A Preliminary Survey of Some Uralic Elements in Costanoan, Esselen, Chimariko and Salinan

Abstract: The paper aims to show that several Amerindian languages, namely Salinan, Esselen, Chimariko and Costanoan, previously spoken in California, contain lexical material with distinctly Uralic features. The paper also discusses the existing proposal of a close relationship between Miwok and Costanoan, known as the Utian family, and the controversial Hokan hypothesis. Alleged cognates between Miwok and Costanoan are considered here to be areal loanwords and Hokan is not considered to be a valid unit in its current perimeter. The paper proposes to group Salinan, Esselen, Chimariko and Costanoan in a new Amerindian family called ‘Cal-Uralic’ and to group ‘Cal-Uralic’, Uralic, Yukaghir, and Mongolian in a new macro-family called ‘West-Siberian’.

Keywords: Uralic, Amerindian, Costanoan, Miwok, Salinan, Esselen, Chimariko.

1. Introduction

Lyle Campbell, who certainly is among the present-day linguists most critical of any comparative endeavors linking Amerindian languages together or linking them with Eurasian languages, listed a number of such proposals in one of his books under the heading “Far-fetched Proposals.” (Campbell, 2000:261–62.) One of the proposals mocked in Chapter 8 is a connection between Huave, an Amerindian language still spoken Mexico, and Uralic by Bouda in 1964. So it is with this mostly skeptical, if not negative, background in mind that the present paper will propose that Uralic material is retrievable in several Amerindian languages, now extinct but formerly spoken in California: the Costanoan family, also known as Olhone or Ohlone, Esselen, Chimariko and Salinan.

Needless to say, the present paper does not have any ambition à la Greenberg to lump all Amerindian languages together and encompass all documented material on
them. The goal is rather modest and only takes into account a precise and selective set of languages. But at the same time, it aims to break new ground with sound footing, showing that some Amerindian languages contain lexical material shared with Eurasian languages: in the present case, with Uralic to be precise, also with Yukaghir, which has been suspected of being quite close to Uralic for several decades, and with Mongolian, which may be a less frequently proposed partner as far as bilateral comparisons with Uralic are concerned. A more ambitious goal of the paper is to silence the critical stance against long-distance comparative work, as it can be proved that regular and acceptable results can be achieved in that field. Another goal of more methodological nature is to show that words with regular sound correspondences are not necessarily true cognates, but can be loanwords.

The paper begins with short presentations of each group or language under survey, discusses methodological issues about long-distance comparative endeavors, tackles existing proposals to link Costanoan with Miwok or the Hokan hypothesis, and then describes and discusses a number of potential cognates between Uralic and Costanoan, Esselen, Chimariko and Salinan. Additional data from Yukaghir and Mongolian have been added in order to address the issue of the relationships of Uralic to other languages spoken in Northern Eurasia.

2. The claims: ‘Cal-Uralic’ as a subbranch of ‘West-Siberian’

The central claim of the paper is that the following languages or families: Uralic, Costanoan, Esselen, Chimariko, Salinan, Yukaghir and Mongolian are genetically related and add up to a consistent genetic node, which I propose to call ‘West-Siberian’. The next claim is that Costanoan, Esselen, Chimariko and Salinan are more closely related to Uralic than these five are to Yukaghir and Mongolian on the other
hand. Costanoan, Esselen, Chimariko and Salinan belong to a branch of ‘West-Siberian’ that I propose to call ‘Cal-Uralic’.

On the whole, very few words are shared only by ‘Cal-Uralic’ and Yukaghir or Mongolian and are lacking in Uralic at the same time, whereas a large number of words are shared only by ‘Cal-Uralic’ and Uralic and do not have Yukaghir or Mongolian comparanda. As it stands, this situation suggests that ‘Cal-Uralic’ is very close to Uralic and to some extent one may go as far as to consider it to be a subbranch of Uralic, and possibly even of Finno-Ugric. Now I have to admit that my greater familiarity with Finno-Ugric than with Samoyedic and Mongolian may introduce an artifact and that specialists of these latter groups may improve the general picture and that the genetic assignment of ‘Cal-Uralic’ within Uralic as a whole might become more balanced in the future. As a rule it can be observed that ‘Cal-Uralic’ is less agglutinative and exclusively suffixal than Uralic or Finno-Ugric is. This is likely to be a conservative feature. For example Esselen enne ama ‘I eat’ can be compared with Mokša ama-n ‘I eat’ and Hungarian én ‘P1sg’. The status of Mokša -(ɔ)n as an originally free form is nevertheless still noticeable as it can be suffixed to the negation instead of the verb: af-ɔl-ən ama ‘I was not eating’. It can be noted that Esselen enne goes against the preconceived dogma that Mokša -n and Hungarian én are based on a dissimilated labial nasal m.

At this preliminary stage, the data supporting these claims are mostly lexical. Grammatical and morphological issues will be addressed in coming papers. The fact is that the basic vocabulary of Uralic is represented in ‘Cal-Uralic’ to such a massive and precise extent that neither the validity of ‘Cal-Uralic’ nor the relationship between Uralic and ‘Cal-Uralic’ can seriously be doubted.
A few words with a possible Indo-European pedigree can be found in ‘Cal-Uralic’: Mutsun mirṭe ‘man’ compares well with Mordvin *mirde ‘husband, man’, a word with hardly any Uralic counterpart that is usually considered to be from Indo-Iranian *mrta ‘mortal being’: man as opposed to gods. Another one is Salinan ṭats- ‘star, moon’, which compares well with Finno-Volgaic *tāste ‘star’. Though this has not been proposed before, it can be noted that this root, which is not pan-Uralic but is present only in the westernmost subbranches, does not have any comparanda in Siberian languages and bears a quite uncanny similarity with PIE *H₂ster ‘star’. Another instance is Esselen tomani ‘night’, quite close to PIE *tem- ‘dark’, from which Latin tenebrae is derived. These words suggest that ‘Cal-Uralic’ cannot have come to its Californian location at a very ancient dating. At most ‘Cal-Uralic’ may be 4,000 years old. And its recent intrusion in North America would explain both its location along the coast, its apparent lexical closeness with westernmost subbranches of Uralic: Volgaic, Permic and Balto-Finnic, and its more distant relationship with Yukaghir and Mongolian. Quite paradoxically, ‘Cal-Uralic’ best resembles the languages located at the greatest distance across Northern Eurasia.

3. Presentation of Costanoan

This group of languages derives its name from Spanish costa ‘coast’ and costano ‘coast-dweller’. As their name indicates, these Amerindian languages used to be spoken in a rather limited swath of coastal land from San Francisco Bay at the North extending toward the south to Monterey Bay. It is unclear whether Costanoan should be divided into dialects or languages, and then how many of them. Milliken et al. (2009:1) considered six languages. This issue is anyway mostly irrelevant for the present discussion as what matters is the lexical data that have been collected from informants. The problem is rather that Costanoan has more often than not been poorly
and approximatively recorded, and that more or less extensive and reliable data exist only for a subset of languages. A historiographical overview of this family can be found in Golla (2011:162-168). Attested varieties from north to south are:

- Karkin, usually considered a significantly divergent variety of Costanoan
- Tamyen (exemplified by Santa Clara), Chochenyo, Ramaytush, allegedly very close dialects
- Awaswas (exemplified by Santa Cruz, Costanoan I, II)
- Chalon (exemplified by Soledad)
- Mutsun, one of the languages with the most extensive description
- Rumsen (exemplified by Rumsen, Costanoan I, IV, NN)

Apart from the controversial Hokan hypothesis, it has been defended and documented that Costanoan was to be integrated with Miwok into a larger group, called Utian, and then further up into an even bigger phylum: Penutian. This proposal is mentioned by Golla (2011:168): “Utian is the term coined by Catherine Callaghan, and adopted by most other researchers, to label a classificatory unit within Penutian consisting of the Miwok and Costanoan families. The validity of this classification is supported by numerous cognates [sic] showing regular correspondences.”¹ The closeness of the relationship between Costanoan and Miwok is intuitively described by Callaghan as similar to that between Romance and Germanic (A personal communication of Callaghan mentioned in Milliken et al).

Quite obviously it is not possible to propose a novel relationship for Costanoan with Uralic without an adequate discussion of the existing Utian hypothesis at the same time. For the sake of clarity and neutrality in the discussion, words that have been proposed by Callaghan to be cognates between Miwok and Costanoan will be

¹ See papers by Callaghan, 1997 and 2001.
called Utianisms and words that I propose below to be cognates between Costanoan and Uralic will be called Uralisms. So the issue is basically to determine whether Utianisms are acceptable, whether Uralisms are acceptable and whether both can be simultaneously acceptable, and what the status and relevance of Utianisms and Uralisms are.

I have deliberately refrained from hammering the word ‘cognate’ in each and every sentence. I assume the reader will implicitly understand that from my point of view the real and deep cognates are Uralisms and that on the contrary Utianisms are either loanwords or unacceptable comparanda. This being said, it must be emphasized that I do not deny that a good number of Utianisms exhibit perfectly regular patterns and that they provide conclusive etymologies for some Costanoan lexemes. From my point of view, they are nevertheless loanwords resulting from areal contacts. Loanwords from French and Latin into the English language provide a nice parallel to the status of Utianisms in Costanoan.

