; 149; 151; 157; 165; 179; 188	C_C
	æ	Ø	willow	109	_#
	ə	ɛ	arm	191	Reduplication
	æ	a	jawbone	173	ay_#

Reflexes of the low back rounded vowel *ɑ are listed in Table 49. Notably, [ɑ] is in free variation with [a] in Miluk and all instances of [ɑ] are treated as /a/ (Douglas-Tavani n.d.). With that being said, *ɑ readily reconstructs word initially, word finally, as the first vowel of a vowel sequence, and between two consonants. This is exemplified by Hanis *xáp* and Miluk *háp'*, ‘water’. It underwent irregular aspiration in Hanis *loówa^{h}kw*, ‘lightning’, and *ts̨ńna^{h}*, ‘thunder’. It was also lost in Miluk before *aɪ in *q'áɪx*, ‘acorn barnacle’.

TABLE 49
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ɑ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ɑ	ɑ	a	star	137	#_
			fish hawk; dirt, ground; fern root	047; 085; 279	_#
			seagull; steelhead	056; 065	_V
			kelp; salmon, dog; salmon, silverside; girl, young; owl; pelican; quail; crow; water; fir tree; fir tree bark (Miluk), old growth fir (Hanis); white; snow; sky; grandmother; baby; bone; grey hair; ear; ant, flying; breast; broth; chisel (of stone); dagger; day; guardian spirit; dentalium, common small; drum, rafter pole; ear pendant; egg, bird; elbow; apart-soul; baby's shaman; male friend; hole; hook, fish; sprout	003; 007; 008; 010; 048; 051; 059; 060; 094; 113; 114; 122; 127; 136; 141; 161; 167; 177; 184; 225; 245; 246; 257; 264; 265; 267; 271; 272; 275; 276; 281; 283; 301; 323; 325; 347	C_C
	ɑ^{h}	a	lightning; thunder	128; 129	_#; C_C
	ɑ	Ø	acorn barnacle	029	_VV

The reflexes of the first diphthong *aɪ are listed in Table 50. It readily reconstructs word finally and between two consonants. This is exemplified by Hanis *tɬáuxkaɪ* and Miluk *tɬáwkaɪ*, 'oyster'. The other correspondences reconstruct with the following comments:

(a) It was reduced word finally to /a/ in Miluk for Mrs. Annie Miner Peterson, such as with Hanis *tɬpaɪ* and Miluk *tɬp*a, 'ashwood'.

(b) It was irregularly reduced to /ɪ/ in Hanis in *tk'wís*, 'fog'.

(c) It was lost in Hanis due to syllable reduction. Compare Hanis *Gáɪs* and Miluk *Gáháɪs*, 'day; guardian spirit'.

TABLE 50
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *aɪ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*aɪ	aɪ	aɪ	oyster; hoof	032; 324	_#
			cedar; bar; channel; hoof; intermediary; messenger; to whittle	104; 231; 324; 329; 352	C_C
	aɪ	a	ants, flying; ashwood; cattail; chisel (of stone); egg, bird; expectoration (phlegm, mucus); fine; payment already made; gambling stick	225; 229; 256; 257; 275; 277; 280; 304	_#
	ɪ	aɪ	fog	298	C_C
	Ø	aɪ	day; guardian spirit	265	C_C

The reflexes of second diphthong *aʊ are listed in Table 51. It readily reconstructs word finally for James Buchanan and George Barney. This is seen in Hanis *qáltsaʊ* and Miluk *q'áltsaʊ*, 'perch (fish)'. It was reduced to *a for Mrs. Annie Miner Peterson word finally, such as in *tq'áya*, 'dentalium, common small'.[13]

TABLE 51
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *aʊ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*aʊ	aʊ	aʊ	perch (fish)	041	_#
	aʊ	a	dentalium, common small; fish and meat foods; marrow	267; 299; 339	_#

The reflexes of the mid central unrounded vowel *ə are listed in Table 52. It readily reconstructs word initially, word finally, and between two consonants. This is exemplified by

[13] The Hanis and Miluk of Mrs. Annie Miner Peterson is markedly distinct from the Hanis and Miluk of Buchanan and Barney in several respects. These differences, which are only discussed here insofar as they cause a difference in reconstructions (such as with this diphthong) are discussed briefly in the final section. Suffice to say here that both languages were undergoing a period of rapid language change during Peterson's time. Ultimately, they warrant a full and thorough treatment unto themselves. As mentioned above, when the same words were transcribed by Peterson and by Buchanan and Barney, the latter were chosen for this reconstruction to remove as many of these changes as possible so as to get as clear a picture of Proto-Coosan as possible.

Hanis *átɬəq* and Miluk *átɬəq*, ‘crab (dungeness)’. The remaining correspondences reconstruct with the following comments:

(a) It was lost in Miluk between *m and *n (compare Hanis *kúmənéɪɬ* and Miluk *kumnéɬɪs*, ‘young brush, grass’) and between *s and *n (compare Hanis *yípsən* and Miluk *psń̥tɬ*, ‘three’).

(b) It assimilated to /u/ in Hanis before *kw, such as in *ítsukw*, ‘rock oyster’.

(c) It assimilated to /ɪ/ in Miluk due to regressive vowel harmony to the stressed *ɪ in the next syllable in *tɪmíɬan*, ‘grandson’ (i.e. *ə > ɪ/_Cí).

(d) It assimilated to /a/ in Hanis due to regressive vowel harmony when the stress is shifted off of *ə and to a different syllable in the word, such as in *qálaqas*, ‘kelp’ (i.e. *ə́Ca > *əCa > aCa).

(e) It changed to /a/ in Hanis before *u in *tɬatɬáuxas*, ‘huckleberry, red’.

TABLE 52
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ə

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ə	ə	ə	plural suffix, two-to-four	353	#_
			with; instrumental; locative; baby	161; 359	_#
			root; mussels; crab (dungeness); flounder; green; it lightens; snow; girl at menarche; woman; neck; bead, clamshell; crabapple, ripe; expectoration (phlegm, mucus); feces; apart-soul; cap, woman's fez shaped; fish and meat foods; ghost; soul of a deceased person; grave; dirt; dirty; handle, braided basket; harpoon; spear, salmon; hawk, small bird; sweat house; ice; snow; intestines; south; south side, coast; shed;	011; 026; 037; 040; 120; 124; 127; 157; 164; 178; 233; 261; 277; 278; 281; 290; 299; 306; 313; 318; 319; 320; 326; 328; 330; 345; 355	C_C
	ə	Ø	young brush, grass	117	m_n
	ə	Ø	three	209	s_n
	u	ə	rock oyster; woodpecker	034; 057	_kw
	ə	ɪ	grandson	144	_Cí

a	ə	kelp; huckleberry, red	003; 101	_Ca
a	ə	huckleberry, red	101	_u

The reflexes of the low-mid front unrounded vowel *ɛ are listed in Table 53. It readily reconstructs word initially, word finally, as the first vowel in a sequence of vowels, and between two consonants. This is exemplified by Hanis *tʃiʃímɛł* and Miluk *tʃiʃímɛł*, 'spruce'. The remaining correspondences reconstruct with the following comments:

(a) It was lost in Miluk due to syllable reduction in *dʒútł*, 'grease, tallow (deer or elk)'. It was also lost in Miluk between *m and *tł (Miluk *kétʃɪ* ***təmhɪs***, 'thumb') and between *l and *q (Miluk *dlílq*, 'bread, acorn'). Finally, it was lost in regular apocope following *q and *gw (Miluk *ɛq*, 'dead person', and Miluk *yɛgw*, 'ghost, soul of a deceased person') and in irregular apocope following *m with *Gém*, 'camas'. Additionally, it was lost due to syllable reduction in Hanis with *hwkwə́n-ætʃ*, 'aunt'.

(b) It changed to /ə/ in Miluk with a shift of stress off of *ɛ to the following syllable. This seems to be indicative of either an irregular disharmonious vowel quality change or the start of syllable reduction with *ləwɛ́*, 'heart'. It also changed to /ə/ in Miluk via irregular centralization, such as in *łkwə́l*, 'red'.

(c) It was also preserved as consonantal length in Hanis via compensatory lengthening. This was an irregular occurrence in which this initial vowel was lost in a high frequency pronoun but the length of which was preserved in the following *n via gemination. Compare Hanis *n:ɛ* and Miluk *ɛnɛ*, '1.SG (independent, contrastive)'.