The crucial and definitive point is that a given word is either a Utianism or a Uralism, never both at the same time. What connects Costanoan with Uralic is precisely lacking in Miwok. In theory, one may imagine that a number of lexemes could be simultaneously Utianisms and Uralisms. This would then suggest that the three groups are potentially genetically related and could form a valid node. But the present situation is that Utianisms do not seem to have any retrievable comparanda in Uralic. At this point, Costanoan cannot be proved to be simultaneously related to Miwok and Uralic. In other words, and to jump to the conclusion, Costanoan is genetically related to Uralic and also contains a number of loanwords from Miwok, which quite logically are less ancient than the cognates with Uralic, as shown below by some sound changes undergone by Uralisms and Utianisms.
A typical feature of Costanoan is a kind of Satem law, which changed \(*q\) into \(k\) and \(*k\) into \(ś\). This isogloss separates Costanoan from the other ‘Cal-Uralic’ languages. The contrast between \(*q\) and \(*k\) is not reconstructed for Proto-Uralic, but still exists in Yukaghir and Mongolian, at least with back vowels.

4. Esselen

Esselen, or Huelel, used to be spoken on the Central Coast of California, south of Monterey and of Costanoan. It may have been the first language of California to become extinct. Very little information on this language has survived. We know about 110 words of Esselen and have but a few lines written in the language. Considering how scanty our knowledge is, genetic assignment can only remain somewhat speculative. There are nevertheless quite clear indications that Esselen is related to its immediate neighbors: Costanoan and Salinan, and to Uralic.

5. Salinan

Salinan was another indigenous language spoken along the central coast of California. It has been extinct since the death of the last speaker in 1958. The principal published documentation on Salinan is Mason (1918). A more recent grammatical study, based on Mason's data and on the field notes of John Peabody Harrington and William H. Jacobsen, is Turner (1987), which also contains a complete bibliography of the primary sources and discussion of their orthography. Two dialects are recognized, Antoniaño and Migueleño, associated with the missions of San Antonio and San Miguel.

Among the languages surveyed in the paper, Salinan is at the same time the best described and the one with the clearest morphological similarities with Uralic, as will appear in other papers.
6. Chimariko

Chimariko is an extinct language isolate formerly spoken in northern Trinity County, California, by the inhabitants of several independent communities. Roland Dixon worked on the Chimariko language in the early 1900s, when there were few remaining speakers. Later, extensive documentation on the language was carried out by J.P. Harrington, who worked with Sally Noble, the last speaker of the language. Chimariko is the northernmost language involved in the paper and is not contiguous to the others. Dixon (1910:306) states that “the language of the Chimariko shows in general greater similarities both formal and lexical, to the Shasta than to either the Hupa or the Wintun. These similarities, which are discussed in the linguistic portion of the paper, in fact are so numerous as to make it seem most likely that the two languages are genetically related.”

Dixon (1910:337–38) lists a number of words that appear to be shared by Chimariko and Shasta. None of them are Uralic, so they are probably loanwords from Shasta, resulting from the close contact described by Dixon. Shasta itself appears to be as little Uralic as is possible.

Chimariko is conspicuous for preserving the contrast between *q and *k, though *q is sometimes spirantized as x, and the contrast between two affricates *ts and *tś. Chimariko also appears to be more conservative of vowel length than the other languages were.

7. The controversial Hokan-Coahuiltecan hypothesis

The present proposal to group Costanoan, Esselen, Chimariko and Salinan in the same family is not new. The last three have been proposed to be part of the so-called Hokan-Coahuiltecan hypothesis with a number of other languages, with Costanoan being optionally Penutian. So it would seem that my approach is, so to speak,
reinventing Hokan from the outside using Uralic as a touchstone and a sieve, instead of building it on an Amerindian basis alone, but this is not the case.

Judging from the words listed in Greenberg (1987:131–42) and presented as Hokan “cognates”, or in other works like those by Margaret Langdon on Pomo or Yuman and Hokan in general, the general assessment is that the perimeter of Hokan-Coahuiltecan includes a hodge-podge of languages with no valid genetic connections. If representative of something that still has to be properly defined, nearly all these comparanda appear un-Uralic, and if Hokan-Coahuiltecan makes sense with, for example Pomo and Yuman as its core members as per Langdon, then Costanoan, Esselen, Chimariko and Salinan are to be removed from that group.

For example the stem *tāw- ‘lung’ is typical of Uralic and is sometimes suffixed with -l: Finnish tävy, Estonian tävi ‘lung’ but Mokša tevlal ‘lung’. A similar pattern is found in ‘Cal-Uralic’: Costanoan Santa Cruz tawe ‘lung’ but Salinan tohol ‘lung’. Yukaghir *lonlo ‘lung’ is a potential cognate if a change or an assimilation *tonlo > *lonlo is accepted. I cannot but believe that Costanoan and Salinan words are cognates of such a semantically precise and isolated Uralic word as *tāw- ‘lung’, plus a suffixal formative l, which appears in plenty of other ‘West-Siberian’ words. If these are not cognates, then what is? They are built using the same stem and the same optional formative. If the names and locations of the languages are removed, no Uralicist would doubt these words are from some Finno-Volgaic-looking language. Furthermore it can be noted that Hungarian tűdő, Samoyedic Tavdi t’ienda with suffix *-nt-, Samoyedic Nenets t’wāk with suffix k and Selqup tyymäktä with suffix mäktä have other formatives than the one shared by Western Uralic and ‘Cal-Uralic’. If these words were not inherited, then who transmitted the Balto-Finnic form to Costanoan and the Mokšan form to Salinan? This set of words is clearly representative of the
kind of semantic, phonetic and morphological “chance coincidences” that only appear in cognates.

In sharp contrast is a sample of words for ‘lung’ in ‘Cal-Uralic’ neighbors: Central Miwok poškaly-, Yokuts comot, Wintun kos(o)l, Central Pomo cōt, Shasta yaxaxa’. Here are the words for ‘lung’ in three so-called Hokan languages, to which ‘Cal-Uralic’ is supposed to be related: Seri askt, Tequistlateco alwofis, Yaqui hemaha’acim. This sample underlines the unusual congruence of Costanoan Santa Cruz tawe and Salinan tohol with Finnish tävy, Estonian tävi and Mokša tevlal: all meaning ‘lung’. This unusual congruence is recurrent in plenty of other morphemes and words: body-parts, kinship words, natural phenomena, fauna, floral, verbs, suffixal formatives, case-markers, tense-markers, etc. At the same time, this sample underlines the complete dysfunction of the Hokan and Penutian lumps. Pomo cōt and Yokuts comot may be related and derived from *comot, with syllabic contraction in Pomo (*comot > nazalized *cōõt > denasalized, but still long cōt), but they are not supposed to be related according to current “classifications” as per Greenberg or Ruhlen... Pomo cōt is supposedly Hokan while Yokuts comot is supposedly Penutian. Similarly, Costanoan Santa Cruz tawe is Penutian, but Salinan tohol is Hokan. Are we entitled to speak about a huge mess concerning these genetic assignments?

8. Some methodological prolegomena

Before more comparanda are introduced, it is necessary to restate what a sound correspondence is and how cognates should be distinguished from look-alikes or loanwords.

At first glance it would seem that the Uralic word for ‘heart’: *šūde(me) (UEW477), as exemplified by Mordvin *šedi or Finnish syyd- [sy:d], is very similar to a number of Costanoan lexemes for ‘heart’, ‘liver’ or ‘intestine’: Mutsun sire
‘heart, mind’ (Mason 1916:431), Costanoan III sire ‘heart’ (Heizer 1952:10), Costanoan II, III sire ‘liver’ (Heizer 1952:10), Costanoan IV sirre ‘intestines’ (Heizer 1952:10), Soledad side ‘liver’, Rumsen sire ‘heart’, siri ‘liver’, Santa Cruz sire ‘liver’ (Heizer 1955:162). Note that Mordvin *śedi definitely looks like Soledad side. One might conclude that these words are potential cognates.

In my opinion, the relationship of these words is far from acceptable as it can be shown from other words that, as a rule, Uralic *śőde should be reflected in Mutsun as unattested **suṭe, not as sire. For example: Uralic *od(a)- ‘to sleep’ (UEW334-35) ~ Mutsun ete-n ‘to sleep’ (Mason 1916:442), Uralic *adj-2 ‘to make a bed (on the ground)’ (UEW2) ~ Mutsun eṭs ‘bed’ (Mason 1916:433), Uralic *wudje ‘new’ (UEW587) ~ Mutsun ḳtās, ḳtās ‘new’ (Mason 1916:461). As a rule, the Uralic proto-phoneme *d is reflected in Mutsun by the typically Californian phone written ḷ. For that matter, the relationship between Mordvin *śedi and Soledad side, however convincing it may look, is to be rejected. From a phonetic point of view, Costanoan words compare better with Saami *čirme ‘kidney’ and *čiidme ‘intestines’ (UEW472-73), which unfortunately have very few representatives in other Uralic languages. It would therefore appear that Costanoan words are based on several proto-forms, which in all cases are not the same as PU *śūde, but were closer to *śire and *śide, as attested in Saami.

It can be further noted that this set of Costanoan words is listed by Callaghan as Utianisms and compared with Miwok *kylla, *kulla ‘liver’. This proposal is dubious. To begin with, it cannot explain the form: Soledad side. Now it could be argued that this form is unrelated or has been improperly recorded, but this kind of objection looks too much like ad-hoc tailoring of data. The next point is that there is no

\[^2\] indicates either a yod or palatalization.
indication that a geminate *ll would ever become *r, or maybe *rr, in Costanoan. The
Uralism: Costanoan *qullul-is ‘elbow’ ~ Vogul *konlowl ‘elbow’ shows that *ll < *nl
is stable. Or else Mutsun *mumullalluk ‘butterfly’ ~ Uralic Mokša *melaw, (dial.)
*mo*melu ‘butterfly’. The alleged change *l(l) > *r is not supported. In other words,
the Utianism Miwok *kylla, *kulla ‘liver’ ~ Costanoan *sire, *side ‘liver’ is most
probably an illusion and cannot be accepted.

That being said, it is true that acceptable Utianisms like Miwok *huk ‘nose’ ~
Costanoan *hus ‘nose’, indicate that Costanoan must have undergone a change *k >
*s at some point in the past. Another item: Miwok *kyt, *kut ‘tooth’ ~ Costanoan *sit
‘tooth’ is much less clear as Costanoan can be compared with Mongolian *sidü
‘tooth’ and is not an obvious loanword. To be more precise Utianisms involving the
guttural stop *k have two different reflexes in Costanoan: *k₁ > *k and *k₂ > *s. The
conditioning factor identified by Callaghan for *k₂ > *s is a neighboring high vowel
*i/y/u. There is therefore no need to distinguish two proto-phonemes as a
complementary distribution can be evidenced. Incidentally, it can be noted that
Costanoan forms like kullulis ‘gloss’ still exist and have not undergone this change:
*ku > *su, though they apparently contain a high vowel. So we are faced here with a
kind of contradiction. As will be described below, Uralisms require two guttural
phonemes that can be noted *q and *k, implicitly suggesting that they stand for uvular
and velar stops. Comparanda listed below indicate that these two proto-phonemes *q
and *k fused in Uralic languages: traditional PU reconstructions uniformly have *k.
Mongolian also supports a distinction between two stops: *q and *k. The reflexes of
these stops in Costanoan Uralisms are *q > *k and *k > *s, a palatal sibilant written <x>
in sources.\(^5\) Two waves of palatalization occurred with different results: inherited \(*k\) became \(\acute{s}\), in all contexts, but borrowed \(*k\) from Miwok was palatalized into \(s\), only when close to a high vowel \(*i/y/u\).

The overall situation can be explained if we hypothesize the following sequence of changes:

- Uralism \(*q\) is maintained as \(*q\)
- Uralism \(*k\) is palatalized into \(*\acute{s}\), whatever the neighboring vowel was
- Utianism \(*k\) (from Miwok) is introduced but remains a different phoneme from
  - Uralism \(*q\)
- Utianism \(*k\) (from Miwok) is later palatalized into \(*s\), in contact with high vowels
- Utianism \(*k\) (when not in contact with high vowels) and Uralism \(*q\) merge into \(*k\)

Another example is the word for ‘eye’: Mutsun \(\acute{s}i n\) ‘eye’ (Mason 1916:432), Costanoan II, IV \(\acute{s}i n\) ‘eyes’ (Heizer 1952:9), Rumsen, Santa Cruz \(h i n\) ‘eye’ (Heizer 1955:174). It is tempting to compare Costanoan words with Uralic \(*\acute{s}i l m e\) ‘eye’ (UEW479) and especially with Permic \(*\acute{s}i n\) ‘eye’, where the cluster \(l m\) fused to become \(n\). But this is not an acceptable Uralism because as a rule PU sibilants \(*s\) and \(*\acute{s}\) are reflected in Costanoan uniformly by \(*s\) whereas this word has \(*\acute{s}\). Callaghan has proposed to compare Costanoan \(*\acute{s}i n\) ‘eye’ with Miwok \(*\acute{s}y n t y\) ‘eye’.

This is an interesting proposal though the extra syllable of Miwok \(*\acute{s}y n t y\) ‘eye’ is an issue. Callaghan mentions the word \(\acute{s}i n te \acute{\text{\text{\text{-}}}s t e}\) ‘big-faced’ but nothing proves that \(*\acute{s}i n\) ‘eye’ is a shortened form of \(*\acute{s}i n t e\). In fact, such a form as \(*\acute{s}i n t e\) would probably

\(^5\) As far as is possible, original graphies have been retained but the pair \(<c, x>\) is standardized as \(<\acute{s}, \acute{s}>\).
become *štite according to the replacement of clusters by geminates, which seems to be a highly frequent feature of Costanoan. Unless Miwok *šynty ‘eye’ can be adequately parsed and explained within Miwok, this is not an acceptable Utianism. It appears that the word Costanoan *simpur, *sinpur ‘eyebrow, eyelash’ is a compound involving *sim, quite probably a Uralism in relationship with *šilme ‘eye’. Logically *simme would be expected in Costanoan to mean ‘eye’, but this word is not attested.

As a rule, sound correspondences are rather straightforward for consonants because, more often than not, they are identical rather than corresponding. A major exception is *k > *š in Costanoan. Another is the weak consonants: h, γ, w, j which often mute out in both groups. It can be noted that Costanoan shows a pervading tendency to replace clusters with geminates. Another tendency is the elimination of palatalization in Costanoan, and more generally in Esselen, Chimariko and Salinan. Correspondences for vowels in Uralisms are trickier because a really satisfactory reconstruction of Proto-Uralic vowels has not been achieved yet, in spite of several attempts in that direction. The PU vowels as exemplified by the UEW or other reconstructions should not be given more importance than they deserve. In addition, vowel harmony in ‘Cal-Uralic’ tend to level the vocalism of the words.

It can also be noted that false cognates also exist in the corpus: for example Salinan ts’ep ‘good, well’ looks like a potential comparandum for Mokša tseber ‘beautiful, good’ or Hungarian szép ‘beautiful’. This is a loanword of Turkic origin. Mokša tseber is most probably from Tatar čibar and in all cases inherited words in Mokša cannot begin with affricates like ts or č. I am not aware of a received etymology for Hungarian szép. It is likely from a similar Turkic source. Apparently Miwok cannot be the source of that word in Salinan, nor does Miwok look Turkic.
This suggests Salinan might have been in contact with some kind of Turkic language in the past, either in Eurasia or in the Americas.

9. Preliminary list of reconstructed forms

Many words shared by Uralic languages and any of Costanoan, Esselen, Chimariko or Salinan usually have comparanda in Yukaghir or Mongolian as well. But it can be noted that a number of words do not have such counterparts in Yukaghir or Mongolian. What is more, many words with no counterparts in Yukaghir or Mongolian have comparanda only in the westernmost branches of Uralic: Finno-Volgaic or Finno-Permic or Volgaic.