TABLE 53
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ɛ

PC	Hanis	Miluk	Examples	Correspondences	Environments

*ɛ	ɛ	ɛ	being, forest; dead person; clover-like plant; female friend	234; 259; 266; 300	#_
			fur seal; starfish; clam, quahog (butter clam); yellowhammer (red shafted flicker); child; heart; 1.SG (independent, contrastive); camp; cold; Go-help-yourself, the; public fish distribution; plural suffix, two-to-four	020; 031; 033; 058; 162; 169; 218; 255; 260; 311; 353	_#
			ice; snow	328	_V
			root; salmon, Chinook (spring or fall); eagle; coyote; panther; wind; ocean; stone; cedar; alder; spruce; young brush, grass; women; man, husband; ribs; lip; mouth; knee; hand; adopted child; orphan; nephew; bead, clamshell; belly; abdomen; belt; tied thing; branch, large; large limb of tree; bucket, wooden red cedar root; ball; butterfly; camas, small; camas; clover-like plant; crabapple, ripe; dress, dance; feces; bailer, wooden; shinny ball; headman: head person; person in charge; boss; fish trap foundation hoop; ghost; soul of a deceased person; half (in quantity of money, etc.); handle, braided basket; hawk, small bird; herring; sweat house; knife, not small; ladder; heel; strawberry; be sick	011; 066; 067; 071; 075; 080; 091; 095; 104; 108; 112; 117; 163; 165; 168; 175; 186; 197; 220; 233; 235; 236; 243; 248; 251; 253; 254; 259; 261; 270; 278; 285; 286; 293; 296; 306; 317; 318; 320; 322; 326; 333; 334; 348; 351; 363	C_C
	ɛ	Ø	thumb; bread, acorn	194; 244; 314	m_tɬ; l_q
	ɛ	Ø	belly; abdomen; grease; tallow (deer or elk)	235	C_C
	ɛ	Ø	camas; dead person; ghost; soul of a deceased person	254; 266; 306	q_; gw_; m_
	ɛ	ə	heart	169	stress shift
	ɛ	ə	red; muskrat	119; 340	C_C
	Ø	ɛ	aunt	146	C_C
	:-	ɛ	1.SG (independent, contrastive)	218	#_C

The reflexes of the high front unrounded vowel *i are listed in Table 54. It readily reconstructs word initially, word finally, as first vowel of a sequence of vowels, and between two consonants. This is exemplified with Hanis *nanít'k*a and Miluk *nanít'k*a, ‘codfish’. The remaining correspondences reconstruct with the following comments:

(a) It was lost in Hanis due to syllable reduction with *úyu*, 'rainbow'. It was also lost in Hanis in a complex change involving metathesis of *isa > *sia, palatalization of *sia > *tsia, and then simplification from *ia > ɪ (compare Hanis *tíkɪtsín-ætʃ* and Miluk *tᵊkíisan*, 'granddaughter'). Lastly, it was lost in Miluk via irregular aphaeresis in *s-*, 'we 3 inclusive'.

(b) It assimilated to /ɛ/ in Hanis via vowel harmony following *ɛʔ in *yéʔɛs*, 'lip'.

(c) It assimilated to /ɪ/ in Miluk via irregular vowel harmony to the *ɪ in the following syllable in *qɛlímɪɬ*, 'knife, not small'.

(d) It changed to /ə/ in Hanis due to irregular centralization which could have been caused by the addition of non-cognate elements to this word in *hwkwə́n-ætʃ*, 'aunt'.

TABLE 54
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *i

PC	Hanis	Miluk	Examples	Correspondences	Environments
*i	i	i	rock oyster; you two; they 3+; plural suffix (more than 3 or 4)	034; 215; 217; 354	#_
			skunk; salon, dog (old Chinook or silverside salon); gopher (mountain beaver); trout; with; instrumental; locative	002; 007; 016; 064; 359	_#
			sea otter; shark; uncle	021; 023; 147	_V
			young man; root; fine seaweed; codfish; yellowhammer (red shafted flicker); salmon, Chinook; wolf; panther; ocean; spruce; child; knee; we 3 inclusive; adopted child; orphan; nephew; alms; food given to a beggar; clitoris; crabapple, ripe; gift-food; luncheon; clam shell, horse	009; 011; 028; 043; 058; 066; 072; 075; 091; 112; 162; 186; 214; 220; 221; 258; 261; 308; 364	C_C
	Ø	i	rainbow	123	C_C
	Ø	i	granddaughter	143	see discussion
	ɛ	i	lip; mouth	175	ɛʔ_
	i	ɪ	knife, not small	333	_Cɪ

ə	i	aunt	146	C_#
i	Ø	we 2 inclusive	213	#_C

The reflexes of the lax front high vowel *ɪ are listed in Table 55. This vowel has been one of the least stable of the Proto-Coosan vowels. It readily reconstructs word initially, word finally, as the first vowel in a sequence of vowels, and between two consonants. This is exemplified by Hanis *kwíltsi* and Miluk *kwíltsi*, 'skunk'. The remaining correspondences reconstruct with the following comments:

(a) It was lost in many instances. It was lost in Hanis due to syllable reduction (compare Hanis *húlɪk* and Miluk *huwílɪk*, 'maple') and irregular syncope, such as in *sénkwɪt*, 'eel'. It was lost in Miluk in regular syncope between *p and *n (*pń̥*, 'mole (animal)'), between *t and *k (*tᵊkíisan*, 'granddaughter'), between *tʃ and *ɬ (*mítʃɬ*, 'louse, head'), and between *kw and *t (*sɪníkwtɛ*, 'eel').

(b) It irregularly centralized to /ə/ in Miluk (*k'wésəs*, 'shiny ball') and Hanis, such as with *tᵃtʃə̃n*a, 'beaver'.

(c) It assimilated to /ʊ/ in Hanis after *hw with *hwʊlʊhw*, 'head of, fish, animal, human'.

(d) It changed to /ɑ/ in Hanis. This is due to two distinct instances of assimilation. First, *ɪ > *a when it has *a as the vowel in both of the syllables before and after it (i.e. aC_Ca). Then, this now unstressed *a assimilated to /ɑ/ before *w. Compare Hanis a*líʃ*a*náw*a*s* and Miluk a*líʃ*a*ńw*a*s*, 'game'.

(e) It changed to /a/ in Miluk following *ɑ(h). Likely, *ɪ first changed to *ɑ, which then unconditionally changed to /a/ in Miluk, such as in *wáa*s*, 'seagull'. It dissimilates to /a/ in Miluk before *y in *kwᵊɬa*í*, 'stone'.

(f) It changes to /ɑ/ in Hanis with the addition of a non-cognate suffix of -V_{+low}tʃ with *oʊmáʃ-atʃ*, 'grandmother'.

(g) It underwent irregular assimilation to /i/ in Hanis word finally following *um in *yúmi*, 'star'.

(h) It changed to /i/ in Hanis after a fricative such as with *tsɬi*, 'arrow point, large'. It also irregularly changed to /i/ in Hanis before *y with *kwɬíyɛx*, 'stone'.

(i) It assimilated to /u/ in Miluk after *w, which was subsequently, or perhaps simultaneously, lost in initial aphaeresis or syllable reduction with stress shift away from the first syllable of the word. Compare Hanis *wíʃikáyœ* and Miluk *uʃikáy*a, 'jawbone'.

TABLE 55
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ɪ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ɪ	ɪ	ɪ	indeed yes	361	#_
			blueberry; bobcat; clover-like plant; drum, rafter pole; brassiere; shed	239; 240; 259; 271; 289; 355	_#
			mountain; beach; sky; granddaughter; day; guardian spirit; bag, buckskin	083; 089; 136; 143; 265; 284	_V
			skunk; gopher (mountain beaver); shark; mussels; fine seaweed; jellyfish; starfish; razor clam; flounder; fish hawk; kingfisher; deer; coyote; hazelnut; maple; leaf; road; river; spruce; fir tree bark (Miluk); old growth fir (Hanis); young brush, grass; grandson; old man; shin; jawbone; thigh; thumb; one hundred; bush; arrow shaft; bar; channel; bark, thick; fur; being, forest; berries-fruits; blue; green; bread, acorn; bumblebee; button; crabapple, green; cup; dipper, red cedar root basket; dentalium, large cherry bark wrapped incised money; dress, dance; bailer, wooden; carrot, wild; headman: head person; person in charge; boss; female friend; gall; game; knife, not small; liver; louse, head; twins; heel	002; 016; 023; 026; 028; 030; 031; 035; 040; 047; 052; 070; 071; 084; 093; 105; 107; 110; 112; 114; 117; 144; 156; 171; 173; 187; 194; 198; 212; 227; 231; 232; 234; 237; 238; 244; 250; 252; 262; 263; 268; 270; 285; 291; 293; 300; 303; 305;	C_C

			333; 336; 337; 341; 348;	
Ø	ɪ	clam; maple	036; 107	C_C
ɪ	Ø	mole (mammal); eel; granddaughter; louse, head	001; 038; 143; 337	p_n; kw_t; t_k; tʃ_ɬ
Ø	ɪ	eel; fern; dentalium, large cherry bark wrapped incised money	038; 116; 268	C_C
ɪ	ə	ball; shiny ball	286	C_C
ə	ɪ	beaver; green; half (in quantity of money, etc.); strawberry	018; 120; 317; 351	C_C
ʊ	ɪ	head of a fish, animal, or human	321	hw_
ɑ	ɪ	game	305	aC_Ca
ɪ	a	seagull; hole	056; 323	ɑ(h)_
ɪ	a	stone	095	_y
ɑ	ɪ	grandmother	141	_-V+lowtʃ
i	ɪ	star	137	um_
i	ɪ	arrow point, large; branch; sprout from branch; small branch	228; 242	$C_{+fricative}$_
i	ɪ	camp; fish trap foundation hoop	255; 296	_y
ɪ	u	jawbone	173	w_

The reflexes of the high back diphthong *oʊ are listed in Table 56. It readily reconstructs word initially and between two consonants. This is exemplified in Hanis *tłoʊ́ʃ* and Miluk *tłoʊwɪʃ*, ‘clam’. The remaining reflexes reconstruct with the following comments:

(a) It reduced to /u/ in Hanis before a non-labial consonant[14] (such as with *kúxætɬ*, ‘trout, mountain’) and following *y (such as with *yúmi*, ‘star’).

(b) It changed to /o/ in Miluk with the special case of the reconstructed word *soweíɬ*, ‘finger’; which has two diphthongs in its reconstructed form. Hanis and Miluk each choose a different syllable to stress. The stressed syllable remains a diphthong. The

[14] Note this sound change necessarily happened before the syllable reduction seen in ‘clam’.

unstressed syllable reduces to a monophthong. Miluk did not stress *oʊ and was subsequently reduced to /o/ in this correspondence.

TABLE 56
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *oʊ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*oʊ	oʊ	oʊ	grandmother	141	#_
			clam; it lightens; lightning	036; 124; 128	C_C
	u	oʊ	trout, mountain; young man; fur seal; sealion	005; 009; 020; 022	$_C_{\text{-labial}}$
	u	oʊ	smelt; star	044; 137	y_
	oʊ	o	finger	195	see discussion

The reflexes of the high front diphthong *eɪ are listed in Table 57. This sound was transcribed as <eɪ> by St. Clair and as <ɛɪ> by Jacobs, sounds that would have been quite close. There is also a lack of an /e/ in these languages. Additionally, Jacobs does not have a different way to represent /e/ in his transcriptions of these languages. Because the community represents this diphthong as eɪ, this convention is used here as well.