<table>
<thead>
<tr>
<th>Word</th>
<th>Reconstructed Form</th>
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<tbody>
<tr>
<td>anger</td>
<td>*kāš in Costanoan, Volgaic</td>
</tr>
<tr>
<td>arm</td>
<td>*kāni in Costanoan, Uralic</td>
</tr>
<tr>
<td>arrow</td>
<td>*pūk-sā in Chimariko, Uralic (+Yukaghir)</td>
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<tr>
<td>bed</td>
<td>*(h)ādj-s- in Costanoan, Salinan, Chimariko, Uralic (+Yukaghir)</td>
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<tr>
<td>belly</td>
<td>*piqā in Costanoan, Salinan, Chimariko, Uralic</td>
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<tr>
<td>belly, loin</td>
<td>*humt- in Costanoan, Uralic (+Mongolian)</td>
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<tr>
<td>berry</td>
<td>(?) *pīši in Costanoan, Salinan, Uralic</td>
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<tr>
<td>to bite</td>
<td>*qāč- in Costanoan, Uralic</td>
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<tr>
<td>bitter, rotten</td>
<td>*qąq- in Costanoan, Uralic (+Yukaghir, Mongolian)</td>
</tr>
<tr>
<td>boil</td>
<td>*kūHpā in Costanoan, Uralic</td>
</tr>
<tr>
<td>bow</td>
<td>*nāhū- Costanoan, Esselen, Uralic (+Yukaghir, Mongolian)</td>
</tr>
<tr>
<td>bride</td>
<td>*bōr- in Costanoan, Uralic (+Mongolian)</td>
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<tr>
<td>to bring, give</td>
<td>*tōye- in Esselen, Uralic (+Yukaghir, Mongolian)</td>
</tr>
<tr>
<td>to chew</td>
<td>(?) *śiṿādż- in Costanoan, Uralic (+Mongolian)</td>
</tr>
<tr>
<td>cloud</td>
<td>*pāwī- in Costanoan, Salinan, Chimariko, Uralic (+Mongolian)</td>
</tr>
<tr>
<td>to come, enter</td>
<td>*sāy- in Costanoan, Finno-Permic (+Yukaghir)</td>
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<tr>
<td>crane</td>
<td>*qaraq ‘crane’ in Uralic (+Mongolian)</td>
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<tr>
<td>day, sun</td>
<td>*āši in Costanoan, Salinan, Esselen, Chimariko, Volgaic</td>
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<tr>
<td>to die</td>
<td>*qūy-vl- in Costanoan, Uralic (+Yukaghir)</td>
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<tr>
<td>to do</td>
<td>*tiH- in Salinan, Uralic</td>
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<tr>
<td>to drink</td>
<td>*lōḤw-, and *lōḤ-pa ‘wet’ in Chimariko, Uralic (+Yukaghir)</td>
</tr>
<tr>
<td></td>
<td>*juH-q- in Costanoan, Uralic (+Mongolian)</td>
</tr>
<tr>
<td>earth</td>
<td>*āmā-, *(a)maγ- in Chimariko, Uralic (+Mongolian)</td>
</tr>
<tr>
<td>eye</td>
<td>*(a)muda in Esselen, Finno-Volgaic</td>
</tr>
<tr>
<td></td>
<td>*śilm(a) in Costanoan, Uralic</td>
</tr>
</tbody>
</table>
to eat *(h)ūmmā- in Costanoan, Salinan, Chimariko, Uralic (+Yukaghir, Mongolian)
*jār’hd-sā- in Costanoan, Volgaic
(?) *(fy-)ām- in Salinan, Uralic (+Yukaghir, Mongolian)
father *hāje in Esselen, Uralic (+Yukaghir)
*āpā in Costanoan, Uralic
*ītše in Chimariko, Uralic (+Yukaghir, Mongolian)
feather *tiw- in Costanoan (+Yukaghir)
to fill, thick *(appable- in Salinan, Chimariko, Uralic (+Yukaghir, Mongolian)
full *tāw- in Costanoan, Uralic (+Yukaghir)
to give *(āmī- *(a)mīy- in Costanoan, Salinan, Uralic (+Yukaghir)
to go, walk *qāw- in Costanoan, Salinan, Uralic (+Yukaghir, Mongolian)
to go (fast) *mīn- in Salinan, Chimariko, Esselen, Uralic (+Yukaghir, Mongolian)
to go (away) *kiHi- in Costanoan, Salinan, Uralic (+Yukaghir)
goose *qalaq- in Costanoan, Salinan (+Mongolian)
to grow (old) (?) *jār- in Costanoan, Chimariko, Uralic
hand, palm *kā-t- in Costanoan, Uralic
heart, organ *ţire in Costanoan, Uralic (+Mongolian)
hill *dōm(p)- in Costanoan, Salinan, Ugric (+Mongolian)
(sweat)house *mātte- in Salinan, Uralic (+Mongolian)
husband *māqū- in Costanoan (+Yukaghir)
kidney, testicle *bōy- in Salinan (+Mongolian)
to kill *ōgu- in Chimariko (+Yukaghir, Mongolian)
large *īc- in Costanoan, Salinan, Uralic (+Mongolian)
lip *tūprā in Costanoan, Uralic
long, distant *(ku)-’a(u)-ka in Salinan, Uralic (+Mongolian)
long ago *kū in Costanoan, Uralic
louse, flea *dāje- in Salinan, Uralic
lung *(tāwe < (?) *tayu- in Costanoan, Salinan, Uralic
man *mīrdje in Costanoan, Volga (possibly from Indo-Iranian)
*koje in Salinan, Uralic
marten *qād-pa in Chimariko, Uralic
mist, dew *piča in Costanoan, Uralic
mother *ānjā in Costanoan, Salinan, Uralic
mother-in-law *nis in Costanoan, Uralic
mouth *hāngi in Costanoan, Chimariko, Uralic (+Yukaghir)
mud, clay *liwa in Costanoan, Salinan, Chimariko, Uralic (+Yukaghir, Mongolian)
new, young *wīd- in Costanoan, Uralic (+Mongolian)
now *tjā-n-, Chimariko, Uralic (+Yukaghir)
old, elderly *īm- in Costanoan, Chimariko, Uralic (+Mongolian)
to peel *kāmo in Costanoan, Uralic
quail, pheasant *(qīm- in Salinan (+Mongolian)
raven *(qaHr in Costanoan, Uralic (+Yukaghir, Mongolian)
to remember *(māl- in Salinan, Uralic
*īnū- in Costanoan (+Yukaghir)
to say *(ăz- (profane) in Costanoan, Salinan, Uralic (+Mongolian)
*ăl- (religious) in Costanoan, Salinan, Esselen, Uralic (+Yukaghir)
seed *wīt- in Costanoan, Volgaic
shaft, arrow *džâ' in Salinan, Chimariko, Uralic (+Yukaghir, Mongolian)
shoe *kōwi in Costanoan, Uralic
sister-in-law (?) *kīHa- in Salinan, Uralic (+Yukaghir)
skin *kaj in Costanoan, Finno-Ugric
(to skin, skin) *pōh(n)ča- ‘(animal) skin’ in Salinan, Uralic
to skin, skin *āšūgā in Costanoan, Salinan, Uralic (+Mongolian)
sky *ālima- in Esselen, Salinan, Uralic
to sleep, *ūd- in Costanoan, Uralic (+Mongolian)
to speak *kāhī in Costanoan, Uralic (+Mongolian)
*mnop- Costanoan, Uralic (+Yukaghir)
star *dāšt- or *dāš in Salinan, Finno-Volgaic (possibly Indo-European)
to shoot (arrow) *pāq- in Salinan, Esselen, Uralic (+Yukaghir),
sun *nap in Salinan, Hungarian (+Mongolian)
to swim *xiį'- in Costanoan, Chimariko, Uralic (+Yukaghir, Mongolian)
thirst, drunken *iį'-, *iį-m- in Costanoan, Uralic (+Yukaghir, Mongolian)
three *gūlm-, *gūlapa in Costanoan, Salinan, Esselen, Uralic (+Mongolian)
throat *kōrq- in Costanoan, Uralic
tongue (?) *iįhān in Chimariko, Uralic (+Yukaghir)
*kāhīl- in Uralic (+Mongolian)
tooth *sītū- in Costanoan (+Mongolian)
*sal'yq- ‘tooth, incisive’ in Salinan, Uralic (+Yukaghir)
*āyur- ‘molar’ in Costanoan, Esselen, Uralic (+Yukaghir, Mongolian)
two *qāq- in Salinan, Chimariko, Esselen, Uralic
*ikī- in Uralic (+Yukaghir, Mongolian)
water, saliva *siyū- in Costanoan, Chimariko, Uralic (+Yukaghir, Mongolian)
who *ki- in Esselen, Uralic (+Yukaghir, Mongolian)
wind (?) *wālma in Costanoan, Volgaic
yellow (?) *čū, *čaw in Costanoan, Salinan, Volgaic

10. Comparanda and data

Comparanda with a short vowel ā :

*(h)āadj-s- ‘bed’
- Mutsun ets ‘bed’ (Mason 1916:433), Rumsen ets, Santa Clara ettanin ‘bed’ (Heizer 1955:162), cf. *eden ‘to sleep’ with e which may play a role in the vowel being e instead of expected a.\(^6\)
- Salinan īsēmet ‘bed’, tsata ‘blanket’,
- Chimariko hatšiinar-utsa\(^7\) ‘bed’, tšiša ‘blanket’,
- Uralic *adj- ‘to make a bed (on the ground)’ (UEW2), Mokša atsam ‘bed’, atsama- ‘to lay out, spread’,

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\(^6\) Callaghan proposed to compare these words with Miwok *e:čy- ‘to sleep’. This is in my opinion a false Utianism.
\(^7\) -utsa is an instrumental suffix in Chimariko.
Comment: It is not unusual that initial vowels are lost in that group. Further comparanda: Yukaghir *amdi- ‘to spread under, lay under, prepare’, *amdiye ‘bedding’ (Nikolajeva 2006:102), with a metathesis in Yukaghir.

*āγur- ‘molar, tooth’
- (?) Mutsun raras ‘molar tooth’ (Mason 1916:431), Cf. tutper ‘lip’ < *turpa with a similar reduplicated initial,
- Esselen awur ‘teeth’ (Shaul appendix A),
- Uralic Mokša jur-bej ‘molar’, a compound with pej ‘tooth’,

*āl- ‘to pronounce (often in religious or magical context)’
- (?) Mutsun lole ‘to cause to speak’ (Mason 1916:450),
- Esselen alpa ‘to speak’ (Shaul appendix A),
- Salinan alsāL ‘to pray’, (?) āle’l- ‘to ask, inquire’,
- Uralic *al- ‘speech-act stem: to promise, curse, bless’ (UEW7), Mokša aldord-‘to chat’,
Comment: Further comparanda: (?) Yukaghir *aol- ‘to order’ (Nikolajeva 2006:100).

*āmā-, *(a)maγa-, *(a)muda ‘earth’
- (?) Mutsun mūn ‘earth, dirt’ (Mason 1916:435),
- Esselen mata ‘earth’ (Shaul appendix A),
- Chimariko ama ‘earth’,
- Uralic *maγa- ‘earth, land’ (UEW263–64), Finno-Volgaic *muda ‘earth’ (IEW705),
Comment: Further comparanda: (?) Mongolian *mara ‘salty earth’.

*āmī-, *(a)mīγ- ‘to give’
- Mutsun ami- ‘to give, bring, carry’ (Mason 1916:441),
- (?) Salinan mak- ‘to give’ (Mason 1918:143),
- Uralic *(a)mīγ- ‘to give, sell’ (UEW275),

*(h)āmmā- ‘to eat’ (quite possibly a babytalk word)
- Mutsun ama- ‘to eat’ (Mason 1916:441), Costanoan II hammai8, Costanoan III ammai ‘to eat’ (Heizer 1952:25), Costanoan II (yemak) ammani ‘(time to) eat’, i.e. ‘noon’ (Heizer 1952:14), *ama(n) ‘food’ (Heizer 1952:163),
- Salinan ama ‘to eat, such gruel’,
- Chimariko ama, ma ‘to eat’, hāmeu ‘food’9, ame-mtu ‘to be hungry’10, Uralic Mokša ama- ‘to eat’, and- ‘to feed’ < PU *amt- (UEW8),11
Comment: Can be criticized as phonosymbolic but the root is far from being Pan-Amerindian. Further comparanda: Mongolian *ama- ‘to taste’, Yukaghir

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8 This form has an initial h but not the other form (yemak) ammani. It is unclear whether h should be taken into account in the reconstruction.
9 From the Uralic point of view this looks like a past participle: Mokša ama-f ‘eaten’ < PU *ama-w.
10 From the Uralic point of view this looks like an infinitive: Mokša ama-mda < *ama-mto.
11 UEW8 does not list Mokša ama- and mixes up items for ‘to feed’ and ‘to give’.