It readily reconstructs between two consonants and word finally. This is exemplified by Hanis *kweís* and Miluk ***gweís***ka, ‘young woman’. The remaining correspondences reconstruct with the following comments:

(a) It was changed to /æ/ in Hanis. This happens word finally and is considered an irregular change that occurred in *tłpɛ́*, ‘wing’.

(b) It was reduced to /ɛ/ in Hanis with the special case of the reconstructed word *soówɛł*, ‘finger’; which has two diphthongs in its reconstructed form. Hanis and Miluk each choose a different syllable to stress. The stressed syllable remains a diphthong. The

unstressed syllable reduces to a monophthong. Hanis did not stress *eɪ and was subsequently reduced to /ɛ/ in this correspondence.

(c) It was reduced to /ɛ/ in Hanis word finally after *ts’ in *pts'ɛ́*, ‘gill’.

TABLE 57
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *eɪ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*eɪ	eɪ	eɪ	buzzard; quail; noon; young woman; belt; tied thing; clitoris; cold; female friend	049; 059; 131; 158; 236; 258; 260; 300	C_C
			bead, clamshell; dentalia strung on a woman’s head	233; 268	_#
	æ	eɪ	wing	062	_#
	ɛ	eɪ	finger	195	see description
	ɛ	eɪ	gill	309	ts’_#

There are two correspondence sets for the high-mid back rounded vowel *o, seen in Table 58. There are no correspondences that readily reconstruct. That said, the pathways of change of *o > /u/ and *o > /ə/, as discussed below, are more readily explainable than *u > /o/ and *ə > /o/ in these two instances. They reconstruct with the following comments:

(a) It changed to /u/ in Miluk following *m. Compare Hanis ***tomítɬ****mɛ* and Miluk ***tumítɬ****k*a, ‘old man’.

(b) It changed to /ə/ in Miluk with the shift of stress away from *o with the addition of non-cognate elements with the Miluk cognate. This change must have occurred before the assimilation change discussed in (a) above. Compare Hanis *tométɬɪs* and Miluk *kétʃɪ* ***təmhɪs***, ‘thumb’.

TABLE 58
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *o

PC	Hanis	Miluk	Examples	Correspondences	Environments
*o	o	u	old man	160	m_
	o	ə	thumb	194	stress shift

The reflexes of the high back rounded vowel *u are listed in Table 59. It readily reconstructs word initially, word finally, and between two consonants. This is exemplified in Hanis *kúl*ax*á*x*a*s* and Miluk *kul*ax*á*x*a*s*, ‘ankle’. The remaining correspondences reconstruct with the following comments:

(a) It was in variation with /w/ in Miluk with loss of the coda of the syllable in *tɬáwk*aɪ, ‘oyster’.

(b) It was lost in Miluk between /xw/ and /w/ in *xwwáy*a*s*, ‘snake’.

(c) It assimilated to /ɪ/ in Miluk via regressive vowel harmony before a non-labial consonant followed by *ɪ in *tɬíɬtʃ'ɪʊ*, ‘bag, buckskin’.

TABLE 59
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *u

PC	Hanis	Miluk	Examples	Correspondences	Environments
*u	u	u	rainbow	123	#_
			rainbow	123	_#
			buzzard; huckleberry, red; maple; young brush, grass; old woman; women; woman; ankle; anus; arrow point; brassiere; go to bed	049; 101; 107; 117; 156; 163; 164; 170; 224; 226; 289; 343	C_C
	u	w	oyster	032	see description
	u	Ø	snake	068	xw_w
	u	ɪ	bag, buckskin	284	$_C_{\text{-labial}}$ɪ

The reflexes of the lax high back vowel *ʊ are listed in Table 60. It readily reconstructs word finally and between two consonants. This is exemplified by Hanis *kwʊts kwínɛ* and Miluk *kwʊtokwínɛ*, 'quahog (butter clam)'. It also changed to /u/ in Miluk between a voiced stop and a labial dorsal consonant, such as with *gɛnhénukwɛ*, 'sister, older' (i.e., $C_{+voice,+stop}$ _ $C_{+labial,+dorsal}$).

TABLE 60
CORRESPONDENCES RECONSTRUCTABLE AS PROTO-COOSAN *ʊ

PC	Hanis	Miluk	Examples	Correspondences	Environments
*ʊ	ʊ	ʊ	deer; bag, buckskin; ice; snow	070; 284; 328	_#
			mussels; clam, quahog (butter clam); yellowhammer (red shafted flicker); berries-fruits; camas, small; crabapple, green; arrow with hardwood point; brassiere; flying squirrel; go-help-yourself, the public fish distribution; head of a fish, animal, or human; south; south side; coast	026; 033; 058; 237; 253; 262; 282; 289; 297; 311; 321; 345	C_C
	ʊ	u	sister, older; design; figure; mark; fringe; grease; tallow (deer or elk)	149; 294; 302; 314	$C_{+voice,+stop}$_$C_{+labial,+dorsal}$

5 THE CONFOUNDING REMAINING RECONSTRUCTIONS

Having gone through the correspondences that can be reconstructed neatly to one Proto-Coosan phoneme we are left with a number of correspondences that do not cleanly reconstruct. These differ from the irregular correspondences and reconstructions in section 4 in that those reconstructions had a describable, distinct environment (even if it was an abnormal one). For many of these there are competing potential directions of change that could explain the modern reflexes. However, these tend to be both irregular and lacking a clear direction. That is, the change could have gone either way. Despite these issues, these cognate sets tend to be fully reconstructable with the exception of the irregular

correspondence. For this reason, they are still considered to be cognates, though the particular correspondences have a *V_n or *C_n designation that corresponds to the non-matching reflex pairing number it was assigned during data collection. Collectively, these are the confounding reconstructions.

The first confounding reconstruction is two different reflex pairings: *V_5 (H./ɛ/ & M. /ɪ/) and *V_{26} (H. /ɪ/ & M. /ɛ/). The cognate sets for *V_5 are: Hanis *tɛlípi* and Miluk *tílɪpi*, 'mountain beaver' (016); Hanis *túxsɛ* and Miluk *toʊ́kwsɪ*, 'sealion' (022); Hanis *sénkwɪt* and Miluk *sɪníkwtɛ*, 'eel' (038); Hanis *łɪnɛk* and Miluk *łínɪk*, 'leaf' (110); Hanis *łkwítɛmł* and Miluk *łkwatímɪł*, 'fern'(116); and Hanis *dʒɪlímts'ɪlém* and Miluk *dʒɪlímts'ɪlɪm*, 'button' (252). The cognate sets for *V_{26} are Hanis *xwɛʔénɪs* and Miluk *xawénɛł*, 'ribs' (168); and Hanis *kmɪn* and Miluk *kmɛn*, 'to bend or lower the head down' (344).

The next confounding reconstruction is two different reflex pairings: *V_{13} (H. /ɛ/ & M. /a/) and *V_{14} (H. /a/ & M. /ɛ/). The cognate sets for *V_{13} are Hanis ***łkwɛ́lt****mɛ* and Miluk ***łkwáltɪ****k*a, 'gold fish, red fish (red rock fish)' (042); and Hanis *bɛsɪk'* and Miluk *pasɪk'*, 'cup; dipper, red cedar root basket' (263). The cognate set for *V_{14} is Hanis *talámɪs* and Miluk *tɛlémɪs*, 'hazelnut' (105).

After that, there is *V_{16} (H. /u/ & M. /ʊ/). This is different from the two previous reconstructions as the pairing of H. /ʊ/ and M. /u/ reconstructs as *ʊ. These cognate sets lack the clear conditioning environment seen in that pairing. The cognate sets for *V_{16} are: Hanis *kúkum* and Miluk *kókʊm*, 'raven' (050) with two instances; Hanis *haʔudɪt* and Miluk *haʔwadɪt*, 'young cedar root' (292); and Hanis *q'wsúláwas* and Miluk *qwsʊláwás*, 'sprout' (347).

Next is *V_{41} (H. /ʊ/ & M. /a/). Its cognate set is Hanis *kwátkwʊs* and Miluk *kwátɬkwaɬ*, 'elbow' (192). This could be an instance of a non-cognate element added at the end of the word. However, it is unclear what meaning this potential non-cognate element carries. It is also unclear why two distinct, yet similar, non-cognate elements were added in both languages. These non-cognate elements do not appear to be possessor morphology.

Moving away from the back of the vowel space, the next confounding reconstruction looks at *V_{17} (H. /ɪ/ and M. /a/) and *V_{19} (H. /a/ & M. /ɪ/). The cognate set for *V_{17} is Hanis *ɬkwítɛmɬ* and Miluk *ɬkwatímɪɬ*, 'fern' (116). The cognate set for *V_{19} is Hanis *máqatɬ* and Miluk *máqɪtɬ*, 'crow' (060).

The next confounding reconstruction is in the front high part of the vowel space with *V_{22} (H. /ɪ/ & M. /i/) and *V_{27} (H. /i/ & M. /ɪ/). The cognate sets for *V_{22} are Hanis *ʃítʃɪ* and Miluk *ʃítʃi*, 'river' (093); Hanis ***húmɪk*** *húʔməs* and Miluk ***humík-****k*a, 'old woman' (156); Hanis *k'ɪm* and Miluk *k'im*á, 'bait' (230); and Hanis *pGɪs* and Miluk *pgis*, 'blossom' (288). The cognate set for *V_{27} are Hanis *tsɬi* and Miluk *tsɬɪ*, 'arrow point, large' (228); Hanis *kwsi* and Miluk *kwsɪ*, 'branch; sprout from branch; small branch' (242); Hanis *tɬɣíyɛl* and Miluk *tɬɣíyɛl*, 'fish trap foundation hoop' (296); and Hanis *mítʃiɬ* and Miluk *mítʃɬ*, 'knife, not small' (337). Of all of these, only 'old woman' has a possible explanation, which would be that a shift from one to the other occurred due to the addition of a non-cognate element later in the word. That said, the directionality would still be unclear.

The last confounding reconstruction for vowels is *V_{23} (H. /ə/ & M. /ɛ/). This cognate, Hanis *ləGəGi* and Miluk *lɛGɛ́Gɛ*, 'worked and softened buckskin' (249), has two instances of *V_{23}. The best explanation at this time would be irregular centralization though it does not make a convincing argument.

One of the confounding reconstructions comes because of metathesis: it is unclear which consonant moved. This is the case with 'valley, prairie' (081), shown in (2). What is unclear here is whether the original form was *msɪ or *mɪs.

(2) a. Hanis *dǽ**msɪt*** 'valley, prairie'
b. Miluk *dé**mɪst*** 'valley, prairie'

The first of the consonants to present a challenge for reconstruction is *C_{51} (H. /ʃ/ & M. /s/). The cognate set is Hanis *if-* and Miluk *-is*, 'you two' (215). This is apparently the result of an irregular change due to the high frequency nature of the cognate pronoun. What is unclear is the direction of the change as both sounds are seen in the same environment elsewhere.

The next confounding reconstruction involves *C_{14} (H. /s/ & M. /ɬ/). It is notable that the opposite of this, Hanis /ɬ/ and Miluk /s/ does reconstruct as *ɬ. This is the result of a context conditioned dissimilation that does not work for *C_{14}. The cognate sets of *C_{14} are Hanis ***təmísn****-ɛtʃ* and Miluk *tɪmíɬan*, 'grandson' (144); Hanis *xwɛʔénɪs* and Miluk *x*a*wénɛɬ*, 'ribs' (168); and Hanis *kwátkwʊs* and Miluk *kwátɬkwa**ɬ***, 'elbow' (192). The last of these could be a non-cognate element that was added later. Though for the reasons discussed in *V_{41} above, this is somewhat dubious. What is interesting is the potential interplay of *C_{14}'s 'elbow' cognate set and *C_{38}'s 'elbow' cognate set.

*C_{38} has Hanis /t/ and Miluk /tɬ/. It is seen only with 'elbow' (192, see above). What makes this interesting is that later in the word is *C_{14}, discussed above, which also sees a plain alveolar to lateral alveolar alternation. It is unclear if these interacted with one another or not. What is clear is that *C_{38} could not be explained by it being part of a non-cognate element added later, like *C_{14}, as it is word-medial and not word-final.

The last of the confounding reconstructions in the alveolar region is *C_8 (H. /tɬ/ & M. /l/). The cognate set for this pairing is Hanis *qái**tɬáwas*** and Miluk *la*láw*as*, ‘breakers’ (088). The best explanation for this alternation is that there are non-cognate initial elements in this set and that these are also non-cognate elements. However, the other elements are clearly non-cognate and this is less so.

Moving away from the alveolar ridge we come to the velum with *C_{77} (H. /kw/ & M. /k’w/. The cognate set here is Hanis *kwən* and Miluk *k’wa**n***, ‘to see’ (362). It is unclear whether this is irregular glottalization or irregular deglottalization.

Next is the *C_7 (H. /q’ ~ k’/ & M. /tɬ’/. While this alternation is seen in *tɬ’, the cognate set for *C_7, Hanis *k'ɪsáləs* and Miluk *tɬ'ʲsálɪs*, ‘green’ (120), lacks that usual environment before *t, *w, and *h. Instead, it is before *ɪ.

The last of the confounding reconstructions is *C_{59} (H. /b/ & M. /p/). This is seen in the cognate set Hanis *bɛsɪk’* and Miluk *pa**sɪk’***, ‘cup; dipper, red cedar root basket’ (263). This could be explained via fortition or lenition. The directionality is unclear.

6 Discussion and Future Research

The above correspondences in sections 4 and 5 provide strong evidence for the existence of Proto-Coosan. The overwhelming majority of the 273 cognates with Hanis-Miluk correspondences are regular and suggest clear reconstructions. Of those that are irregular, many are readily explicable.

The relative sizes of the consonant and vowel inventories have also remained quite stable from Proto-Coosan to her daughters. Notable changes include collapse of *æ > /ɛ/, *ɑ > /a/, and *χ > /x/ in Miluk and the relative, though not nearly as widespread, trend of uvulars

becoming velars in Hanis. And, as might be obvious, more research needs to be done with the confounding reconstructions to see whether, with the inclusion of more data, a pattern might emerge. All of that said, there are still many points for discussion and further research.

Let us begin with the discussion of the data here. An interesting observation that I have made involves the frequency of phonemes.[15] It seems that the front vowels are much more common than the back. In particular, there appear to be significantly more instances of *ɪ and *ɛ than their counterparts of *ʊ and *o, the latter with only two correspondence sets, and no instance of an /o/ reflex in both languages. There is a similar imbalance between the tense high vowels *i and *u and the lax high vowels *ɪ and *ʊ, the latter of which are much more frequent. This could simply be due to chance, but it is notable.

In the same vein is the relative frequency of consonants. As expected, there generally are more plain consonants (e.g. *k, *t, etc.) than more marked consonants such as voiced and ejective consonants. That said, there were a significant number of voiced and ejective consonants. This leaves open a question as to whether or not these would all reconstruct to Pre-Proto-Coosan or if they were originally less marked. After all, we do see glottalization, voicing assimilation, and gemination in some of the correspondences. Again, this could also be due to a more general relative frequency of phonemes within a language. Future research should examine phoneme frequencies to see whether they fit with expected distributions.

Gemination is another matter deserving of future research. Geminates are quite rare within these data but they do exist. There are many instances where geminates were lost in Miluk with no clear degemination environment. Further examination of this to try to

[15] Note that this is impressionistic. Actual frequencies are not provided here because of a bias of the data. A number of the cognates collected from Mrs. Annie Miner Peterson were collected for the express purpose of having infrequent phonemes that were not collected in the St. Clair wordlist. Because of this the frequency data would be inherently unrepresentative of the actual frequencies of phonemes.

determine a cause would be insightful for understanding gemination more generally. It is also unclear how these geminates came about in the first place. There is one possible instance of gemination originating in compensatory lengthening. Did all geminates form this way between Pre-Proto-Coosan and Proto-Coosan? Complicating this are the examples of a devoiced alveolar nasal [n̥] followed by a plain [n]. These are transcribed as distinctly different than geminates—and indeed, they are distinct, in that the [n̥] is able to hold stress and serve as a syllable nucleus.[16] While the cause of devoicing is clear (i.e. assimilation to a preceding voiceless obstruent) what is unclear is whether or not these *nn sequences were in fact *nn, *n:, or *nVn, with the intervening vowel being lost.

Another point of interest is the relative instability of *ɪ and *ə. Of all of the Proto-Coosan vowels, they are subject to the most change. This could simply be due to their relative position in the center of the vowel space making them more susceptible to competing assimilatory and dissimilatory effects. It could also be for *ɪ that its high frequency has simply allowed for more possible instances of change. Alternatively, the high frequency of *ɪ and *ə could be the result of a common reduction of other vowels to these qualities. It has also been suggested that this could be due to contact with English which also commonly has reduction to these vowels (Eric Campbell, personal communication). This is an interesting hypothesis and certainly plausible—though it is unclear how this could be tested or determined clearly.[17]

Future research needs to address three processes that are similar: syllable reduction, debuccalization, and centralization of vowels. While all are observed and can be understood it is unclear what specific environments motivated them. As has generally been noted,

[16] It was marked as holding stress by Jacobs.
[17] A final possible explanation would be transcriber error or influence. This idea is not given significant weight here for the reasons presented in the discussion of sources for this work, above.

debuccalization tends to happen word initially, and there are at least a few instances of non-final syllable reduction that look as though they could be part of some sort of dissimilatory process. This is striking as, in theory, the opposite would be expected. The exact nature of that process is unclear though. Centralization of vowels is even less clear though there are a few instances where it looks like prosody may be the main motivation. Unfortunately due to how stress was transcribed, and the relative lack of recordings, we likely will never know for sure the cause of these instances of centralization. Maybe by looking through every cognate set in the Jacobs' SlipFiles we may be able to come to a reasonable conclusion.

Another looming question involves the voiced velar fricative *ɣ. It is certainly widespread enough in both languages to warrant status as a phoneme. That said, it is the only voiced fricative in both languages.[18] Perhaps even more perplexing is the fact that [x] and [χ] are in free variation in Miluk (/x/) but there is only the /ɣ/ that is not in variation with the equivalent voiced uvular fricative [ʁ], as it does not exist. *ɣ does seem to be a relatively infrequent phoneme in Proto-Coosan, so it could be a recent addition to Proto-Coosan from Pre-Proto-Coosan that arose from a small conditioning environment no longer observable in Proto-Coosan's daughters. Alternatively, it has been suggested that *ɣ could have a realization that is closer to that of an approximate (Matthew Gordon, personal communication). If true, this would resolve the symmetry issues that are raised by its current classification as a fricative. This idea is interesting and worthy of further research.

Internal classification of Miluk is also an important goal. As Jacobs notes, there was an awareness among members of the community, namely Mrs. Annie Miner Peterson, of the

[18] Douglas-Tavani's phonological analysis of Miluk does note a few instances of [ʒ], though these are all deemed allophones of /ʃ/.

two distinct dialects of Lower Coquille and South Slough. If sufficient data from each dialect could be collected we could determine just how distinctive these dialects are.