*ānjā ‘mother’
- Mutsun ana ‘mother’ (Mason 1916:437),
- Salinan anewu ‘grandmother’,
- Uralic *anju ‘mother’ (UEW10),
Comment: In Uralic this root is used for a large array of words for ‘elder female relatives’. Further comparanda: (?) Yukaghir *enje ‘mother’ (Nikolajeva 2006:161).

*āpā‘āl-, *āpā- ‘to fill, thick’
- (?) Chimariko pepe’in ‘thick’,
- Salinan apel-, epel- ‘to fill’,
- Uralic *pal- ‘many, thick’ (IEW350–51),

*āppā ‘father’
- Mutsun apa ‘father’ (Mason 1916:437), Rumsen appan ‘padre’ (NN 1802:172),
- Uralic *appa ‘father-in-law’ (UEW14),

*āši ‘day, sun’
- Mutsun ismen ‘sun’ (Mason 1916:435), with *menj- ‘sky’ (UEW276),
- (?) Salinan ts’ewuni’, ts’anone’ ‘light of day’ (Mason 1918:133),
- Esselen asī ‘sun’ (Shaul appendix A),
- Chimariko asi, asse ‘(to)day’,
- Uralic Mordvin *ši ‘sun’, *te-či ‘today’ [lit. ‘this day’],
Comment: Mutsen may be a compound involving with *menj- ‘sky’ (UEW276), and Salinan may involve *num- ‘above’ (UEW308).

*āšūgā ‘skin’
- Mutsun swiše ‘to skin, take off hide’ (Mason 1916:452),
- (?) Salinan axwem ‘skin, hide’,
- Uralic ≈šuka ‘skin’ (UEW488), Ugric *šoγ- ‘skin, hide’,
Comment: Further comparanda: Mongolian *šaral- ‘to peel, skin’.

*āz- ‘to say’
- *asier- > esier-: Mutsen esier- ‘to say’ (Mason 1916:442),
- (?) Salinan sā ‘to speak’, se ‘to tell’, (?) āse ‘name, call’,
- Uralic Mokša az- ‘to narrate, say’, Ugric *saw- ‘word, speech’ (UEW885–86),
Comment: Further comparanda: Mongolian *ayi- (if < *azı) ‘to speak aloud, recite’.

*džā- ‘shaft, arrow’
- Chimariko sa’a- ‘arrow’,
- Salinan tse’-uto ‘arrow-point’, a compound: Cf. Mutsen utis ‘arrow-point’\(^{12}\),

\(^{12}\) This stem seems to be from Miwok: Cf. Central Miwok hotto ‘arrow-head’. 

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*hāqi 'mouth'
- Mutsun šai 'mouth' (Mason 1916:442), Soledad hai, Rumsen haik 'mouth' (Heizer 1955:160), Costanoan IV šai 'mouth' (Heizer 1952:9),
- Chimariko hawa 'mouth',
- Uralic *age 'mouth' (UEW11–12), Hungarian ajak 'lip',
Comment: Further comparanda: Yukaghir *aja 'mouth' (Nikolajeva 2006:106), (?) Mongolian *angai- 'to open'.

(?) *jär- 'to grow (old)'
- Mutsun yer 'to grow old' (Mason 1916:447),
- Chimariko irti- 'to grow', itridusku 'old maid',
- Uralic *er 'old, big, much' (UEW75), Hungarian öreg 'old',
Comment: Further comparanda: (?) Mongolian urgu- 'to grow'.

*jārHdsā- 'to eat'
- *jārHdsā- > *erdse > *erdse-: Mutsun ertime-, ertime- 'to eat supper' (Mason 1916:442),
- Uralic Mokša jarxtsa- 'to eat (generic)', isolated word, Comment: No comparanda in Mongolian or Yukaghir.

*kāhī ‘to speak, sound’
- Mutsun šahie 'voice' (Mason 1916:432),
- (?) Salinan k'ok'olše 'to converse, speak', if k' is the merger of *kH,
- (?) Chimariko kō, koko 'to talk, call',
- Uralic *kaj-k 'sound' (UEW643), also *kehle 'tongue, language' (UEW144–45),
Comment: Further comparanda: Mongolian *kele 'to say, tongue, language' < (?) kahil.

*kālj ‘skin’
- Mutsun šelien 'skin' (Mason 1916:432),
- Uralic Finno-Ugric *kaljwe 'thin skin' (UEW121),
Comment: meager data. The phoneme ĝ is usually considered a Finno-Ugric innovation. Cannot be compared with Mongolian *qalisk 'skin, shell' because of the initial *q.

*kāmo ‘to peel’
- Mutsun šomo 'to skin, take off hide' (Mason 1916:454),
- Uralic *kama 'to peel, crust' (UEW121–22),
Comment: Further comparanda: Yukaghir *gompi- 'fur-coat' (Nikolajeva 2006:385), *qar, *qajr- 'skin' (Nikolajeva 2006:379–80), and Mongolian...
*qaγul- ‘to peel’ seem to reflect another root *qaγ-: Uralic *kærnä ‘bark, crust’ (IEW138–39).

*kär- ‘to bite, chew’
- Mutsun šorko ‘to gulp, swallow’ (Mason 1916:454),
- Uralic *kar- ‘to bite’ (UEW129),

*lām- or better *liyām- ‘to eat (soup)’
- Salinan lam- ‘to eat’,
- Uralic (approximative) ≈lem- ‘soup’ (IEW245) < (?) *liyam-,

*ljāŋ- ‘goose’
- Chimariko lālo ‘goose’,
- (?) Uralic *lunta ‘goose’ (IEW254),

*(ū)mā- ‘to burn’
- Chimariko maa ‘to burn’,
- (?) Uralic: Permic *umor- ‘flame’ (IEW804),

*māγu- ‘husband’
- Mutsun maku, makas ‘husband’, mukene ‘man’ (Mason 1916:437),
- Not in Uralic,

*nāhū- ‘bow’
- (?) Mutsun lawan ‘bow’ (Mason 1916:433),
- Esselen paku-nax ‘bow’, apparently two words: arrow and bow,
- Uralic ≈njeHI ‘arrow’ (UEW37), < *nāhūl,

*nāp ‘sun’
- Salinan na? ‘sun’ (Mason 1918:133), < *nap-
- Uralic Hungarian nap ‘sun, day’,
Comment: Further comparanda: Mongolian naran ‘sun’ < (?) *napran.

*pāq- ‘to shoot (arrows)’
- Salinan paxuve ‘bow’ (Mason 1918:133),
- Esselen paku-nax ‘bow’, apparently two words: arrow and bow,
- Uralic ≈pekā ‘arrow’ (UEW369), but Vogul paxt- ‘to shoot (arrows)’,
*păwi- ‘cloud’
- Salinan pai ‘cloud’ (Mason 1918:133),
- Chimariko (h)awēdam ‘cloud’,
- Uralic звуч ‘cloud’ (UEW116), Mordvin *pejel ‘cloud’,
Comment: Further comparanda: Mongolian *eul(en) ‘cloud’.

*qāč- ‘to bite’
- Mutsun kase ‘to bite’ (Mason 1916:459),
- Uralic Finno-Permic *kačka ‘to bite’ (UEW641),
Comment: No comparanda in Mongolian or Yukaghir. Cf. *qač- ‘bitter’.

*qād-pa ‘marten’
- Chimariko qāpam ‘marten’,
- Uralic *kadwa ‘marten, hermin’ (UEW116), Lapp *gadpe ‘marten, hermin’,
Comment: No comparanda in Mongolian or Yukaghir.

*qalaq- ‘goose’, *qaraq ‘crane’,
- Mutsun lalak, lukluk ‘goose’ (Mason 1916:428),
- Salinan kalakˀ ‘goose, crane’ (Mason 1918:123),
- Uralic *kark- ‘crane’ (UEW128),

*qāq-č ‘bitter, rotten’
- Mutsun kakša, kašša ‘bitter’ (Mason 1916:465),
- Uralic kačke ‘bitter’ (UEW113),

*gāq- ‘two’
- Salinan kakšu, xakiš ‘two’ (Mason 1918:153),
- Esselen kxulax ‘two’, mixed up with kxulep ‘three’ (Shaul Appendix A),
- Chimariko găqi ‘two’, variant xoku is a loanword from Shasta xukkˀa ‘two’,
- Uralic kaka ‘two’ (UEW1118–19),
Comment: No comparanda in Mongolian or Yukaghir. Cf. *tikī-.

*gāHR ‘raven’
- Mutsun kakari ‘raven’ (Mason 1916:429),
- (?) Salinan škak’ ‘crow’,
- Uralic kvern ‘raven’ (UEW228-29), Finnish kaarne,

*sāy- ‘to come’
- *sāy-na- > *sana-: Mutsun sanae ‘to come, draw near’ (Mason 1916:451),
- Uralic: Finno-Permic *say- ‘to come, obtain’ (UEW748-49),
Comment: scarcely attested. (?) Yukaghir *čayd- ‘to come to visit’ (Nikolajeva 2006:124), or better *sey-,*söy- ‘to bring in, enter’ (Nikolajeva 2006:409).

*šālijq- ‘tooth’
- Salinan suluknai ‘tooth’ (Mason 1918:128),
- Not in Uralic, but *sal- ‘to cut’ (UEW450–51) may be the original meaning,

*tjā-n- ‘now’ < deictic tja + temporal case-marker
- (?) Mutsun šiʃen ‘now’ (Mason 1916:467), looks like *tja-ʃi-n ‘today’,
- Salinan tana ‘now’ (Mason 1918:152),
- Uralic: Mordvin *tent ‘now’ (UEW748-49),

(?)*wālma ‘wind’
- Costanoan III ualma ‘cold afternoon wind’ (Heizer 1952:15),
- Uralic Mordvin *varma ‘wind’, isolated word,14
Comment: No comparanda in Mongolian or Yukaghir.