Other avenues of future research that are warranted involve looking at the relationship between Coosan languages relative to other languages. The first place to look would be Alsea and Siuslaw, two neighboring languages. Some work has already been done on this and it does appear that they are distinct, unrelated languages. Similar treatment to them relative to that which Hanis and Miluk received here may prove worthwhile.

Also of interest is the idea posed by Doty 2012 of a relationship between the Coosan languages and Salishan languages. It seems that such a relationship will ultimately prove untenable, however, as Doty was unable to find correspondences between Hanis and Proto-Salishan. Thus, the only way for this to be true would be for Hanis to have lost all of the traits that tie it to Proto-Salishan, rendering such a relationship impossible to show if Doty was correct. Further, of the features that Doty noted Miluk had in common with Salishan languages, Hanis is described as not sharing them with Miluk.[19] Given the relative similarity of the languages seen here, it seems highly unlikely that Hanis would have lost all of these traits that could tie Miluk to Proto-Salishan. More likely is prolonged contact with a Salishan community; potentially with a language that was lost to prehistory.

Lastly, there is the matter of the rapid language change that occurred in the speech of Mrs. Annie Miner Peterson. There was a noticeable rapid shift from the Miluk and Hanis of Buchanan and Barney to that of Mrs. Annie Miner Peterson, the last speaker of Miluk and

[19] Often, Doty simply omits Hanis from the discussion. The most striking of these 'features' that are discussed as potentially being shared is what Doty discusses Miluk as having 'fossilized relics of an old gender system...in the lexical items for male and female people throughout life' (Doty 2012: 66). He notes that the words for men start with /t/, such as with Salishan languages like Musqueam, and that feminine forms start with /hu/, /w/, or /kw/, which he posits were the same phoneme at one point (Doty 2012: 69). Missing from this discussion is that nearly all of these words are cognate with the Hanis form and they are not shown as being cognate with Salishan, besides this cursory observation about the initial consonant. While this is one example, the treatment of other features often resembles this course.

one of the last speakers of Hanis. This observation comes from the few examples that we have of the same words transcribed from multiple speakers. On such occasions, Buchanan and Barney's versions were used here, due to significant syllable reduction and voicing of obstruents in the speech of Mrs. Peterson. Whether dialects are in play is not clear. Miluk is reported as having two distinct dialects by Mrs. Peterson, and little is known about which variety Barney spoke. Hanis is not reported as having distinct dialects. This also raises questions as to what form of the languages should be used for revitalization and language teaching. It is this last point of research that my future research plans are focused on.

Appendix A: Potential Cognate Sets Used in This Paper

This appendix contains all of the potential cognate sets used in this paper. They are the potential cognate sets because not every entry in this list has ultimately been included in the final reconstruction and analysis of Proto-Coosan. This is done for several reasons. First, it is done to highlight instances where the languages do not share the same words, which is important in showing that Hanis and Miluk are distinct from each other. In these instances, the proto-form is listed as non-cognate. There are also instances where an entry will be listed as 'removed from list'. These instances occur when that entry was noticed to be a repeat of another, earlier entry. This typically happened when there were more than one entry with the same form in Hanis and Miluk but a different translation. For example, 'entrails' and 'intestines'. Finally, there are entries that have 'not included' in the proto-form column. This is done in instances where the cognate being captured is in fact multi-morphemic and the component morphemes were found in other, monomorphemic entries in this list. Two other notes are important for navigating this table. First, cognate elements are presented in boldface. Where there are non-cognate elements within one or both forms in the cognate set, those are presented in normal faced font. Second, careful readers may notice that there are occasionally numbers missing in the running counter. This is the result of entries being deleted during the assembly of the cognate sets and renumbering having not occurred in the moment. In these instances, the data entry and construction of correspondence sets was too far along to warrant both the work of renumbering but also the potentiality to introduce errors that such an undertaking would introduce. Order of cognate sets was determined by the order in which they were collected.

List of All Potential Cognate Sets Used in This Paper

		Hanis	Miluk	Proto-Form
001	mole (mammal)	**pín**	**pn̥**	*pín
002	skunk	**kwíltsi**	**kwíltsi**	*kwíltsi
003	kelp	**qálaqas**	**qalə́qas**	*qálaqas
004	cormorant	**tɬástɬas**	**tɬástɬas**	*tɬástɬas
005	trout, mountain	**kúxætɬ**	**koʊ́xɛtɬ**	*koʊxætɬ
006	chum, salmon	**hǽyæq**	**hɛ́yɛq**	*hǽyæq
007	salmon, dog (old Chinook or silverside salmon)	**xɑyáni**	**xayáni**	*xɑyáni
008	salmon, silverside	**mɑyáwa**	**maya^{w}**	*mɑyáwa
009	young man	**díluɬ**	**díloʊɬ**	*díloʊɬ
010	girl, young	**wáwɑ**	**wawá**ka	*wɑwɑ
011	root	**lɛpíkəs**	**lɛpíkəs**	*lɛpíkəs
012	day after tomorrow	yáɪqáɪs	díamaɪs	not cognate
013	tomorrow	hǽlmi	ama	not cognate
014	today	díxtsɛ	díxaxáya	not cognate
015	yesterday	lǽnɛkwálɪ	tɬɪnə́ku	not cognate
016	gopher (mountain beaver)	**tɛlípi**	**tílɪpi**	*tɪlɪpi
017	rabbit	**tʃaxtʃax**	**tʃaxtʃáx^{u}**	*tʃaxtʃax
018	beaver	**t^{a}tʃə́na**	**t^{æ}tʃína**	*ttʃína
019	river otter	**ʃtʃǽlt**	**ʃ'tʃɛ́lt**	*ʃtʃǽlt
020	fur seal	**tsúlɛ**	**tsoʊ́lɛ**	*tsoʊ́lɛ
021	sea otter	**kiǽ'wæ**	**giɛ́'wɛ**	*kiǽ'wæ
022	sealion	**túxsɛ**	**toʊ́k^{u}sɪ**	*toʊ́xsV$_{5}$
023	shark	**tsɪxía**	**tsɪxía**	*tsɪxía
024	whale	pɛntɬoʊ́waɪ	tsɛ́hɛm	not cognate
025	seal	kakoʊ́mɛt	qaɪtsń̥na	not cognate

		Hanis	Miluk	Proto-Form
026	mussels	**kwílʊhwən**	**kwílʊhwən**	*kwílʊhwən
027	tall eel grass	łqálkas	lə mə́n	not cognate
028	fine seaweed	**tɬkínɪx**	**tɬkínɪx**	*tɬkínɪx
029	acorn barnacle	**qɑ́aɪx-**	**q'áɪx**	*qɑ́aɪx
030	jellyfish	kákométs **hwántɬɪs**	**hwántɬɪs**	*hwántɬɪs
031	starfish	**gwɪtsímɛ**	**gwɪtsímɛ**	*gwɪtsímɛ
032	oyster	**tɬáuxkaɪ**	**tɬáwkaɪ**	*tɬáuxkaɪ
033	clam, quahog (Butter clam)	**kómɛ**	**kómɛ**	*kómɛ
034	rock oyster	**ítsukw**	**ítsəkw**	*ítsəkw
035	razor clam	**ʃílɪʃ**	**ʃílɪʃ**	*ʃílɪʃ
036	clam	**tɬoʊ́ʃ**	**tɬoʊwɪʃ**	*tɬoʊwɪʃ
037	crab (dungeness)	**átɬəq**	**átɬəq**	*átɬəq
038	eel	**sɛ́nkwɪt**	**sɪníkwtɛ**	*sV$_5$níkwtɛ
039	sturgeon	məqə́xa	nɪqáxan	not cognate
040	flounder	**sə́tɬɪk**	**sə́tɬɪk**	*sə́tɬɪk
041	perch (fish)	**qáltsaʊ**	**q'áltsaʊ**	*qáltsaʊ
042	gold fish, red fish (red rock fish)	**ɬkwɛ́lt**mɛ	**ɬkwalt**ɪka	*ɬkwV$_{13}$lt
043	codfish	**naníʃka**	**naníʃka**	*naníʃka
044	smelt	**gyúwa**	**koʊwa**	*kyoʊwa
045	screech owl	**pǽtʃɛt**	**pɛtʃt**	*pǽtʃt
046	chickenhawk	qállix-aínɛ	tɬílakaítəs	not cognate
047	fish hawk	**kɪskú**sɪtɬ'	**gɪsgá**tətəs	*kɪskú
048	owl	**hútɪs**	**hát**	*hút
049	buzzard	**leíxum**	**leíxum**	*leíxum
050	raven	**kúkum**	**kókʊm**	*kV$_{13}$kV$_{13}$m
051	pelican	**sɑwáɬ'**	**sawáɬɪ**	*sɑwáɬ

		Hanis	Miluk	Proto-Form
052	kingfisher	**ʃtʃítɪs**	**ʃtʃítɪs**	*ʃtʃítɪs
053	Koot (American coot)	kwaíætɬ	nowákɪl	not cognate
054	diver (loon)	k'átʃuwəx	nəmáwa	not cognate
055	crane	q'anaí	tɬ'ænɛ́ɪ	not cognate
056	seagull	**wáɪs**	**wáas**	*wáV$_{17}$s
057	woodpecker (Hanis 'sapsucker')	**tuq'wmas**	**tə́kwmas**	*tə́kwmas
058	yellowhammer (red shafted flicker)	**kwʊts kwínɛ**	**kwʊtokwínɛ**	*kwʊtkwínɛ
059	quail	**daláʔleɪya**	**daláʔleɪya**	*daláʔleɪya
060	crow	**máqatɬ**	**máqɪtɬ**	*máqV$_{19}$tɬ
061	bluejay	**ɣayǽna**	**ɣayɛ́na**	*ɣayǽna
062	wing	**tɬpǽ**	**tɬpeí**	*tɬpeí
063	bird	ǹ̥tɬpɛnæ^{h}ɬ	tsə́tsɛ	not cognate
064	trout	**tɬ'tʃĩ**	**tɬ'tʃĩ**	*tɬ'tʃĩ
065	steelhead	**ts^{ə}kwáʔal**	**ts^{ə}kwál**	*tskwáal
066	salmon, Chinook; spring or fall	**dɛmsíwaq**	**dɛ́msíwəx**	*dɛmsíwaq
067	eagle	**mɛxǽyæ**	**mɛxǽyɛ**	*mɛxǽyæ
068	snake	**xúwayas**	**x^{u}wáyas**	*xuwayas
069	elk	dʒíli	kíts	not cognate
070	deer	**xwítsxʊ**xt	**xwítsxʊ**	*xwítsxʊ
071	coyote	**yɛ́lɪs**	**yɛ́lɪs**	*yɛ́lɪs
072	wolf	**tɬímækw**	**tɬimɛ́kw**	*tɬimækw
073	horse[20]	kyoʊ́tan	kyoʊ́tan	not cognate
074	black bear	ʃxímɬ	pɛ́lɛl	not cognate
075	panther	**ɬítʃɛt**	**ɬítʃɛt**	*ɬítʃɛt

[20] This word, while the same in both languages, is borrowed from Chinook Wawa.

		Hanis	Miluk	Proto-Form
076	dog	kwiyús	yɛ́kl^{u}	not cognate
077	village	**k'^{l}táyas**	**tɬ'táyas**	*tɬ'táyas
078	house	yɛxǽwɛx	yɛ́ts	not cognate
079	wind is blowing	k'^{ə}wɛsísa	lníwɪt tɬ'wɛ́sɛ	not cognate[21]
080	wind	**k'wǽsês**	**tɬ'wɛ́sɛs**	*C_{7}wǽsɛs
081	valley, prairie	**dǽmsɪt**	**dɛ́mɪst**	*dǽmsɪt or *dǽmɪst
082	hill (little mountain)	tseí^{ɨ}ɬ kwǽyǽɪs	ɛk kwɛ́ yɛ́ɪs	not cognate[22]
083	mountain	**kwǽyæɪs**	**kwɛ́yɛ́ɪs**	*kwæyæɪs
084	road	**hǽwɪl**ts	**hɛ́wɪl**	*hǽwɪl
085	dirt, ground	**k'tá**	**tɬ'tá**ya	*tɬ'tá
086	mud	látɬəs	tɬpɛ́x	not cognate
087	waves (motion of water)	gɪ lúʔməs	kwtsaímɛɬ	not cognate
088	breakers	qái**tɬáwas**	**laláwas**	*C_{8}áwas
089	beach	**ɬtʃæ ɪs**	**ɬdʒɛ́ɪs**	*ɬdʒæɪs
090	sand	tsáxwəts	báltɛs	not cognate
091	ocean	**baltímɛs**	**bałtímɛs**	*bałtímɛs
092	creek	^{ɨ}ɬánɪk	tɬɛ́mɪ	not cognate
093	river	**ʃɪtʃtɪ**	**ʃítʃi**	*ʃɪtʃtV$_{21}$
094	water	**xáp**	**háp'**	*xáp
095	stone	**kwɬíyɛx**	**k^{wə}ɬaí**	*kwɬV$_{17}$yɛx
096	oar	tʃə̌ma	tɬéhɛ	not cognate
097	canoe	ɪx	tɬkús	not cognate
098	chittam tree bark	wi yípan ô tsqá	tím dɛtsɛ́tɬɛɬ	not cognate
099	chittam tree	wi yípan	tim	not cognate

[21] Not included because 'wind' is analyzed in 080 below and there are noncognate elements.
[22] Not included because 'mountain' is analyzed in 083 below and there are noncognate elements.

		Hanis	Miluk	Proto-Form
100	huckleberry, red bush	tɬatɬáuxasɪ níkɪn	tɬəxtɬə́uxas dɪníkɪn	not included[23]
101	huckleberry, red	**tɬatɬáuxas**	**tɬəxtɬə́uxas**	*tɬəxtɬə́uxas
102	huckleberry	**qáxas**	**q'ás**	*qáxas
103	blackberry	wiaxaínɪ	ʒoʊdʒoʊ́a	not cognate
104	cedar	**tɬahaímɛɬ**	**tɬəhaímɛɬ**	*tɬəhaímɛɬ
105	hazelnut	**talámɪs**	**tɛlɛ́mɪs**	*tV$_{14}$lV$_{14}$mɪs
106	hazel	wíʔyɛ	tsə́st	not cognate
107	maple	**húlɪk**	**huwílɪk**	*huwílɪk
108	alder	**k'wɛ́x**	**tɬkwɛ́x**	*tɬkwɛ́x
109	willow	**kwɛ́**hæ^{h}	**tɬkwí**	*tɬkwV$_{26}$hæ
110	leaf	**ɬɪnɛk**	**ɬínɪk**	*ɬínV$_{5}$k
111	limb	**hællɛ́kw**	**hɛlɛ́kw**	*hælækw
112	spruce	**tʃɪʃímɛɬ**	**tʃɪʃímɛɬ**	*tʃɪʃímɛɬ
113	fir tree (Hanis: made of fir tree)	**hɑlq**	**halq**	*hɑlq
114	fir tree bark (Miluk) old growth fir (Hanis)	**tsᵊkwátɬɪs**	**sᵊkwátɬɪs**	*skwátɬɪs
115	timber	nɪkwín	nətɬín	not cognate
116	fern	**ɬkwítɛmɬ**	**ɬkwatímɪɬ**	*ɬkwV$_{17}$tV$_{5}$mɪɬ
117	young brush, grass	**kúmənɛ́ɪɬ**	**kumnɛ́ɬɪs**	*kúmənɛ́ɬɪɬ
118	grass	ɬɪnɛk	ɬínɪk	not included[24]
119	red	**ɬkwɛ́lt**	**ɬkwə́l**	*ɬkwV$_{4l}$lt
120	green	**k'ɪsə́ləs**	**tl'^{i}sə́lɪs**	*C$_{7}$ɪsə́lɪs
121	black	k'əlɛ́ʔɛs	hɛ́ntɬɪs	not cognate
122	white	**xᵊxás**	**xᵊxás**	*xᵊxás
123	rainbow	**úyu**	**uwíyu**	*uwíyu

[23] Not included for the overall reconstruction because the two distinct elements of ‘red huckleberry’ and ‘bush’ are their own items.
[24] Not included as it is the same word as ‘leaf’.

		Hanis	Miluk	Proto-Form
124	it lightens	**loókwəloókw**-ai	**lo̯óo̯kwəloókw**	*loúkwəloúkw
125	it snows	sʔtɬáyam	túitátiæm	not cognate
126	it is raining	gímmit	ilɛ́q	not cognate
127	snow	**stɬáləs**	**stɬáləs**	*stɬáləs
128	lightning	**loówɑʰkw**	**loʊwák^{u}**	*loʊwɑk^{w}
129	thunder	**tso̯nɑʰ**	**tso̯na**	*tso̯nɑ
130	rain	gɪmgímɪs	íləkeɛs	not cognate
131	noon (**straight up** sun)	**tɬeɪnatɬ** tʰkɑ´lɪs	**tɬeɪnatɬ kwalɛ́ɛs**	*tɬeɪnatɬ[25]
132	night	kwɛ́ɬɪtʃ	x'ɛɬɛ́m	not cognate
133	evening	q'áwa	qálqai	not cognate
134	morning	tsʰxáyat	kæleímɛɬ	not cognate
135	cloud	tɛqnɪs	səso̯qʷᵃ	not cognate
136	sky	**qáyɪs**	**qaháɪs**	*qɑyáɪs
137	star	**yúmi**	**yoúmɪ**	*yoúmɪ
138	moon	tɬoʊhwáɪs	mɛtiátɪs	not cognate
139	sun	tʰká?ləs	kwᵃlɛ́ɛs	not cognate
140	my children	hɛnɛ́ʷhíma	ɛnɛńᵃhímɛ	not included[26]
141	grandmother	**oʊmáʃɑ**tʃ	**oʊmáʃɪ**	*oʊmáʃɪ
142	grandfather	pəkáɨkɑtʃ	sqoʊlúkwɛ	not cognate
143	granddaughter	**tíkɪtsín**ætʃ	**tʰkíisan**	*tɪkɪisan
144	grandson	**təmísn**ɛtʃ	**tɪmíɬan**	*tɪmíC$_{14}$V$_{33}$n
145	nephew, cousin	nəxláu	dúwˈtɛ	not cognate
146	aunt	**hwkwə́n**ætʃ	**gwɛ́kwi**	*gwɛ́kwi
147	uncle	**axíaxatʃ**	**axíaxatʃ**	*axíaxatʃ
148	sister, younger	kwiyátɬɪtʃ	kwíla	not cognate

[25] Only the first morpheme, 'straight up', reconstructed here. See 'sun' below.
[26] Not included as this is multimorphemic with the constituent morphemes appearing elsewhere in this list.