Comparanda with a long vowel ā (< (?) *āH):

*āma- ‘to extract, remove’
- Salinan āmamp- ‘to extract, withdraw’ (Mason 1918:138),
- Uralic *āmɔɾe- ‘to scoop (out)’ (UEW25), also ama- ‘to scoop (out)’ (UEW7–8),
Comment: No comparanda in Mongolian or Yukaghir.

*dāšt- or *dāš- ‘star’
- Salinan taṯsuwan ‘stars’, taṯš̱ōpe- ‘moon’ (Mason 1918:133),
- Uralic: Finno-Volgaic *tāstā ‘star’ (UEW793),
Comment: An isolated word with no clear connections. If the word has a connection with PIE *aʃter ‘star’15, then the best reconstruction is *dāʃt-.

*hāje ‘father’
- Esselen haya ‘father’ (Shaul appendix A),
- Uralic *aʃja ‘father (also husband, grandfather)’ (UEW609),

*dāje- ‘louse, flea’
- (?) Chimariko t’amina ‘flea’,
- Salinan tājiL ‘flea’,
- Uralic *tāje ‘louse’ (UEW515),
Comment: No comparanda in Mongolian or Yukaghir. Cf. PIE *deiʃ-> English tick.

*kāʃ ‘anger’
- Mutsun šas ‘anger’ (Mason 1916:432),
- Uralic Moksha kež ‘anger’, isolated word,

14 The irregular change PU *l > Mordvin *r is also attested in the word erja ‘to live’ < PU *el-.
15 (?) with a d mobile as in *(d)akru ‘tear(s)’, hence the unattested (?) *daster.
Comment: No comparanda in Mongolian or Yukaghir.

*kāt ‘hand, palm’
- Mutsun šatta ‘palm, sole’ (Mason 1916:432),
- (?) Salinan keo ‘knuckle’ (Mason 1918:127), (?) representing the bare root
  *kā-,
- Uralic *kāte ‘hand’ (UEW140),
Comment: An isolated word with no clear connections. Uralic *käme ‘palm’ (UEW137) has another initial according to Yukaghir *qanj-pə ‘palm’ (Nikolajeva 2006:379).

*māl- ‘to remember’
- Salinan malēntax ‘to remember, think’,
- Uralic *mäi- ‘to feel’ (UEW267–68), Vot mäilehtä-, Estonian mäle(s)ta- ‘to remember’,
Comment: No comparanda in Mongolian or Yukaghir. Yukaghir *māl- ‘to surprise’ is quite different semantically (Nikolajeva 2006:257).

*mält- ‘tent, house’ < (?) *mäk-
- Chimariko matta ‘sweat-house’,
- Uralic *mált- ‘house, hut, tent’ (UEW269),
Comment: Further comparanda: Mongolian *majiqan ‘tent’.

*qāw- ‘to go, walk’
- Salinan k’onox ‘to arrive, reach’ (Mason 1918:143), k’ōL- ‘to arise, spring up’ (Mason 1918:143),
- Uralic *kāwe ‘to go’ (UEW654–55),

*tāw- ‘full’ < (?) *dayu-
- *tāwL > tāl-: Costanoan II toolon ‘full’ (Heizer 1952:32), Mutsun tolon ‘much’ (Mason 1916:440),
- (?) Salinan tēlē’pmi ‘full’,
- Uralic *tāwed- ‘full’ (UEW518),
Comment: Further comparanda: Yukaghir tū- ‘to fill, load’ (Nikolajeva 2006:437), (?) Mongolian *dūyūre ‘full, complete’, dubious as initial t would be expected.

*tāwe ‘lung’ < (?) *daju-
- Santa Cruz tawe ‘lung’ (Heizer 1955:162), (?) Costanoan II tuae ‘ribs’ (Heizer 1952:10), (?) Mutsun take ‘ribs’ (Mason 1916:432),
- Salinan tohol, tohul ‘lung, gizzard’,
- Uralic *tāwe ‘lung’ (UEW519), Mokša tevlal.
Comment: Further comparanda: (?) Yukaghir *lonlo- ‘lung’ (Nikolajeva 2006:248) with irregular initial, which may be influenced by Yukaghir *laq- ‘lungs’ (Nikolajeva 2006:235).

Comparanda with a short vowel ī:

(?) *ībān- ‘tongue’
- (?) Salinan epal, ipaL ‘tongue’ (Mason 1918:126), apparently a “Hokan” borrowing,\(^{16}\)
- Chimariko (hi-)pen ‘tongue’, pen ‘to lick’,
- (?) Uralic ːip så ‘taste, smell’ (UEW83–84), rather confused data,

\(\text{Comment: further comparanda: (?) Yukaghir *wonor ‘tongue’ (Nikolajeva 2006:458).}\)

\*ĭčē ‘father’
- Chimariko ːitšila-i ‘father’,
- Uralic \*ičä ‘father’ (UEW78),

\(\text{Comment: further comparanda: Yukaghir eče (Nikolajeva 2006:150), Mongolian *ečige ‘father’. Cf. *ič- ‘large, big’.}\)

\*ĭkī- or \*ĭqī- ‘two, twin’
- Not in Cal-Uralic,
- Uralic \*ki-kt ‘two’ (UEW118–19), a variant of \*qaq-t-

\(\text{Comment: further comparanda: Yukaghir *ki- ‘two’ (Nikolajeva 2006:209), Mongolian *ikere ‘twin’.}\)

\*ĭlima- ‘sky’
- Esselen imi ‘sky’ (Shaul appendix A),
- Salinan lema ‘sky’,
- Uralic \*il/[i]ma ‘sky, weather, God’ (IEW81–82),

\(\text{Comment: no comparanda in Yukaghir or Mongolian.}\)

(?) \*ĭnu- ‘to perceive, remember’
- Mutsun inu ‘to remember’,
- Not in Uralic,

\(\text{Comment: further comparanda: Yukaghir ŏn-me ‘mind, memory, conscience’ (Nikolajeva 2006:333).}\)

\*ĭw-ĭr-, \*ĭw-m- ‘thirst, need to drink’
- Santa Clara uvér ‘to drink’ (Heizer 1955:163), Costanoan II uēt ‘to drink’ (Heizer 1952:25),
- Uralic \*ür- ‘to drink’ (UEW85),\(^{17}\) Selqup Tym őöra- ‘to get drunk’, Uralic \*im- ‘to drink’ (UEW82–83),


\*jilā ‘sun, daylight’
- Chimariko alla, ulla ‘sun’,
- Uralic \*jelä ‘sun, daylight’ (UEW96–97),

\(\text{Comment: Further comparanda: Yukaghir *jeljöde ‘sun’ (Nikolajeva 2006:187), which may be a compound involving a cognate of Mongolian *ŭd- ‘afternoon, day’: hence Yukaghir \*jilā+ŭd-.}\)

\(^{16}\) Cf. Yuman \*hinpal, Seri apl., Tequistlateco ipaL ‘tongue’. Possibly a cognate between these languages but a probable borrowing in Salinan.

\(^{17}\) Uralic apparently underwent a syllabic contraction. This verb is often associated with alcoholic drinks and drunkenness in Uralic languages.

\(^{18}\) Nikolajeva reconstructs \*ljum- but the entry mixes several stems and meanings.
*jīsū ‘joint, limb’
- Mutsun is(s)u ‘hand’ (Mason 1916:431), Costanoan I hissa, II issu, III isu, IV is, iš ‘arm’ (Heizer 1952:10), Soleda isso ‘arm’, issu ‘hand, wrist’ (Heizer 1955:161), Rumsen is ‘hand, arm’ (Heizer 1955:161, 174), Santa Cruz issu ‘arm’, issu ‘back of hand’ (Heizer 1955:161),
- Uralic *j[jä]se ‘limb, joint’ (UEW95), Hungarian iz ‘limb’.

Comment: Further comparanda: (?) Mongolian *sige- ‘small finger’.

*kī- ‘who’
- Esselen kini ‘who’ (Shaul appendix A),
- Uralic *ki, *ke ‘who’ (UEW140–41),


*kīHā- ‘wife, sister-in-law’
- (?) Mutsun šat(una) ‘wife’ (Mason 1916:438),
- Uralic ≈kāl- ‘sister-in-law’ (UEW135–36), Erzia kijalo,


*kīHi- ‘to go (away), way’
- Mutsun šīi- ‘to go for fire’, šīne- ‘to go, walk’ (Mason 1918:453),
- Salinan ki ‘to go’ (Mason 1918:143), ki-tipa ‘to march’ (Mason 1918:143),
- Uralic Mordvin ki ‘way’, not the same as *kāwe ‘to go’ (UEW654–55),


*līwa ‘mud, earth, clay’
- Mutsun luśun ‘to be stuck in mud or clay’ (Mason 1916:450),
- Salinan loto ‘clay’ (Mason 1918:133),
- Chimariko lādido ‘mud’,
- Uralic *liwa ‘mud’ (UEW250), also ‘sand’ which may be another root,


*mīrdje ‘man’
- Mutsun mir(te), mitče ‘adult man’ (Mason 1916:437),
- Uralic Mordvin *mīrdje ‘husband’,

Comment: This word has a striking similarity with Proto-Indo-European *ṃṛtós ‘mortal being, man’. Mordvin is usually considered to be from some Indo-Iranian source *mṛta.

*mīn- ‘to go (fast)’
- Esselen neni- ‘to go’,
- Salinan mene ‘to go to bring’ (Mason 1918:144),
- (?) Chimariko mūm- ‘to run’,
- Uralic *mene- ‘to go’ (UEW272), Estonian min-, Zyrian mun-,

Comment: Further comparanda: (?) Yukaghir *menmo- ‘to jump’ (Nikolajeva 2006:266), Mongolian *meyde ‘to hurry’.

*nīs ‘mother-in-law’
- Mutsun anaaknis ‘stepmother’ (Mason 1916:437),
- Uralic anja ‘mother’ (UEW10), Erzya niz-anja ‘mother-in-law’,
Comment: No comparanda in Mongolian or Yukaghir.

(?) *pišši ‘berry’
- (?) Chimariko tšimiana ‘serviceberry’, with loss of pi-,\(^{19}\)
- (?) Salinan ts’etakiL ‘chuckberries [sic]’ (Mason 1918:130),
- Uralic *piča ‘berry, often of rowan trees’ (UEW376–78),
Comment: no comparanda in Yukaghir or Mongolian.

*piča ‘mist, dew’
- Uralic *pič ‘dew, hoarfrost’ (UEW377),
Comment: Further comparanda: (?) dubious Mongolian * sûrči- ‘to rain in small drops, sprinkle’ (?) with loss of pi-)

*piqa ‘belly’
- *piqti > *pitti: Soledad piti, Rumsen pitin ‘belly’ (Heizer 1955:161),
Costanoan II pitti ‘belly’, Costanoan IV pittus ‘belly’ (Heizer 1952:10), (?)

*piqti > *puttus: Mutsun puttus ‘belly, abdomen’ (Mason 1916:432),
- Salinan ika(n) ‘belly’ (Mason 1918:127), with loss of initial p,
- Chimariko (hi-)pxa ‘intestines’, with spirant q,
- Uralic *pikkä ‘belly’ (UEW379-80),
Comment: No comparanda in Mongolian or Yukaghir.

(?) *qim- ‘quail, pheasant’
- Salinan homlik? ‘quail’ (Mason 1918:126),
- Esselen kumul ‘quail’ (Shaul Appendix A),
- Not in Uralic,
Comment: Further comparanda: Mongolian kemerleg ‘pheasant’.

*sīyi- ‘water’, *sīyul- ‘saliva’,
- Mutsun sɨ- ‘water’ (Mason 1916:471), Costanoan I, II sɨ, III, IV sɨ ‘water’
(Heizer 1952:15), *sɨ ‘water’ (Heizer 1952:163),\(^{20}\)
- (?) Chimariko šidulla ‘spring’, possibly a compound: Cf. Komi tu(l)- ‘to surge (of water)’ (IEW532–33),
- Uralic Finno-Volgaic *šulk- ‘to spit’ (UEW479–80) < *šyulk, Ostyak *s̞øy̞- ‘to spit’,

*šilm(a) ‘eye’
- Mutsun sin-pur ‘eyebrows’ (Mason 1916:431), Costanoan IV sim-ppur
‘eyelashes, eyebrows’ (Heizer 1952:9),
- (?) Chimariko (hu)-sunsa ‘eyelashes’,

\(^{19}\) Chimariko tselina ‘gooseberry’ is less interesting because it has ts instead of tš.
\(^{20}\) Callaghan proposed a Utianism Miwok *ki:k ‘water’, but final -k is an issue.
- Uralic *šilmę ‘eye’ (UEW479), Permic *šin(m) ‘eye’,
  **Comment**: No comparanda in Yukaghir or Mongolian.

*šītu ‘tooth’
- Mutsun *sit ‘teeth’ (Mason 1916:431),
- (?) Chimariko (hu)-tsu ‘teeth’, with metathesis or more probably a loanword from Shasta,
- Not in Uralic,
  **Comment**: Further comparanda: Mongolian *sidū ‘tooth’.

(?)*šiwadž- ‘to chew’
- (?) Chimariko *šatši ‘to chew’, which represents *čači- or *dźadži- rather than *sos-,
- Uralic *soske- ‘to bite, chew’ (UEW448–49),
  **Comment**: Further comparanda: Mongolian *żażila- ‘to chew’. The words exhibit a kind of assimilation of two different s(h)ibilants. The initial can be that of Uralic *sew- ‘to eat’ (UEW440), hence a derivative *šiwadž- ‘to chew’, whence *sōs- or *dźadži-.

*tiH- ‘to do’
- Salinan *ñ- ‘to do’,
- Uralic *teke ‘to do, make’ (UEW519), Mordvin *tij-, *tej- ‘to do’,
  **Comment**: This word has a striking similarity with Proto-Indo-European *dheH₁ ‘to do’. This is maybe a chance coincidence, though no comparanda in Yukaghir or Mongolian seem to exist.

*tiw- ‘feather’
- Mutsun *tiwi ‘feather ornament’ (Mason 1916:433),
- Uralic *tu-lka ‘feather, wing’ (UEW535–36) is apparently another root,
  **Comment**: Further comparanda: Yukaghir *tiw- ‘feather, wing’ (Nikolajeva 2006:231–32).

(?) *wīt- ‘seed’
- Mutsun *ıtus ‘seed’ (Mason 1916:431),\(^{21}\)
- Uralic Mordvin *vidjme ‘seed’, isolated word,
  **Comment**: No comparanda in Yukaghir or Mongolian.

*źiře ‘heart, organ’
- Mutsun *šire ‘heart, mind’ (Mason 1916:431), Costanoan III *šire ‘heart’ (Heizer 1952:10), Costanoan II, III *šire ‘liver’ (Heizer 1952:10), Costanoan IV *širre ‘intestines’ (Heizer 1952:10), Soledad *šire ‘liver’, Rumsen *šire ‘heart’, *šir ‘liver’, Santa Cruz *šire ‘liver’ (Heizer 1955:162),
- Uralic *šerj(me) ‘kidney’ (UEW472–73), Saami *čirmi ‘kidney’, *čidmi ‘bowel’,
  **Comment**: Further comparanda: Mongolian *źirůke ‘heart’.

Comparanda with a long vowel ũ:

*tič- ‘large’

\(^{21}\) Initial *w is lost when the following vowel is *i.
- Costanoan IV *išak* ‘large’ (Heizer 1952:33), Rumsen *ishak* ‘grande’ (NN 1802:171),
- Salinan *(k)etša* ‘large, great’ (Mason 1916:149),
- Uralic *ič* ‘big’ (UEW78), Mokša *otsju* ‘big’,
  Comment: No comparanda in Yukaghir or Mongolian.

*ɪm- ‘old, elderly’
- (?) Mutsun *intesë* ‘elderly man’ (Mason 1916:437),
- (?) Salinan *ama* ‘paternal grandfather’ (Mason 1918:133),
- (?) Chimariko *amālula* ‘old maid’,
- Uralic *oma* ‘old’ (UEW337-38), also Uralic *im* ‘old woman’ (UEW83),
  Comment: Further comparanda: Mongolian *ebügen- ‘old man, grandfather’.

*wīd- ‘new, young’
- Mutsun *iṭas, iṭas* ‘new’ (Mason 1916:461), Costanoan II *ičas, Costanoan IV iitti* ‘new’ (Heizer 1952:33), cf. Mutsun *tuta* ‘young man’ (Mason 1916:438),
- Uralic *wudje* ‘new’ (UEW587), Mokša *od* ‘new, young’,
  Comment: Further comparanda: (?) Yukaghir *ö:- ‘young’ (Nikolajeva 2006:318–19), (?) Mongolian *id-er* ‘young, full of strength’.

Comparanda with a short vowel ŏ:

*bōγ- ‘kidney, testicle’
- (?) Salinan *oxot* ‘testicle’ (Mason 1918:127),
- Uralic: only Volgo-Permic *wārk* ‘kidney’ (UEW817),
  Comment: Further comparanda: Mongolian *bo(g)ere- ‘kidney, testicle’.

*bōr- ‘bride’
- Mutsun *uršes* ‘bride’ (Mason 1916:437),
- Uralic Finno-Volgaic *oriwa* ‘bride, daughter-in-law’ (UEW722),
  Comment: Further comparanda: Mongolian *beri- ‘bride, daughter-in-law’.

*dōm(p)- ‘hill’
- Mutsun *tamar* ‘hill’ (Mason 1916:436), without expected initial ţ,
- Salinan *t’opo* ‘mountain’ (Mason 1918:133),
- Ugric *domp- ‘hill’ (UEW896), Hungarian *domb* has a peculiar voiced initial,
  Comment: Further comparanda: Mongolian *dobu ‘hill’.

*ōgū- ‘to kill’
- Chimariko *ko- ‘to kill’, with loss of initial vowel,

*kōje- ‘man, people’
- Salinan *k’wel* ‘people’ (Mason 1918:134),
- Uralic *koje* ‘man’ (UEW166–67),
  Comment: No comparanda in Yukaghir or Mongolian.