		Hanis	Miluk	Proto-Form
149	sister, older	**hænók**unætʃ	gɛn**hɛ́nukwɛ**	*hænók
150	younger brother	mətɬkwíyætʃ	mɪskóla	not cognate
151	brother, older	**hǽtɬ**ætʃ	**hɛtɬ**í	*hǽtɬ
152	daughter	**kwaɪátʃ**ɪtʃ	**kwáya**	*kwaya
153	son	ála	kílɪka	not cognate
154	mother	ǽʔnætʃ	gɛníka	not cognate
155	father	ækʷᵊtɬætʃ	ɛɬí	not cognate
156	old woman	**húmɪk** húʔməs	**humík**ka	*húmV_{22}k
157	girl at menarche	**tᵊtʃǽwəs**	**tᵊtʃéwəs**	*ttʃǽwəs
158	young woman	**kweís**	**gweís**ka	*kweís
159	young boy			not included[27]
160	old man	**tomítɬ**mɛ	**tumítɬ**ka	*tomítɬ
161	baby	**q'ána** ɑ´ʔlɑ	**q'anə́**qɪka	*q'ɑna
162	child	**hímɛ**	**hímɛ**	*hímɛ
163	women	**huméka**	**huméka**	*huméka
164	woman	**húʔməs**	**húməs**	*húʔməs
165	man, husband	**dǽmɛɬ**	**démɛɬ**	*dǽmɛɬ
166	chest	kɪtsɛ́wɛ́wʊs	ləwɛ́	not cognate
167	bone	**láʔmɑk**	**la mák**	*lɑʔmɑk
168	ribs	**xwɛʔɛ́nɪs**	**xawɛ́nɛɬ**	*xV_{13}wɛ́n$V_{26}C_{14}$
169	heart	yí**lɛ wɛ́**tʃɪs	**ləwɛ́**	*lɛwɛ́
170	ankle	**kúlaxáxas**	**kulaxáxas**	*kulaxáxas
171	shin	**skɪtʃ**ɛ́tʃɪs	**skɪtʃ**íyɛɬ	*skɪtʃ
172	chin	**tsᵚmɛ́**	**tʃ'əm**	not cognate
173	jawbone	**wíʃɪkáyæ**	**uʃɪkáya**	*wíʃɪkáyæ
174	cheek	**qáwa**	**qáwa**	*qáwa

[27] Not included as this appears to be a repeat of 'young man'.

		Hanis	Miluk	Proto-Form
175	lip, mouth	**yɛ́ʔɛs**	**yɛ́is**	*yɛ́ʔis
176	back	pəgái	xwítɬxwi	not cognate
177	grey hair	**yálɑqᵃ**	**yálaq**	*yɑ́lɑq
178	neck	**kwəns**	**xwənúxwən**	*xwən
179	face	**æ**	**hɛ́l**	*hæl
180	nose	tʃúwɪɬ	łɪnɛx	not cognate
181	hair	x-ɪnɛʔk	hanəs	not cognate
182	teeth	gᵊtsɛ	gétʃɣaɪ	not cognate
183	eye	**hwálhwal**	**xwáᵘxwal**	*xwálxwal
184	ear	**kwhɑ́nas**	**tɬ'ᵘánas**	*tɬ'hɑ́nas
185	head	hwílʊx	sɛ́l	not cognate
186	knee	**tíyɛx**	**siyɛx**	*tiyɛx
187	thigh	**tʃílæ**iʃ	**dʒílɛ**	*tʃílæ
188	belly	**wɛ́hæl**	**wɛ́h**	*wɛ́h
189	waist	ləgməɬ	kɛ́laxɛ́hɛs	not cognate
190	shoulder	tᵊkwɛ́tkwɪs	ʃɪpátɬ	not cognate
191	arm	məxæ**tɬməx**	**tɬ'ê´x**ɪn	*tɬmV$_{23}$x
192	elbow	**kwátkwʊs**	**kwátɬkwaɬ**	*kwáC$_{38}$kwV$_{41}$C$_{14}$
193	skin	tsᵊxá	sɛ́tɬɛɬ	not cognate
194	thumb	**tomɛ́tɬɪs**	kɛ́tʃɪ **təmhɪs**	*tomɛ́tɬɪs
195	finger	**soʊ́wɛɬ**	**soweíɬ**	*soʊweɪɬ
196	foot	**kəɬá**	**gᵉɬá**	*kła
197	hand	**kɛ́ɬa**	**kɛ́ɬa**n	*kɛ́ɬa
198	one hundred	yɪxeíᵉ **nɪkɪʰn**	hítʃɪ-**níkɪn**	*nɪkɪn
199	thirty	yɪpsínka	psn̥tɬkiú	not included[28]

[28] While the morpheme ‘three’ can be found within this word and that is cognate; the morpheme ‘three’ is reconstructed below.

		Hanis	Miluk	Proto-Form
200	twenty	yɪhwɛ́^{e}ka	atsúkiú	not cognate
201	eleven	tɬəpqáʔni yíxeɪ úxtsí	t'íʃĩ / hitʃĩ dʊk^{u}sɪ	not cognate
202	ten	tɬəpqáʔni	t'íʃĩ	not cognate
203	nine	yʊhwɛ́ahæɬ	hɪtʃĩan	not cognate
204	eight	ɪxaíahæɬ	atsoótɬan	not cognate
205	seven	yɪhwɛ́wiɛx^{a}	tsáwaxkeɪ	not cognate
206	six	ɪxeíwiɛ́x^{a}	tʃɛxkeía	not cognate
207	five	**kæʔtɛmhɪs**	**kantʃĩnʒi**	not cognate
208	four	hǽʃtʊ	dʒáwa	not cognate
209	three	yí**psən**	**psn̥tɬ**	*psəntɬ
210	two	yúhwɛ	átsu^{hw}	not cognate
211	one	yíxeɪ	hítʃĩ	not cognate
212	bush	**ɪníkɪn**	**dɪníkɪn**	*dɪníkɪn
213[29]	we 2 inclusive	**-is**	**s-**	*is
214	we 3 inclusive	**ɬin-**	**-li**	*ɬin-
215	you two	**iʃ-**	**-is**	*iC$_{51}$
216	they two	uxw-	-itc	not cognate
217	they 3+	**iɬ-**	**-iɬ**	*iɬ
218	1.SG (independent, contrastive)	**nnɛ**	**ɛnɛ**	*ɛnɛ
219	acorn	**álam**	**álám**	*álam
220	adopted child, orphan, nephew	**gwínɛ́wɛtɬ'**	**gwinɛ́weʔ**	*gwinɛ́wɛtɬ'
221	alms; food given to a beggar	**tintʃ'**	**tintʃ'**	*tintʃ'
222	*removed from list*			
223	*removed from list*			

[29] All examples from this point onward, in both Miluk and Hanis, are from Annie Miner Peterson.

		Hanis	Miluk	Proto-Form
224	anus	**múyus**	**múyus**	*múyus
225	ant, flying	**lɑ́maɪ**	**láma**	*lɑmaɪ
226	arrow point	**sus**	**sus**	*sus
227	arrow shaft	**mílaq**	**mílaq**	*mílaq
228	arrow point, large	**tsɬi**	**tsɬɪ**	*tsɬV_{27}
229	ashwood	**tɬpaɪ**	**tɬpa**	*tɬpaɪ
230	bait	**k'ɪm**	**k'imá**	*kV_{22}ma
231	bar; channel	**q'áɪmɪs**	**q'áɪmɪs**	*q'áɪmɪs
232	bark, thick; fir	**tsgwadlɪs**	**tsGwadlɪs**	*tsGwadlɪs
233	bead, clamshell	**ts'əndɛqɛɪ**	**ts'əndɛqɛɪ**	*ts'əndɛqɛɪ
234	being, forest	**ɛ́ʃɪn**	**ɛ́ʃɪn**	*ɛ́ʃɪn
235	belly; abdomen	**wɛ́hɛl**	**wɛ́^{h30}**	*wɛ́hɛl
236	belt; tied thing	**GɛtGɛɪtɬ'**	**GɛtGɛɪtɬ'**	*GɛtGɛɪtɬ'
237	berries-fruits	**yʊkwsɪl**	**yʊqwsɪl**	*yʊqwsɪl
238	blue; green	**k'sílɪs**	**k'sílɪs**	*k'sílɪs
239	blueberry	**q'ánɪ**	**q'ánɪ**	*q'ánɪ
240	bobcat	**bátgɪ**	**bátgɪ**	*bátgɪ
241	*removed from list*			
242	branch; sprout from branch; small branch	**kwsi**	**kwsɪ**	*kwsV$_{27}$
243	branch, large; large limb of tree	**hɛ́l:ɛkw**	**hɛlɛ́kw**	*hɛl:ɛkw
244	bread, acorn	**dlílɛq**	**dlílq**	*dlɪlɛq
245	breast	**gɑ**	**gats'**	*gɑts'
246	broth	**χɑtɬ'**	**xatɬ'**	*χɑtɬ'
247	buckskin; hide	**kaláʃ**	**kaláʃ**	*kaláʃ

[30] While aspirated vowels are not phonemic in Miluk, this aspiration is shown as a proffering of evidence of syllable reduction.