*kɔr=* ‘throat’

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22 The UEW suggests a borrowing from Indo-Iranian *wṛd-k, wṛkk- ‘kidney’, which is phonetically unlikely.
- Mutsun šorkoos ‘throat’ (Mason 1916:432),
- Uralic *kurke ‘throat’ (UEW676),

*kowt ‘shoe’
- Mutsun šotoś ‘shoe’ (Mason 1916:434),
- Uralic *kowt- ‘snow shoe, ski’ (UEW674-75),

*lōHw- ‘to drink’, *lōH-pa ‘wet’
- Chimariko lū- ‘to drink’,
- (?) Uralic (approximative reconstruction) ≈loppa ‘wet’ (IEW693),

*mōla ‘butterfly’
- Mutsun mumullalluk ‘butterfly’ (Mason 1916:427),
- Salinan mal- ‘to fly’ (Mason 1918:143),
- Uralic Mokša melaw, (dialect.) (mo)melu ‘butterfly’, isolated word,

(?)*mōs- ‘breast(s)’
- Mutsun muse ‘full-breasted’ (Mason 1916:462), Soledad, Rumsen, Santa Cruz mus ‘breast’ (Heizer 1955:161), Costanoan III mus, Costanoan IV mus- ‘female breasts’ (Heizer 1952:10),
- (?) Uralic *müšk ‘protruding body part: hump, pregnant’ (IEW703),

*ōdī, *(ō)dālka ‘feather’
- Mutsun uteļ ‘ear-ornament of feathers’ (Mason 1916:433),
- Salinan ọtewots’o- ‘feather’ (Mason 1918:127),
- Uralic *tulka ‘feather, wing’ (UEW535–36),

(?)*pō(n)ča- ‘skin’
- (?) Salinan s(p)anat ‘skin, hide’, (?) with metathesis,
- Uralic po(n)ča ‘skin (on reindeer leg)’ (IEW394–95),
* Comment: No comparanda in Yukaghir or Mongolian.

*gōn ‘elbow’
- *gōnlöw1 > kullul: Costanoan II kullulíš ‘elbow’ (Heizer 1952:10), Rumsen kuluš ‘elbow’, Santa Cruz kululis ‘elbow’ (Heizer 1955:161),
- Uralic *kūn- ‘elbow’ (UEW158–59), Vogul konlowl ‘elbow’,

23 Better attested in the form PU *liHp.
24 Callaghan suggests here a Utiyanism with Miwok *mu ‘breast’, *musu ‘milk, to suckle’. This may indeed be a better solution, as Uralic data are not especially homogeneous and conclusive.
25 The morpheme -is certainly is the same as issu ‘limb, arm, hand’.

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*şō ‘charcoal’
- Mutsun suw, sus ‘charcoal’,
- Uralic *şūđje ‘charcoal’ (UEW477-78), Finnish syd-,
  Comment: No comparanda in Yukaghir or Mongolian.

*tōye- ‘to bring, give’
- Esselen toxesa ‘to give’ (Shaul Appendix A),
- Uralic *tōye ‘to bring, give’ (UEW529–30),
  Comment: Further comparanda: Yukaghir *tē- ‘to give’ (Nikolajeva 2006:236),
  Mongolian ta’u ‘to give, distribute’.

*tō- ‘to fly’
- Chimariko (hu-)tu ‘feather, wing’, tu ‘to fly’,
- Uralic *tulga ‘feather, wing’ (UEW535–36),
  Comment: No comparanda in Yukaghir or Mongolian.

Comparanda with a long vowel ō :

*mōn- ‘to speak’
- Mutsun monse ‘to advise’, monsie ‘to relate, recount’ (Mason 1916:448),
  with *mōn- > non-: Costanoan II nonue, III nonuei ‘to speak’ (Heizer 1952:25),
- Uralic *mon- ‘to say’ (UEW290-91), Hungarian *mond- ‘to say, name, (dial.)
  to speak’,

Comparanda with a short vowel ū :

*gūl- m, *gūlapa ‘three’
- Mutsun kapšan ‘three’ (Mason 1916:439),
- Salinan k(l)apai ‘three’ (Mason 1918:153),
- Esselen kxulep ‘three’ (Shaul appendix A),
- Uralic *kolme- ‘three’ (UEW174),
  Comment: Further comparanda: Mongolian *gurban- ‘three’.

*hūm- ‘belly’
- *hutm- > *hutt-: Mutsun šut(t)i tu ‘belly, abdomen’ (Mason 1916:432), Santa
  Cruz huttu ‘belly’ (Heizer 1955:161), Costanoan II huttu ‘abdomen’ (Heizer
  1952:10),
- Uralic *omte ‘belly, cavity’ (UEW338),
  Comment: Further comparanda: Mongolian *umaday- ‘lower part of belly’.

*juH-g- ‘to drink’
- *juHg- > ukk-: Mutsun ukk(vsi)- ‘to drink (water)’ (Mason 1916:445),
  Costanoan IV ukkes ‘to drink’ (Heizer 1952:25),
- Uralic *juHk- ‘to drink’ (UEW103), Saami *jukk- ‘to drink’,
  Comment: Further comparanda: Mongolian *ayu-, *uyu- ‘to drink’.

*(ku)-ʔaka- ‘long, distant’
- Salinan k’Awaka ‘long, tall’ (Mason 1918:150),
- Uralic *kauka- ‘long’ (UEW132), Mordvin kuwaka ‘long, distant’, Comment: Further comparanda: (?) Mongolian *au- ‘large, broad’.

*kūkt ‘belly’
- Mutsun šut(i)u ‘belly’ (Mason 1916:432),
- Uralic *koki ‘belly’ (UEW670),

*kūHpa ‘boil’
- Mutsun šupur ‘carbuncle’ (Mason 1916:432),
- Uralic *kuppa ‘boil’ (UEW213-14),

*kūni ‘arm’
- Mutsun šut(t)u ‘belly’ (Mason 1916:432),
- Uralic *kon-ala ‘armpit’ (lit. ‘under the arm’) (UEW178),

*pūk-sā- ‘arrow’
- (?) Chimariko atsibuksa ‘arrow-flaker’, if a compound, Cf. -at- ‘to hit’,

*pub- ‘old’
- (?) Mutsun parane ‘grandmother’ < (?) *por+ana ‘old mother’ (Mason 1916:438),
- Uralic *por- ‘old’ (UEW737), Comment: No comparanda in Mongolian or Yukaghir.

*qū-gvl- ‘to die’
- Chimariko qè ‘to die’,

*tūpra ‘lip’
- Mutsun tutper ‘lips’ (Mason 1916:432),
- Uralic *turpa- ‘lip’ (UEW801), a metathesis of *tupra according to Mutsun, Comment: No comparanda in Yukaghir or Mongolian.

*tād- ‘to sleep’
- *oden > eden: Mutsun eč-e ‘to sleep’ (Mason 1916:442), Costanoan II hečen, III ečen ‘to sleep’ (Heizer 1952:25),
- Uralic *od(a)- ‘to sleep’ (UEW334-35), Mordvin *ud- ‘to sleep’, Comment: No comparanda in Yukaghir or Mongolian.

*ūm- ‘to sleep, doze’
- Salinan me ‘to sleep’ (Mason 1918:144),

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26 This root interferences with Germanic *hauka ‘high’ in Balto-Finnic.
27 In Mordvin the prefixal nature of the first syllable of kuwaka is shown by the fact this word is stressed on the second syllable, which happens to be the diachronic stem: *ku‘auka > kuwáka.
28 The morpheme -is certainly is issu ‘limb, arm, hand’.
- (?) Uralic Finno-Volgaic *on- ‘sleep, dream’ (UEW805), Cheremis omo- ‘sleep’.


*ūšim-, *ūćim ‘to drink’
- Salinan išim ‘to drink’ (Mason 1918:144),
- (?) Esselen etse, ešē ‘to drink’ (Shaul appendix A),
- Uralic Finno-Volgaic *šem- ‘to drink’ (UEW773), Mordvin *šim- ‘to drink’.


Comparanda with a long vowel ū:

*čū ‘yellow’
- Mutsun tšutsun ‘green’ (Mason 1916:465), Costanoan III čutku ‘green’ (Heizer 1952:32),
- (?) Salinan אולי awat ‘yellow’ (Mason 1918:151),
- Uralic *čoša ‘yellow’ (UEW621-22), Mordvin *tjuşa.


*kū ‘long ago’
- Mutsun kus ‘in the olden times, once upon a time’ (Mason 1916:467),
- Uralic Mordvin kunara ‘long ago’, possibly a derivative of *ku ‘wh-words’ (UEW191),

Comment: No comparanda in Yukaghir or Mongolian.

*xūj- ‘to swim’
- Mutsun yuya ‘to swim’ (Mason 1918:447),
- Chimariko xu- ‘to swim’,
- Uralic *uj- ‘to swim’ (UEW542),

Comment: Further comparanda: Yukaghir *(w)e:j- ‘to swim’ (Nikolajeva 2006:150), Mongolian *o jim- ‘to swim’.

*tūm- ‘to know’
- Mutsun tuman ‘(to be) able’ (Kroeber 1904:72),
- Uralic *tum-t- ‘to know, perceive’ (UEW536–37),

Comment: No comparanda in Yukaghir or Mongolian.

11. Conclusions and perspectives

This preliminary survey of Costanoan, Esselen, Chimariko and Salinan as compared to Uralic shows that these languages, that I propose be called ‘Cal-Uralic’, definitely contain lexical material of Uralic origin. It appears that they even seem to be closer to Finno-Ugric than they are to Samoyedic. To some extent this means that they deserve to be included within Uralic as a new subbranch. This also raises the issue of the time-
depth of the relationship between Samoyedic, Cal-Uralic and Finno-Ugric. It seems probable that Cal-Uralic is a quite recent newcomer in the Americas.

Mason (1916:405) makes an interesting observation about vowel harmony in Mutsun: “There appears also to be a feeling for vocalic harmony [sic], and some suffixes are varied to the end that their vowel may correspond and harmonize with the characteristic or stem vowel of the word. Thus, sumi-ri-ni, but towo-ro-ste; xana-ksa, but tare-kse.” Such phonomena can be expected in a language of Uralic origin. Further works need to be dedicated to grammatical or morphological features to consolidate the status of Cal-Uralic within Uralic and West-Siberian.

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