		Hanis	Miluk	Proto-Form
248	bucket, wooden red cedar root	**xwkwɛ́**	**xwkwɛ́l**	*xwkwɛl
249	worked and softened buckskin	**ləGəGi**	**lɛGɛ́Gɛ**	*lV$_{23}$GV$_{23}$GV$_{52}$
250	bumblebee	**tíχmıɬ**	**tíxmıɬ**	*tíχmıɬ
251	butterfly	**bɛ́l:ɛχ**	**bɛ́lɛχ**	*bɛ́l:ɛχ
252	button	**dʒılímts'ılɛ́m**	**dʒılímts'ılım**	*dʒılímts'ılV$_{5}$m
253	camas, small	**wól:ɛts'**	**wʊlɛ́ts'**	*wʊl:ɛts'
254	camas	**Gɛ́mɛ**	**Gɛ́m**	*Gɛ́mɛ
255	camp	**kwɬíyɛ**	**qwɬíyɛ**	*qwɬíyɛ
256	cattail	**ɬhwáı**	**ɬhwa**	*ɬhwáı
257	chisel (of stone)	**qátɬqaı**	**qátɬqa**	*qátɬqaı
258	clitoris	**lɛ́ıɣits'**	**lɛ́ıɣits'**	*lɛ́ıɣits'
259	clover like plant	**ɛl:ɛ́nı**	**ɛlɛ́nı**	*ɛl:ɛ́nı
260	cold	**Gɛ́ınɛ**	**Gɛ́ınɛ**	*Gɛ́ınɛ
261	crabapple, (ripe)	**mitʃ'lɛ́wəs**	**mitʃ'lɛ́wəs**	*mitʃ'lɛ́wəs
262	crabapple, (green)	**sísʊxw**	**sísʊxw**	*sísʊxw
263	cup; dipper, red cedar root basket	**bɛsık'**	**pasık'**	*C$_{59}$V$_{13}$sık'
264	dagger	**ɬaq'áma**	**ɬaq'áma**	*ɬaq'áma
265	day; guardian spirit	**Gáıs**	**Gáháıs**	*Gɑhaıs
266	dead person	**ɛ́qɛ**	**ɛq**	*ɛqɛ
267	dentalium, common small	**tq'áyaʊ**	**tq'áya**	*tq'áyaʊ
268	dentalium, large cherry bark wrapped incised money	**hadáyıms**	**hadáımıs**	*hadáyımıs
269	dentalia strung on a woman's head	**k'wχɛ́ı**	**k'wχɛ́ı**	*k'wχɛ́ı
270	dress, dance	**ɬmılɛtʃ'**	**lmılɛtʃ'**	*ɬmılɛtʃ'
271	drum, rafter pole	**gwátsgwı**	**GwátsGwı**	*GwɑtsGwı

		Hanis	Miluk	Proto-Form
272	ear pendant	**ɣalɑs**	**ɣalas**	*ɣalɑs
273	eel; salt water eel	**xla**	**xla**	*xla
274	*removed from list*			
275	egg, bird	**máqwłaɪ**	**máqwła**	*máqwłaɪ
276	elbow	**gwátgwɪs**	**gwátgwəs**	*gwátgwɪs
277	expectoration (phlegm, mucus)	**pqáɪ**	**pqá**	*pqáɪ
278	feces	**ts'éɣəs**	**ts'éɣəs**	*ts'éɣəs
279	fern root	**łk'wɑ**	**łq'wa**	*łq'wɑ
280	fine; payment already made	**sk'áɪ**	**sk'a**	*sk'áɪ
281	apart-soul	**dəmɑk'**	**dəmák'**	*dəmɑk'
282	arrow with hardwood point	**wʊsbáya**	**wʊsbayá**	*wʊsbaya
283	baby's shaman; baby specialist	**halɑGayawa**	**háGaGayáwa**	*halɑGayawa
284	bag, buckskin	**tɬúɬtʃ'ɪʊ**	**tɬíɬtʃ'ɪʊ**	*tɬułtʃ'ɪʊ
285	bailer, wooden	**Gέχdɪts'**	**Gέxdɪts'**	*Gέχdɪts'
286	ball; shiny ball	**k'wέsɪs**	**k'wέsəs**	*k'wέsɪs
287	*removed from list*			
288	blossom	**pGɪs**	**pgis**	*pgV$_{22}$s
289	brassiere	**mʊlútɪ**	**mʊlútɪ**	*mʊlútɪ
290	cap, woman's fez shaped	**tɬp'ə́l:a**	**tɬp'ə́la**	*tɬp'ə́l:a
291	carrot, wild	**haʔudɪt**	**haʔwadɪt**	*haʔwadɪt
292	cedar root, young	**búwas**	**bówas**	*bV$_{16}$was
293	headman: head person; person in charge; boss; the recognized village leader among the very wealthy, or the leading very-wealthy person among several villages.	**sɪkínχɛm**	**síkínɛn**	*sɪkínχɛm
294	design; figure; mark	**bʊk**	**buqw**	*bʊqw

		Hanis	Miluk	Proto-Form
295	*removed from list*			
296	fish trap foundation hoop	**tɬɣíyɛl**	**tɬɣíyɛl**	*tɬɣV_{27}yɛl
297	flying squirrel	**Gálmʊq**	**Gálmʊq**	*Gálmʊq
298	fog	**tk'wís**	**tq'wáɪs**	*tq'wáɪs
299	food; fish and meat foods	**k'wə́nyaʊ**	**q'wə́nya**	*q'wə́nyaʊ
300	female friend	**ɛ́ɪkɪtʃ'**	**ɛ́ɪkɪtʃ'**	*ɛ́ɪkɪtʃ'
301	male friend	**sláʔɑtʃ**	**slaʔá**	*slaʔɑ
302	fringe	**dʊxw**	**duxw**	*dʊxw
303	gall	**gísgan**	**gísgan**	*gísgan
304	gambling stick	**dáqsaɪ**	**dáqsa**	*dáqsaɪ
305	game	**alíʃanáwas**	**alíʃaníwas**	*alíʃaníwas
306	ghost; soul, of a deceased person	**yɛgwɛ**	**yɛgw**	*yɛgwɛ
307	ghost; soul, of a living person	**dəm:ɑk'ɪs**	**dəmak'ɪs**	not included[31]
308	gift-food; luncheon	**tintʃ**	**tintʃ**	*tintʃ
309	gill	**pts'ɛ́**	**pts'ɛ́ɪ**	*pts'ɛ́ɪ
310	*removed from list*			
311	go-help-yourself, the; public fish distribution	**lódʒɛ**	**lódʒɛ**	*lódʒɛ
312	goose	**qnáhats**	**qnáhats**	*qnáhats
313	grave; dirt; dirty	**tgwə́nwəs**	**tGwə́nwəs**	*tGwə́nwəs
314	grease; tallow, (deer or elk)	**dʒówɛtɬ**	**dʒútɬ**	*dʒówɛtɬ
315	*removed from list*			
316	*removed from list*			
317	half (in quantity of money, etc.)	**Gɛ́t'əs**	**Gɛ́t'ɪs**	*Gɛ́t'ɪs
318	handle, braided basket	**tsə́ɣɛn**	**tsə́ɣɛn**	*tsə́ɣɛn

[31] Not included as this is the word for 'apart-soul' above with an extra morpheme.

		Hanis	Miluk	Proto-Form
319	harpoon; spear, salmon	**dʒə́m:a**	**dʒə́ma**	*dʒə́m:a
320	hawk, small bird	**dʒəlɛ́Gɛq'**	**dʒəlɛGɛq'**	*dʒəlɛGɛq'
321	head of, fish, animal, human	**hwʊlʊhw**	**hwɪlʊxw**	*hwɪlʊxw
322	herring	**k'wɛ́k'w**	**kwɛ́k'w**	*kwɛ́k'w
323	hole	**χant'áhɪ**	**xant'áha**	*χant'áhV$_{17}$
324	hoof	**tʃ'kwáɪkwaɪ**	**tʃ'kwáɪkwaɪ**	*tʃ'kwáɪkwaɪ
325	hook, fish	**q'álats**	**q'álats**	*q'álats
326	sweat house	**kwəlétɬ'**	**kwəlétɬ'**	*kwəlétɬ'
327	*removed from list*			
328	ice; snow	**kwə́l:ɛʊ**	**qwə́lɛʊ**	*qwə́l:ɛʊ
329	intermediary; messenger	**nɪk'táhaɪwa^{h}s**	**nɪk'táhaɪwəs**	*nɪk'táhaɪwas
330	intestines	**Gwə́lɣəs**	**Gwə́lɣəs**	*Gwə́lɣəs
331	*removed from list*			
332	*removed from list*			
333	knife, not small	**qɛlímɪɬ**	**qɛlímɪɬ**	*qɛlimɪɬ
334	ladder	**lɛ́qhɛlq**	**hɛqhɛ́lq**	*lɛqhɛlq
335	language; talk; way of talking	**ɣál:a**	**ɣála**	*ɣál:a
336	liver	**míla**	**mílam**	*mílam
337	louse, head	**mítʃɪɬ**	**mítʃɬ**	*mítʃɪɬ
338	marked; a type of baby ailment	**łq'ámχ**	**łq'ámx**	*łq'ámχ
339	marrow	**slaq'ádaʊ**	**slaq'áda**	*slaq'ádaʊ
340	muskrat	**dzɛn**	**dzən**	*dzɛn
341	twins	**ts'ílkɪn**	**ts'ílkɪn**	*ts'ílkɪn
342	*removed from list*			
343	go to bed	**tʃ'u-**	**tsum-**	*tsum$_{1}$

		Hanis	Miluk	Proto-Form
344	to bend or lower the head down	**kmɪn**	**kmɛn**	*kmV$_{26}$n
345	south, south side, coast	**gógwəs**	**GóGwəs**	*GóGwəs
346	*removed from list*			
347	sprout	**q'wsúɫáwas**	**qwsʊɫáwás**	*q'wsV$_{16}$lɑwas
348	heel	**qɫím:ɛn**	**qɫímɛn**	*qɫím:ɛn
349	*removed from list*			
350	*removed from list*			
351	strawberry	**léləs**	**lélɪs**	*lélɪs
352	to whittle	**χáɪt**	**xáɪt**	*χáɪt
353	plural suffix, two-to-four	**əm:ɛ**	**əmɛ**	*əm:ɛ
354	plural suffix (more than 3 or 4)	**íyas**	**íyas**	*íyas
355	shed	**mə́qmɪ**	**mə́qmɪ**	*mə́qmɪ
356	imperative verb suffix	-dɛ	-íyam	not cognate
357	to kick	**t'Gw**	**t'Gw**	*t'Gw
358	with; instrumental; locative	**ni-**	**ni-**	*ni
359	with; instrumental; locative	**nə-**	**nə-**	*nə
360	with; instrumental; locative	**n-**	**n-**	*n
361	indeed yes	**-ɪl**	**-ɪ**	*ɪl
362	to see	**kwən**	**k'wan**	*C$_{77}$an
363	be sick	**χɛn**	**xɛnw**	*χɛnw
364	clam shell, horse	**kiʔnak'**	**kiʔn:ak'**	*ki'n:ak'

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